

Please enter N value: 8

Please enter iterations value: 100

Please enter a value for the maximum sideways move allowed: 100

Hill Climbing Search Analysis

Initial:

[(6, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (4, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (4, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (7, 5), (4, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (7, 5), (4, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 3

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 4

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]

|*|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 5

[(2, 0), (6, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 6

```

[(2, 0), (0, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 7

```

[(2, 0), (6, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 8

```

[(2, 0), (0, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 9

```

[(2, 0), (6, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 10

```
[(2, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 11

```
[(2, 0), (6, 1), (6, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 12

```
[(2, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 13

```
[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 14

[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 15

[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 16

[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 17

[(2, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 18

[(4, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (7, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

Success:

```

[(4, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(7, 0), (6, 1), (3, 2), (3, 3), (3, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (6, 1), (3, 2), (3, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (6, 1), (3, 2), (3, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(4, 0), (6, 1), (3, 2), (3, 3), (6, 4), (1, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (3, 2), (3, 3), (6, 4), (1, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 6

[(4, 0), (7, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Success:

[(4, 0), (7, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (2, 1), (4, 2), (4, 3), (6, 4), (6, 5), (1, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (4, 2), (0, 3), (6, 4), (6, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (2, 1), (4, 2), (0, 3), (6, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(4, 0), (2, 1), (4, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 5

[(5, 0), (2, 1), (4, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|


```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(5, 0), (2, 1), (4, 2), (7, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|

```

Success:

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(7, 0), (5, 1), (2, 2), (3, 3), (3, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (5, 1), (2, 2), (3, 3), (1, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (2, 2), (3, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(7, 0), (5, 1), (2, 2), (3, 3), (3, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	Q	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (5, 1), (2, 2), (3, 3), (1, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (5, 1), (2, 2), (3, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 5

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 6

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (0, 5), (4, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 7

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 8

```
[(7, 0), (2, 1), (2, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 9

```
[(7, 0), (2, 1), (4, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 10

```
[(7, 0), (2, 1), (4, 2), (6, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 11

```
[(7, 0), (2, 1), (4, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 12

[(7, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (3, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	

Step: 13

[(7, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	

Step: 14

[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	

Step: 15

[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (3, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	

Step: 16

```

[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 17

```

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 18

```

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(1, 0), (4, 1), (3, 2), (2, 3), (6, 4), (2, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (0, 2), (2, 3), (6, 4), (2, 5), (3, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (4, 1), (0, 2), (2, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(1, 0), (5, 1), (0, 2), (2, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(1, 0), (3, 1), (5, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (0, 1), (0, 2), (1, 3), (3, 4), (3, 5), (2, 6), (2, 7)]
|Q|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (0, 1), (0, 2), (1, 3), (3, 4), (7, 5), (2, 6), (2, 7)]
|Q|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```


Step: 3

[(0, 0), (4, 1), (0, 2), (1, 3), (3, 4), (7, 5), (2, 6), (2, 7)]

Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (7, 5), (2, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (2, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 6

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(6, 0), (4, 1), (0, 2), (5, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 8

```

[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 9

```

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 10

```

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 11

```

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 12

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 13

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 14

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 15

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 16

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 17

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 18

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 19

```

[(2, 0), (0, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 20

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 21

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 22

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 23

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 24

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 25

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 26

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 27

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 28

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 29

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 30

```
[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 31

```
[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 32

```
[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 33

```
[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 34

[(6, 0), (4, 1), (0, 2), (5, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 35

[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 36

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 37

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 38

[(6, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]


```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 39

```

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 40

```

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 41

```

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 42

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 43

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 44

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 45

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 46

```

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 47

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]

Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 48

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 49

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (5, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 50

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 51

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]

|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 52

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 53

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 54

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 55

```

[(0, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 56

[(5, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*

Step: 57

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*

Step: 58

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	*

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

```

[(0, 0), (6, 1), (7, 2), (6, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (6, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (6, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (6, 1), (7, 2), (6, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(0, 0), (6, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(0, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

Success:

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (0, 1), (7, 2), (2, 3), (6, 4), (6, 5), (4, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	Q

Step: 2

[(3, 0), (0, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	Q

Step: 3

[(3, 0), (0, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*

Step: 4


```
[(3, 0), (0, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (2, 1), (0, 2), (6, 3), (0, 4), (7, 5), (0, 6), (1, 7)]
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(4, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (1, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(4, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (4, 1), (6, 2), (7, 3), (6, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|Q|*|Q|*|*|

```

Step: 2

```

[(7, 0), (4, 1), (6, 2), (7, 3), (2, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|Q|*|*|

```

Step: 3

```

[(0, 0), (4, 1), (6, 2), (7, 3), (2, 4), (7, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

```

Step: 4

```

[(0, 0), (4, 1), (5, 2), (7, 3), (2, 4), (7, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

```

Step: 5

```

[(0, 0), (4, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(6, 0), (0, 1), (1, 2), (6, 3), (5, 4), (1, 5), (3, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (0, 1), (1, 2), (7, 3), (5, 4), (1, 5), (3, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(6, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (3, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (4, 1), (2, 2), (7, 3), (5, 4), (1, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (3, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (5, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (1, 1), (6, 2), (7, 3), (6, 4), (1, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(5, 0), (2, 1), (6, 2), (7, 3), (6, 4), (1, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (2, 1), (6, 2), (7, 3), (6, 4), (1, 5), (1, 6), (4, 7)]

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(5, 0), (2, 1), (0, 2), (7, 3), (6, 4), (1, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (3, 1), (1, 2), (7, 3), (7, 4), (4, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|Q|Q|
```

Step: 2

```
[(6, 0), (3, 1), (1, 2), (7, 3), (7, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
```

Step: 3

```
[(6, 0), (3, 1), (1, 2), (7, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|

```

Step: 4

```

[(6, 0), (3, 1), (1, 2), (7, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|

```

Success:

```

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(4, 0), (6, 1), (7, 2), (1, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (2, 1), (7, 2), (1, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|

Step: 3

[(4, 0), (2, 1), (7, 2), (5, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (2, 1), (7, 2), (5, 3), (0, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 5

[(4, 0), (2, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 6

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 7

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 8

```

[(4, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 9

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 10

```

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 11

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```



```

|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 12

```

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 13

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 14

```

[(4, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 16

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 17

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 18

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 19

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 20

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 21

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 22

```

[(4, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 23

```

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 24

```

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

Step: 25

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 26

[(4, 0), (1, 1), (7, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 27

[(4, 0), (1, 1), (5, 2), (5, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 28

[(4, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 29

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

```

|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 30

```

[(1, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|

```

Step: 31

```

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 32

```

[(4, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 33

```

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 34

[(1, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	Q	*	Q	*	*	*	*	

Step: 35

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	

Step: 36

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (6, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	

Success:

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (7, 1), (4, 2), (1, 3), (5, 4), (5, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (7, 1), (4, 2), (1, 3), (5, 4), (5, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```

[(6, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```



```

|*|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(5, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 10

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|

```

|*|Q|*|*|*|*|*|

Step: 11

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Step: 12

[(5, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|Q|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Step: 13

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Step: 14

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

Step: 15

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 18

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 19

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 20

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 21

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 22

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 23

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 24

```

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 25

```

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|

```

Step: 26

```

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 27

```

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 28

```

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 29

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 30

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 31

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 32

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

|Q|*|*|*|*|*|*|*|

Step: 33

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|Q|*|*|*|

Step: 34

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

Step: 35

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|*|

Step: 36

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

Step: 37

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|

```

Step: 38

```

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 39

```

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|

```

Step: 40

```

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 41

```

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```


*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 42

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 43

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 44

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 45

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 46

```

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 47

```

[(2, 0), (7, 1), (1, 2), (4, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 48

```

[(2, 0), (7, 1), (1, 2), (4, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 49

```

[(4, 0), (7, 1), (1, 2), (4, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 50

```

[(4, 0), (7, 1), (1, 2), (5, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 51

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 52

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 53

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 54

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

|*|Q|*|*|*|*|Q|*|

Step: 55

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 56

[(4, 0), (7, 1), (1, 2), (5, 3), (2, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 57

[(4, 0), (7, 1), (1, 2), (4, 3), (2, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 58

[(2, 0), (7, 1), (1, 2), (4, 3), (2, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 59

[(2, 0), (7, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(5, 0), (0, 1), (5, 2), (7, 3), (6, 4), (4, 5), (2, 6), (2, 7)]
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (5, 2), (1, 3), (6, 4), (4, 5), (2, 6), (2, 7)]
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (5, 2), (1, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(4, 0), (2, 1), (7, 2), (7, 3), (7, 4), (7, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*		
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	Q	Q	Q	*	*	

Step: 2

[(4, 0), (2, 1), (7, 2), (7, 3), (7, 4), (3, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*		
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	Q	Q	Q	*	*	*

Step: 3

[(4, 0), (2, 1), (7, 2), (7, 3), (1, 4), (3, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*		
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	Q	Q	*	*	*	*

Step: 4

[(4, 0), (2, 1), (7, 2), (7, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	Q	*		
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	

|*|*|Q|Q|*|*|*|*|

Step: 5

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(6, 0), (4, 1), (4, 2), (4, 3), (5, 4), (4, 5), (4, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|Q|Q|*|Q|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(6, 0), (4, 1), (2, 2), (4, 3), (5, 4), (4, 5), (4, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|Q|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (4, 5), (4, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|Q|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(6, 0), (0, 1), (1, 2), (4, 3), (5, 4), (7, 5), (2, 6), (0, 7)]
*	Q	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	

Step: 2

[(6, 0), (0, 1), (1, 2), (4, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(6, 0), (0, 1), (1, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*


```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 6

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 7

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Step: 8

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 9

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 10

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 11

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 12

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 13

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 14

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 15

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 16

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 17

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 18

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 20

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 21

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 22

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 23

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 24

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 25

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 26

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 27

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 28

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 29

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|

Step: 30

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 31

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 32

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 33

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 34

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 35

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 36

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 38

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```


*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 39

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 40

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 41

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 42

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 43

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 44

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 45

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 46

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 47

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 48

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 49

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 50

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 51

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Step: 52

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 53

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 54

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 55

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 56

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 57

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 58

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 59

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 60

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 61

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 62

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 63

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 64

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 65

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 66

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 67

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 68

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 69

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 70

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 71

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 72

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 73

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```


|*|*|*|*|*|Q|*|*|

Step: 74

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 75

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 76

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 77

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 78

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 79

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 80

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 81

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 82

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 83

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 84

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 85

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 86

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 87

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 88

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 89

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 90

```

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 91

```

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 92

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 93

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 94

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 95

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|

Step: 96

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 97

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 98

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 99

[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 100

[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 101

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 102

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 103

```
[(6, 0), (0, 1), (5, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 104

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (3, 2), (3, 3), (4, 4), (6, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (1, 1), (3, 2), (7, 3), (4, 4), (6, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (3, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```


Search Failed

Initial:

[(0, 0), (7, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (6, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	Q
*	Q	*	*	*	Q	*	*

Step: 2

[(0, 0), (7, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

[(0, 0), (4, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(2, 0), (6, 1), (0, 2), (4, 3), (7, 4), (2, 5), (6, 6), (3, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 2

[(2, 0), (5, 1), (0, 2), (4, 3), (7, 4), (2, 5), (6, 6), (3, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (0, 2), (4, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (3, 1), (3, 2), (3, 3), (5, 4), (2, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (3, 1), (0, 2), (3, 3), (5, 4), (2, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(5, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (2, 1), (4, 2), (6, 3), (5, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (2, 1), (4, 2), (7, 3), (5, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Step: 4

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (1, 2), (1, 3), (0, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	Q	*	Q	*
*	*	Q	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (7, 1), (1, 2), (1, 3), (0, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	Q	*	Q	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (1, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (1, 2), (5, 3), (3, 4), (2, 5), (1, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|Q|Q|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (1, 1), (1, 2), (5, 3), (3, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|Q|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (1, 1), (7, 2), (5, 3), (3, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|Q|
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (1, 1), (7, 2), (5, 3), (3, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(4, 0), (5, 1), (2, 2), (4, 3), (3, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|Q|*|Q|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (5, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (2, 2), (7, 3), (6, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (5, 1), (2, 2), (4, 3), (3, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|

Step: 2

[(4, 0), (5, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|Q|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(1, 0), (5, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(1, 0), (5, 1), (2, 2), (0, 3), (6, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 5

[(1, 0), (5, 1), (2, 2), (0, 3), (6, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 6

[(3, 0), (5, 1), (2, 2), (0, 3), (6, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|Q|*|*|*|Q|


```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 7

```
[(3, 0), (5, 1), (2, 2), (1, 3), (6, 4), (4, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Random Restart Hill Climbing Search

Initial:

```
[(3, 0), (7, 1), (3, 2), (1, 3), (4, 4), (1, 5), (0, 6), (0, 7)]
|*|*|*|*|*|Q|Q| |
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (3, 2), (1, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (3, 2), (1, 3), (6, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

```
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (4, 2), (7, 3), (1, 4), (2, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 2

```
[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (2, 5), (7, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 3

```
[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (2, 5), (5, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(5, 0), (5, 1), (4, 2), (5, 3), (3, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (5, 1), (4, 2), (1, 3), (3, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (4, 2), (1, 3), (3, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Step: 5

```

[(5, 0), (7, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|

```

Success:

```

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (0, 1), (7, 2), (3, 3), (3, 4), (5, 5), (0, 6), (3, 7)]
|Q|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (0, 6), (3, 7)]
|Q|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(2, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(2, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 7

```

[(2, 0), (2, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 8

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (2, 1), (2, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	Q	*
Q	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (2, 1), (2, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (7, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(3, 0), (2, 1), (2, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (2, 1), (2, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(6, 0), (2, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(6, 0), (2, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```


*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 7

[(1, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 8

[(0, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 9

[(0, 0), (4, 1), (7, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 10

[(0, 0), (4, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 11

```

[(0, 0), (1, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 12

```

[(5, 0), (1, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(0, 0), (1, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(0, 0), (4, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(0, 0), (1, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 16

[(5, 0), (1, 1), (4, 2), (7, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 17

[(5, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 18

[(4, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Success:

[(4, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|*|Q|*|*|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(1, 0), (1, 1), (3, 2), (3, 3), (6, 4), (5, 5), (2, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (1, 1), (3, 2), (3, 3), (6, 4), (5, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(1, 0), (1, 1), (3, 2), (3, 3), (6, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(1, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|Q|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 5

[(4, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (0, 7)]

```
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 6

```
[(4, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(7, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (0, 1), (3, 2), (0, 3), (7, 4), (4, 5), (6, 6), (6, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|Q|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (6, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	Q	*	*	*

Step: 3

[(7, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
Q	*	*	*	Q	*	*	*	

Success:

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	

Hill Climbing Search Analysis

Initial:

[(3, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (1, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (1, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

Success:

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (1, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (1, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Success:

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(5, 0), (5, 1), (4, 2), (1, 3), (0, 4), (3, 5), (7, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

[(5, 0), (5, 1), (4, 2), (6, 3), (0, 4), (3, 5), (7, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 3

[(5, 0), (1, 1), (4, 2), (6, 3), (0, 4), (3, 5), (7, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(0, 0), (6, 1), (1, 2), (4, 3), (4, 4), (3, 5), (5, 6), (7, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(0, 0), (6, 1), (1, 2), (4, 3), (6, 4), (3, 5), (5, 6), (7, 7)]

|Q|*|*|*|*|*|*|*|


```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(0, 0), (6, 1), (1, 2), (4, 3), (6, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (7, 1), (1, 2), (4, 3), (6, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (4, 2), (6, 3), (4, 4), (1, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (4, 2), (6, 3), (4, 4), (1, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (3, 1), (7, 2), (6, 3), (4, 4), (1, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (4, 1), (4, 2), (0, 3), (6, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (4, 1), (4, 2), (0, 3), (6, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

Step: 3

[(1, 0), (4, 1), (7, 2), (0, 3), (6, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 4

[(1, 0), (4, 1), (7, 2), (3, 3), (6, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(0, 0), (1, 1), (1, 2), (2, 3), (7, 4), (2, 5), (3, 6), (1, 7)]

|Q|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|Q|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 2

[(0, 0), (1, 1), (4, 2), (2, 3), (7, 4), (2, 5), (3, 6), (1, 7)]

```
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (2, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (1, 1), (4, 2), (6, 3), (2, 4), (6, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (1, 1), (4, 2), (6, 3), (3, 4), (6, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(2, 0), (1, 1), (4, 2), (6, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (1, 1), (4, 2), (6, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(6, 0), (6, 1), (5, 2), (5, 3), (0, 4), (0, 5), (3, 6), (5, 7)]

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (6, 1), (1, 2), (5, 3), (0, 4), (0, 5), (3, 6), (5, 7)]

*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (6, 2), (3, 3), (4, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(1, 0), (7, 1), (6, 2), (3, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

```
[(2, 0), (7, 1), (6, 2), (3, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (0, 2), (6, 3), (7, 4), (5, 5), (0, 6), (1, 7)]
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (0, 2), (6, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(4, 0), (3, 1), (0, 2), (6, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (6, 2), (2, 3), (5, 4), (1, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
```

```

|Q|Q|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (1, 1), (6, 2), (2, 3), (5, 4), (1, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (1, 1), (6, 2), (2, 3), (5, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (1, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (4, 1), (4, 2), (3, 3), (0, 4), (5, 5), (2, 6), (4, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (4, 1), (1, 2), (3, 3), (0, 4), (5, 5), (2, 6), (4, 7)]
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(7, 0), (4, 1), (1, 2), (3, 3), (0, 4), (5, 5), (2, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (4, 1), (5, 2), (6, 3), (5, 4), (1, 5), (3, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	Q	*	*	*	*

|Q|*|*|*|*|*|*|Q|

Step: 2

[(7, 0), (4, 1), (0, 2), (6, 3), (5, 4), (1, 5), (3, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

Step: 3

[(7, 0), (4, 1), (0, 2), (2, 3), (5, 4), (1, 5), (3, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

Step: 4

[(7, 0), (4, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(1, 0), (2, 1), (2, 2), (4, 3), (7, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 2

[(1, 0), (7, 1), (2, 2), (4, 3), (7, 4), (5, 5), (0, 6), (6, 7)]

```
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (7, 1), (1, 2), (6, 3), (1, 4), (3, 5), (5, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (2, 2), (6, 3), (1, 4), (3, 5), (5, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (2, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (7, 1), (2, 2), (6, 3), (1, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (0, 2), (1, 3), (5, 4), (3, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*| |
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (0, 2), (1, 3), (5, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(6, 0), (4, 1), (0, 2), (1, 3), (5, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(5, 0), (3, 1), (4, 2), (5, 3), (4, 4), (5, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|*|
```

Q	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (4, 2), (6, 3), (4, 4), (5, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (3, 1), (4, 2), (6, 3), (0, 4), (5, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (3, 1), (4, 2), (6, 3), (0, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(5, 0), (3, 1), (4, 2), (6, 3), (0, 4), (2, 5), (7, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

```

[(5, 0), (0, 1), (4, 2), (6, 3), (0, 4), (2, 5), (7, 6), (1, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(1, 0), (2, 1), (5, 2), (0, 3), (4, 4), (2, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (2, 1), (5, 2), (0, 3), (4, 4), (7, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*| |
|Q|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(1, 0), (2, 1), (5, 2), (0, 3), (4, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*| |
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(1, 0), (6, 1), (5, 2), (0, 3), (4, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (2, 2), (0, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(0, 0), (5, 1), (2, 2), (6, 3), (1, 4), (2, 5), (1, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (5, 1), (2, 2), (6, 3), (1, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (5, 1), (2, 2), (6, 3), (1, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(0, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

```
[(0, 0), (7, 1), (4, 2), (1, 3), (3, 4), (0, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (4, 2), (1, 3), (3, 4), (6, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (7, 1), (4, 2), (1, 3), (3, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (1, 1), (6, 2), (4, 3), (4, 4), (1, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (6, 2), (4, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(3, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (5, 1), (0, 2), (4, 3), (3, 4), (6, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|Q|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (5, 1), (0, 2), (4, 3), (1, 4), (6, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (7, 1), (0, 2), (4, 3), (1, 4), (6, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (7, 1), (0, 2), (3, 3), (1, 4), (6, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(4, 0), (7, 1), (0, 2), (3, 3), (1, 4), (6, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|

```

|*|Q|*|*|*|*|*|

Step: 6

[(4, 0), (7, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|

Success:

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|

Hill Climbing Search Analysis

Initial:

[(3, 0), (5, 1), (7, 2), (2, 3), (3, 4), (7, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|

Step: 2

[(3, 0), (5, 1), (7, 2), (2, 3), (1, 4), (7, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|

Step: 3

[(3, 0), (5, 1), (7, 2), (2, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(3, 0), (5, 1), (7, 2), (2, 3), (3, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 2

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 3

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|

```

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 8

```

[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

Step: 9

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 10

[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 11

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 12

[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 13

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 15

```

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 16

```

[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 17

```

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```



```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 18

```
[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 19

```
[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 20

```
[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 21

```
[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 22

[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 23

[(3, 0), (1, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 24

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*

Step: 25

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 26

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 27

```

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 28

```

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 29

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 30

```

[(4, 0), (1, 1), (7, 2), (2, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

Step: 31

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*

Step: 32

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 33

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 34

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 35

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]

```

|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 36

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 37

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 38

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 39

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 40

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 41

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 42

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 43

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 44

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 45

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 46

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (5, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 47

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 48

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

Step: 49

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 50

```

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 51

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 52

```

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

Step: 53

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 54

[(4, 0), (1, 1), (5, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Success:

[(4, 0), (1, 1), (5, 2), (0, 3), (6, 4), (3, 5), (7, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (0, 1), (2, 2), (3, 3), (4, 4), (7, 5), (0, 6), (7, 7)]

*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q

Step: 2

```

[(3, 0), (0, 1), (2, 2), (4, 3), (4, 4), (7, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 3

```

[(3, 0), (0, 1), (2, 2), (4, 3), (1, 4), (7, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 4

```

[(3, 0), (0, 1), (2, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(3, 0), (7, 1), (2, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|

```

Search Failed

Initial:

```

[(2, 0), (1, 1), (0, 2), (7, 3), (2, 4), (5, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```

|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(2, 0), (6, 1), (0, 2), (7, 3), (2, 4), (5, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(2, 0), (6, 1), (1, 2), (7, 3), (2, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(2, 0), (6, 1), (1, 2), (7, 3), (2, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(2, 0), (6, 1), (1, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(0, 0), (3, 1), (2, 2), (7, 3), (1, 4), (6, 5), (3, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(0, 0), (3, 1), (2, 2), (7, 3), (1, 4), (6, 5), (5, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(6, 0), (3, 1), (2, 2), (7, 3), (1, 4), (6, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (3, 1), (2, 2), (7, 3), (1, 4), (4, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (5, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 8

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 9

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 10

```
[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 11

```
[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 12

```
[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 13

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|Q|*|*|*|Q|

Step: 14

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

Step: 15

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

Step: 16

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

Step: 17

[(6, 0), (3, 1), (5, 2), (0, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|Q|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 18

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 19

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 22

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```


*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 23

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 24

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 25

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 26

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 27

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 28

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 29

```

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 30

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 31

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 32

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 33

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 34

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 35

```

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|

Step: 36

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 37

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 38

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|Q|*|*|*|*|

Step: 39

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 40

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*| |
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 41

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 42

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 43

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 44

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 45

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 46

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 47

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 48

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 49

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 50

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 51

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 52

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 53

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 54

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 55

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 56

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 57

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```


|*|*|*|Q|*|*|*|*|

Step: 58

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 59

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 60

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 61

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 62

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 63

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (0, 6), (2, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 64

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 65

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 66

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 67

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	

Step: 68

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 69

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	

Step: 70

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 71

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 72

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 73

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 74

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 75

```

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 76

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 77

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 78

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (0, 6), (2, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 79

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|

Step: 80

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 81

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 82

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 83

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 84

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|Q|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 85

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 86

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 87

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 88

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 89

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	*

Step: 90

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	Q	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 91

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 92

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	*
*	*	Q	Q	*	*	*	*	*

Step: 93


```

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 94

```

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|

```

Step: 95

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 96

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 97

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 98

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*

Step: 99

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 100

[(0, 0), (3, 1), (1, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 101

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|

Step: 102

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 103

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 104

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|Q|*|*|*|*|

Step: 105

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(1, 0), (4, 1), (3, 2), (3, 3), (2, 4), (3, 5), (5, 6), (2, 7)]

```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (3, 2), (7, 3), (2, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (3, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(0, 0), (7, 1), (2, 2), (3, 3), (6, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (3, 2), (3, 3), (6, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (3, 2), (1, 3), (6, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 4

```
[(0, 0), (7, 1), (3, 2), (1, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

|*|Q|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (7, 1), (2, 2), (3, 3), (6, 4), (7, 5), (5, 6), (2, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|Q|*|*|

Step: 2

[(1, 0), (7, 1), (2, 2), (3, 3), (6, 4), (7, 5), (5, 6), (2, 7)]

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|Q|*|*|

Step: 3

[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|Q|*|*|

Step: 4

[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 5

```

[(1, 0), (4, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (4, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 10

[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 11

[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (5, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Success:

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

|*|*|Q|*|*|*|*|*

Random Restart Hill Climbing Search

Initial:

[(0, 0), (5, 1), (7, 2), (3, 3), (2, 4), (3, 5), (4, 6), (3, 7)]

|Q|*|*|*|*|*|*|*

|*|*|*|*|*|*|*|*

|*|*|*|*|Q|*|*|*|*

|*|*|*|Q|*|Q|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 2

[(0, 0), (5, 1), (7, 2), (3, 3), (1, 4), (3, 5), (4, 6), (3, 7)]

|Q|*|*|*|*|*|*|*

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(0, 0), (5, 1), (7, 2), (6, 3), (1, 4), (3, 5), (4, 6), (3, 7)]

|Q|*|*|*|*|*|*|*

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 4

[(0, 0), (5, 1), (7, 2), (6, 3), (1, 4), (2, 5), (4, 6), (3, 7)]

|Q|*|*|*|*|*|*|*

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

```

[(5, 0), (1, 1), (3, 2), (5, 3), (5, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (3, 2), (7, 3), (5, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(5, 0), (1, 1), (4, 2), (7, 3), (5, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(6, 0), (5, 1), (5, 2), (2, 3), (6, 4), (2, 5), (5, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (5, 1), (5, 2), (2, 3), (6, 4), (2, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(6, 0), (5, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(0, 0), (5, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(5, 0), (2, 1), (6, 2), (0, 3), (2, 4), (5, 5), (4, 6), (4, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (6, 2), (0, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (3, 1), (6, 2), (0, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (2, 1), (0, 2), (0, 3), (1, 4), (5, 5), (5, 6), (7, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q

Step: 2

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (5, 5), (5, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q

Step: 3

[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (5, 5), (5, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (3, 5), (5, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(6, 0), (4, 1), (2, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(6, 0), (1, 1), (2, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(6, 0), (1, 1), (5, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(0, 0), (6, 1), (0, 2), (3, 3), (0, 4), (6, 5), (7, 6), (7, 7)]

Q	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	Q

Step: 2

[(3, 0), (6, 1), (0, 2), (3, 3), (0, 4), (6, 5), (7, 6), (7, 7)]

*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	Q

Step: 3

[(3, 0), (6, 1), (0, 2), (3, 3), (0, 4), (4, 5), (7, 6), (7, 7)]

*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Step: 4

[(3, 0), (6, 1), (0, 2), (5, 3), (0, 4), (4, 5), (7, 6), (7, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Step: 5

[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Search Failed

Initial:

[(5, 0), (6, 1), (3, 2), (5, 3), (0, 4), (0, 5), (3, 6), (7, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(1, 0), (6, 1), (3, 2), (5, 3), (0, 4), (0, 5), (3, 6), (7, 7)]
*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

|*|*|*|*|*|*|Q|

Step: 3

[(1, 0), (6, 1), (4, 2), (5, 3), (0, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|Q|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(2, 0), (6, 1), (4, 2), (6, 3), (3, 4), (3, 5), (6, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(2, 0), (5, 1), (4, 2), (6, 3), (3, 4), (3, 5), (6, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(2, 0), (5, 1), (4, 2), (0, 3), (3, 4), (3, 5), (6, 6), (7, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

Step: 4

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (3, 5), (6, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	Q

Step: 5

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (0, 1), (1, 2), (4, 3), (7, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(2, 0), (0, 1), (1, 2), (4, 3), (7, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(2, 0), (0, 1), (1, 2), (4, 3), (7, 4), (0, 5), (4, 6), (3, 7)]
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(2, 0), (0, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (4, 1), (0, 2), (5, 3), (1, 4), (1, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(5, 0), (4, 1), (0, 2), (5, 3), (6, 4), (1, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 3

[(4, 0), (4, 1), (0, 2), (5, 3), (6, 4), (1, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(4, 0), (4, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(4, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 6

[(4, 0), (2, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 7

[(4, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
```

Step: 8

```
[(4, 0), (2, 1), (0, 2), (5, 3), (3, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 9

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(4, 0), (3, 1), (4, 2), (2, 3), (6, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

```
|*|Q|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (3, 1), (4, 2), (2, 3), (1, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (4, 2), (2, 3), (1, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (3, 1), (0, 2), (2, 3), (1, 4), (6, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (3, 1), (0, 2), (5, 3), (1, 4), (6, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

|Q|*|*|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (3, 1), (4, 2), (2, 3), (6, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|Q|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(4, 0), (3, 1), (5, 2), (2, 3), (6, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|Q|Q|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(4, 0), (3, 1), (5, 2), (2, 3), (1, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(4, 0), (3, 1), (5, 2), (0, 3), (1, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

Step: 5

```

[(4, 0), (7, 1), (5, 2), (0, 3), (1, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (7, 1), (5, 2), (0, 3), (3, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (7, 1), (5, 2), (0, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(4, 0), (7, 1), (3, 2), (0, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (7, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|

```

Step: 10

```

[(4, 0), (0, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(6, 0), (4, 1), (4, 2), (0, 3), (2, 4), (4, 5), (3, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (4, 1), (4, 2), (0, 3), (2, 4), (5, 5), (3, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```


|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (4, 1), (4, 2), (0, 3), (2, 4), (5, 5), (3, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (4, 1), (4, 2), (0, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (4, 1), (6, 2), (0, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (4, 1), (7, 2), (1, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*

Step: 2

```

[(7, 0), (2, 1), (7, 2), (1, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (2, 1), (4, 2), (1, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (2, 1), (4, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(3, 0), (4, 1), (3, 2), (0, 3), (0, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (4, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (6, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q

Step: 2

[(6, 0), (6, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

```
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
```

Step: 3

```
[(6, 0), (6, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (6, 1), (0, 2), (4, 3), (2, 4), (6, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 2

```
[(7, 0), (3, 1), (0, 2), (4, 3), (2, 4), (6, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (3, 1), (0, 2), (4, 3), (2, 4), (6, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

[(5, 0), (3, 1), (0, 2), (4, 3), (2, 4), (1, 5), (6, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 5

[(5, 0), (3, 1), (0, 2), (4, 3), (7, 4), (1, 5), (6, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	Q

Success:

[(5, 0), (3, 1), (0, 2), (4, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(5, 0), (7, 1), (0, 2), (2, 3), (7, 4), (5, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	Q	*	*	*

Step: 2

[(5, 0), (7, 1), (0, 2), (4, 3), (7, 4), (5, 5), (6, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|Q|*|*|*|

```

Step: 3

```

[(5, 0), (7, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|

```

Step: 4

```

[(5, 0), (7, 1), (0, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|

```

Step: 5

```

[(5, 0), (3, 1), (0, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(5, 0), (7, 1), (0, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 7

[(5, 0), (7, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 8

[(5, 0), (7, 1), (0, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 9

[(5, 0), (2, 1), (0, 2), (4, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 10

[(5, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Success:

```

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(4, 0), (7, 1), (7, 2), (6, 3), (4, 4), (7, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|Q|*|*|

```

Step: 2

```

[(4, 0), (7, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 3

```

[(4, 0), (7, 1), (3, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```


*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (7, 1), (7, 2), (6, 3), (4, 4), (7, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	Q	*	*	Q	*	*

Step: 2

[(4, 0), (7, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

[(4, 0), (7, 1), (3, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (1, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 6

[(4, 0), (1, 1), (3, 2), (6, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 7

[(4, 0), (1, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 9

[(4, 0), (1, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 10

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	Q	*	*	*	
*	Q	*	*	*	*	*	*	

Step: 11

[(4, 0), (7, 1), (1, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 12

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 13

[(4, 0), (1, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 14

```

[(4, 0), (7, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(4, 0), (7, 1), (1, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(4, 0), (7, 1), (1, 2), (3, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(4, 0), (7, 1), (1, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

Step: 18

[(4, 0), (4, 1), (1, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 19

[(4, 0), (7, 1), (1, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 20

[(4, 0), (0, 1), (1, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 21

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*

Step: 22

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (2, 5), (7, 6), (1, 7)]

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

Step: 23

```

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (2, 5), (7, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

Step: 24

```

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (2, 5), (1, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 25

```

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (2, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 26

```

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(3, 0), (1, 1), (2, 2), (6, 3), (0, 4), (6, 5), (2, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (4, 2), (6, 3), (0, 4), (6, 5), (2, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (2, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|Q|*|*|*|*|

Step: 4

[(3, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (2, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(5, 0), (7, 1), (0, 2), (3, 3), (4, 4), (6, 5), (5, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|Q|

Step: 2

[(5, 0), (7, 1), (0, 2), (3, 3), (4, 4), (6, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

Step: 3

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (6, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

Step: 4

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (1, 5), (5, 6), (2, 7)]


```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(5, 0), (7, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Success:

```
[(3, 0), (7, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (6, 1), (1, 2), (4, 3), (7, 4), (2, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
```

Step: 2

```
[(7, 0), (6, 1), (1, 2), (4, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|

```

Step: 3

```

[(0, 0), (6, 1), (1, 2), (4, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (2, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|

Success:

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Hill Climbing Search Analysis

Initial:

[(0, 0), (6, 1), (5, 2), (4, 3), (6, 4), (0, 5), (7, 6), (2, 7)]

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

[(0, 0), (6, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (2, 7)]

|Q|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 3

[(0, 0), (5, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (2, 7)]

|Q|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 4

[(0, 0), (5, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (4, 7)]

```

|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (6, 1), (5, 2), (4, 3), (6, 4), (0, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 2

```

[(0, 0), (6, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(0, 0), (7, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 4

```

[(0, 0), (7, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 5

```

[(0, 0), (7, 1), (5, 2), (1, 3), (6, 4), (4, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 6

```

[(0, 0), (7, 1), (5, 2), (1, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 7

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 8

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 9

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 10

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 11

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 12

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 13

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 14

```

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 15

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 16

```

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 17

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
```

Step: 18

```
[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 19

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
```

Step: 20

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 21

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```


Step: 22

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 23

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 24

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 25

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 26

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 27

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 28

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 29

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 30

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 31

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 32

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 33

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 34

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 35

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 36

```

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 37

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 38

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 39

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
```

Step: 40

```
[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 41

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
```

Step: 42

```
[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 43

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
```

Step: 44

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 45

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 46

[(0, 0), (3, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 47

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 48

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 49

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 50

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 51

```
[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 52

```
[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 53

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 54

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 55

[(4, 0), (0, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 56

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 57

[(4, 0), (0, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]


```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|

```

Step: 58

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 59

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 60

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 61

```

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 62

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 63

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 64

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 65

```

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 66

[(4, 0), (0, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 67

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 68

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 69

[(4, 0), (2, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 70

[(4, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 71

```

[(4, 0), (2, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 72

```

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 73

```

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 74

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 75

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 76

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 77

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 78

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 79

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 80

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 81

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 82

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 83

```

[(0, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 84

```
[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 85

```
[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 86

```
[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 87

```
[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 88

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 89

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 90

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 91

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 92

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|


```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 93

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 94

```

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 95

```

[(4, 0), (0, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 96

```

[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

Step: 97

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*	Q

Step: 98

[(4, 0), (6, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 99

[(4, 0), (2, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 100

[(4, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 101

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (7, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(5, 0), (7, 1), (4, 2), (3, 3), (3, 4), (5, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (7, 1), (4, 2), (0, 3), (3, 4), (5, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (7, 1), (4, 2), (0, 3), (3, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	

Search Failed

Initial:

[(2, 0), (6, 1), (5, 2), (0, 3), (4, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (6, 1), (5, 2), (0, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (6, 1), (5, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 4

[(2, 0), (6, 1), (7, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (7, 1), (5, 2), (6, 3), (2, 4), (1, 5), (3, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(0, 0), (7, 1), (5, 2), (4, 3), (2, 4), (1, 5), (3, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (5, 2), (4, 3), (2, 4), (1, 5), (3, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (1, 1), (3, 2), (2, 3), (1, 4), (7, 5), (4, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q

Step: 2

[(7, 0), (1, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q

Step: 3

[(7, 0), (1, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*

Step: 4

[(7, 0), (1, 1), (3, 2), (5, 3), (0, 4), (7, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*

Step: 5

[(7, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (5, 1), (5, 2), (5, 3), (5, 4), (2, 5), (0, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|Q|Q|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (1, 2), (5, 3), (5, 4), (2, 5), (0, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (1, 2), (5, 3), (7, 4), (2, 5), (0, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (5, 1), (1, 2), (5, 3), (7, 4), (2, 5), (0, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
```

```
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(4, 0), (1, 1), (1, 2), (5, 3), (7, 4), (2, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 6

```
[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (6, 1), (0, 2), (6, 3), (6, 4), (7, 5), (3, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```


Step: 2

[(4, 0), (6, 1), (0, 2), (6, 3), (6, 4), (7, 5), (3, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(4, 0), (6, 1), (0, 2), (2, 3), (6, 4), (7, 5), (3, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(4, 0), (6, 1), (0, 2), (2, 3), (6, 4), (7, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (7, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Success:

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(5, 0), (6, 1), (0, 2), (4, 3), (6, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(5, 0), (2, 1), (0, 2), (4, 3), (6, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (2, 1), (0, 2), (4, 3), (6, 4), (4, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(5, 0), (2, 1), (0, 2), (4, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (6, 1), (0, 2), (4, 3), (6, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(5, 0), (2, 1), (0, 2), (4, 3), (6, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (2, 1), (0, 2), (1, 3), (6, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(5, 0), (2, 1), (0, 2), (1, 3), (6, 4), (4, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|Q|

Step: 5

[(5, 0), (2, 1), (0, 2), (1, 3), (6, 4), (4, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 6

[(5, 0), (2, 1), (0, 2), (1, 3), (6, 4), (4, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 7

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 8

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 9

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (1, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 10

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 11

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 13

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 14

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 15

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 16

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 17

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 18

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 19

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 20

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 21

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 22

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 23

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 24

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 25

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 26

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```


|*|*|*|*|*|*|Q|*|

Step: 27

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 28

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 29

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 30

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 31

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (1, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 32

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 33

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 34

```

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 35

```

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 36

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 37

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 38

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 39

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 40

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 41

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 42

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 43

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 44

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

```

|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 45

```

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 46

```

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|

```

Step: 47

```

[(5, 0), (2, 1), (0, 2), (3, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 48

```

[(5, 0), (2, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|

Success:

[(5, 0), (2, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Random Restart Hill Climbing Search

Initial:

[(7, 0), (6, 1), (3, 2), (4, 3), (6, 4), (0, 5), (0, 6), (4, 7)]

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (6, 1), (3, 2), (1, 3), (6, 4), (0, 5), (0, 6), (4, 7)]

|*|*|*|*|*|Q|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (2, 1), (3, 2), (1, 3), (6, 4), (0, 5), (0, 6), (4, 7)]

|*|*|*|*|*|Q|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (2, 1), (7, 2), (1, 3), (6, 4), (0, 5), (0, 6), (4, 7)]

```
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (4, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (1, 1), (0, 2), (0, 3), (1, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	Q	*	*	Q	*
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(2, 0), (1, 1), (6, 2), (0, 3), (1, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	Q	*	*	Q	*
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(2, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	Q	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	Q	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 5

[(5, 0), (1, 1), (6, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (7, 1), (7, 2), (1, 3), (2, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*	*

Step: 2

[(6, 0), (4, 1), (7, 2), (1, 3), (2, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*

Step: 3

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (3, 1), (6, 2), (3, 3), (1, 4), (0, 5), (4, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (3, 1), (6, 2), (3, 3), (1, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (0, 5), (5, 6), (7, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(3, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(7, 0), (6, 1), (0, 2), (0, 3), (3, 4), (4, 5), (2, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (6, 1), (0, 2), (0, 3), (5, 4), (4, 5), (2, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (7, 1), (7, 2), (2, 3), (1, 4), (5, 5), (6, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (7, 1), (7, 2), (2, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*

Step: 3

[(6, 0), (3, 1), (7, 2), (2, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(6, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 5

[(6, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (7, 1), (6, 2), (2, 3), (3, 4), (6, 5), (2, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	Q

|*|Q|*|*|*|*|*|

Step: 2

[(4, 0), (7, 1), (0, 2), (2, 3), (3, 4), (6, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 3

[(4, 0), (7, 1), (0, 2), (2, 3), (3, 4), (6, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|Q|

Step: 4

[(4, 0), (5, 1), (0, 2), (2, 3), (3, 4), (6, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

Step: 5

[(4, 0), (5, 1), (0, 2), (6, 3), (3, 4), (6, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(0, 0), (2, 1), (0, 2), (3, 3), (1, 4), (0, 5), (0, 6), (4, 7)]

```

|Q|*|Q|*|*|Q|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (0, 6), (4, 7)]
|Q|*|Q|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(7, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 4

```

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 5

```

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Step: 6

```
[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (4, 1), (0, 2), (6, 3), (1, 4), (1, 5), (3, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (0, 2), (5, 3), (1, 4), (1, 5), (3, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (4, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(6, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 5

[(1, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 6

[(1, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 7

[(1, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|


```

|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(6, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(1, 0), (4, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(1, 0), (6, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(4, 0), (6, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 12

```
[(4, 0), (6, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 13

```
[(4, 0), (6, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (2, 1), (4, 2), (7, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

[(6, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (2, 1), (4, 2), (7, 3), (1, 4), (2, 5), (6, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 2

[(6, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 5

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(1, 0), (0, 1), (3, 2), (3, 3), (2, 4), (4, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 2

```
[(1, 0), (0, 1), (3, 2), (5, 3), (2, 4), (4, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 3

```
[(1, 0), (6, 1), (3, 2), (5, 3), (2, 4), (4, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 4

```
[(1, 0), (6, 1), (3, 2), (5, 3), (2, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(2, 0), (1, 1), (3, 2), (3, 3), (5, 4), (4, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (7, 1), (3, 2), (3, 3), (5, 4), (4, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 3

[(2, 0), (7, 1), (3, 2), (3, 3), (0, 4), (4, 5), (1, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 4

[(2, 0), (7, 1), (3, 2), (3, 3), (0, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Search Failed

Initial:

```

[(3, 0), (6, 1), (6, 2), (5, 3), (1, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (6, 1), (6, 2), (5, 3), (1, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(3, 0), (6, 1), (2, 2), (5, 3), (1, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(3, 0), (6, 1), (2, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(5, 0), (3, 1), (0, 2), (2, 3), (7, 4), (2, 5), (0, 6), (7, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 2

[(5, 0), (3, 1), (0, 2), (6, 3), (7, 4), (2, 5), (0, 6), (7, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 3

[(5, 0), (3, 1), (1, 2), (6, 3), (7, 4), (2, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 4

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(5, 0), (4, 1), (4, 2), (2, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (7, 1), (4, 2), (2, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (4, 2), (2, 3), (1, 4), (6, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (6, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 5

[(5, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (6, 2), (2, 3), (4, 4), (3, 5), (0, 6), (1, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (2, 1), (6, 2), (2, 3), (4, 4), (7, 5), (0, 6), (1, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(3, 0), (2, 1), (6, 2), (2, 3), (4, 4), (7, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(3, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(3, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```
|*|Q|*|*|*|*|*| |
|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(4, 0), (7, 1), (3, 2), (0, 3), (2, 4), (7, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 2

```
[(4, 0), (7, 1), (3, 2), (0, 3), (2, 4), (7, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
```

Success:

```
[(4, 0), (7, 1), (3, 2), (0, 3), (2, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (1, 1), (1, 2), (4, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	Q	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (1, 2), (4, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (1, 5), (4, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(0, 0), (3, 1), (6, 2), (4, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 6

[(0, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 7

[(0, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (1, 5), (0, 6), (1, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (6, 5), (0, 6), (1, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (4, 1), (5, 2), (3, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 5

```
[(2, 0), (4, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (1, 5), (0, 6), (1, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|Q|*|*|*|
```

```

|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (1, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(2, 0), (4, 1), (5, 2), (3, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(2, 0), (4, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(2, 0), (6, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|

Search Failed

Random Restart Hill Climbing Search

Initial:

[(0, 0), (6, 1), (2, 2), (5, 3), (5, 4), (6, 5), (7, 6), (3, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

[(0, 0), (6, 1), (2, 2), (5, 3), (1, 4), (6, 5), (7, 6), (3, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

Step: 3

[(0, 0), (6, 1), (2, 2), (5, 3), (1, 4), (4, 5), (7, 6), (3, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(6, 0), (0, 1), (2, 2), (6, 3), (0, 4), (0, 5), (4, 6), (4, 7)]

|*|Q|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(6, 0), (0, 1), (2, 2), (6, 3), (0, 4), (7, 5), (4, 6), (4, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(6, 0), (0, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (4, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(6, 0), (1, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (4, 2), (5, 3), (0, 4), (1, 5), (5, 6), (2, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (0, 1), (3, 2), (5, 3), (0, 4), (1, 5), (5, 6), (2, 7)]

|*|Q|*|*|Q|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (0, 1), (3, 2), (5, 3), (0, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (0, 1), (5, 2), (0, 3), (4, 4), (7, 5), (7, 6), (2, 7)]
|*|Q|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 2

```
[(6, 0), (0, 1), (5, 2), (0, 3), (4, 4), (7, 5), (7, 6), (2, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 4

```
[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 5

```
[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 6

[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(6, 0), (0, 1), (7, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 8

[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 9

[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (7, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 10

[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]

|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 11

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 12

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 13

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 14

```

[(7, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

Step: 15

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 16

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 17

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 18

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 19

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 22

```

[(2, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 23

```

[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 24

[(2, 0), (5, 1), (7, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 25

[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 26

[(2, 0), (7, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 27

[(2, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 28

[(7, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 29

[(2, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 30

[(7, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 31

[(7, 0), (2, 1), (4, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 32

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|

```

Step: 33

```

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 34

```

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 35

```

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|

```

Step: 36

```

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

Step: 37

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 38

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 39

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 40

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 41

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 42

```

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|

```

Step: 43

```

[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|

```

Step: 44

```

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 45

```

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 46

```
[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 47

```
[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 48

```
[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 49

```
[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 50

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 51

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 52

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 53

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 54

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 55

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Step: 56

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 57

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 58

```

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 59

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 60

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 61

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 62

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 63

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]


```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 64

```

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 65

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 66

```

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 67

```

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 68

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 69

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 70

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 71

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 72

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 73

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 74

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 75

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 76

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 77

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 78

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 79

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 80

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 81

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 82

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 83

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 84

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 85

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 86

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 87

```

[(5, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 88

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 89

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 90

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	

Step: 91

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 92

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 93

[(5, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 94

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 95

[(5, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 96

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 97

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 98

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 99

[(5, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 100

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 101

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 102

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 103

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(4, 0), (6, 1), (4, 2), (4, 3), (3, 4), (6, 5), (3, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (4, 2), (0, 3), (3, 4), (6, 5), (3, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (3, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 4

```

[(4, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(4, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(4, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(5, 0), (1, 1), (5, 2), (7, 3), (3, 4), (4, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (5, 2), (7, 3), (0, 4), (4, 5), (3, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	Q	*	Q	
Q	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*

Step: 3

[(5, 0), (1, 1), (5, 2), (7, 3), (0, 4), (4, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	Q	*	*	
Q	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*

Step: 4

[(5, 0), (1, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	*

Step: 5

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(5, 0), (1, 1), (5, 2), (7, 3), (3, 4), (4, 5), (3, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

```
|*|*|*|*|*|Q|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(5, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (6, 2), (7, 3), (2, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(5, 0), (1, 1), (6, 2), (7, 3), (2, 4), (4, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 6

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (7, 6), (0, 7)]

*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (7, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search

Initial:

[(2, 0), (0, 1), (4, 2), (0, 3), (7, 4), (5, 5), (1, 6), (2, 7)]

*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(2, 0), (0, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (2, 7)]

*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(2, 0), (0, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

|*|Q|*|Q|*|*|*|*|

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 4

[(2, 0), (7, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Search Failed

Initial:

[(4, 0), (5, 1), (5, 2), (1, 3), (6, 4), (7, 5), (3, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(4, 0), (0, 1), (5, 2), (1, 3), (6, 4), (7, 5), (3, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(7, 0), (4, 1), (5, 2), (7, 3), (2, 4), (4, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 2

```

[(7, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 3

```

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```


|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(6, 0), (7, 1), (6, 2), (6, 3), (2, 4), (4, 5), (3, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Q|*|Q|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 2

[(5, 0), (7, 1), (6, 2), (6, 3), (2, 4), (4, 5), (3, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

Q|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 3

[(5, 0), (7, 1), (6, 2), (6, 3), (2, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

Q|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 4

[(5, 0), (7, 1), (6, 2), (1, 3), (2, 4), (4, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Search Failed

Initial:

```

[(2, 0), (2, 1), (1, 2), (2, 3), (3, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|Q|*|Q|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (2, 1), (1, 2), (7, 3), (3, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(2, 0), (2, 1), (6, 2), (7, 3), (3, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(0, 0), (2, 1), (6, 2), (7, 3), (3, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(4, 0), (3, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	Q	*
Q	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (2, 2), (4, 3), (6, 4), (4, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q	*
*	*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
*	*	*	*	*	*	*	*	

Step: 3

[(5, 0), (3, 1), (2, 2), (4, 3), (6, 4), (1, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
*	*	*	*	*	*	*	*	

Step: 4

[(5, 0), (7, 1), (2, 2), (4, 3), (6, 4), (1, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
*	Q	*	*	*	*	*	*	

Search Failed

Initial:

[(0, 0), (4, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (0, 7)]
Q	*	*	*	Q	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*	*

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(0, 0), (4, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(6, 0), (4, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(6, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (2, 2), (5, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 2

[(6, 0), (1, 1), (2, 2), (5, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(6, 0), (1, 1), (3, 2), (5, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	

Step: 4

[(6, 0), (1, 1), (3, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (2, 2), (6, 3), (2, 4), (4, 5), (2, 6), (1, 7)]

*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (1, 1), (2, 2), (6, 3), (2, 4), (4, 5), (7, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

```
|*|Q|*|*|*|*|Q| |
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(6, 0), (1, 1), (2, 2), (0, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(6, 0), (1, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(6, 0), (7, 1), (7, 2), (1, 3), (3, 4), (6, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|Q|Q|
|*|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (7, 1), (7, 2), (1, 3), (3, 4), (6, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|Q|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (7, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|Q|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (7, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (0, 1), (6, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (0, 1), (6, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (1, 1), (6, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (1, 1), (6, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Success:

```
[(7, 0), (1, 1), (4, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
```



```
|*|Q|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(0, 0), (3, 1), (5, 2), (0, 3), (5, 4), (7, 5), (7, 6), (4, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 2

```
[(0, 0), (3, 1), (5, 2), (0, 3), (2, 4), (7, 5), (7, 6), (4, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(0, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (4, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(0, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (3, 1), (5, 2), (0, 3), (5, 4), (7, 5), (7, 6), (4, 7)]
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 2

[(0, 0), (3, 1), (5, 2), (0, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(0, 0), (3, 1), (5, 2), (2, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(0, 0), (3, 1), (5, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

Step: 5

[(0, 0), (3, 1), (1, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 6

[(0, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Success:

[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (5, 1), (7, 2), (6, 3), (7, 4), (6, 5), (5, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	Q
*	*	*	Q	*	Q	*	*
*	*	Q	*	Q	*	*	*

Step: 2

```

[(3, 0), (5, 1), (7, 2), (6, 3), (4, 4), (6, 5), (5, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (5, 1), (7, 2), (6, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(4, 0), (0, 1), (4, 2), (0, 3), (5, 4), (0, 5), (5, 6), (6, 7)]
|*|Q|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (1, 1), (4, 2), (0, 3), (5, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (1, 1), (4, 2), (0, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (1, 1), (4, 2), (0, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(6, 0), (5, 1), (4, 2), (4, 3), (3, 4), (3, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|Q|
|*|*|Q|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (5, 1), (4, 2), (4, 3), (7, 4), (3, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|Q|Q|*|*|*|*|

```

```
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (5, 1), (1, 2), (4, 3), (7, 4), (3, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(6, 0), (3, 1), (0, 2), (3, 3), (3, 4), (1, 5), (4, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(6, 0), (3, 1), (0, 2), (3, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(6, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 5

[(0, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 7

```

[(7, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 8

```

[(7, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|

```

Step: 9

```

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```


|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 10

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 11

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 12

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 13

[(3, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 14

[(3, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 15

```

[(0, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 16

```

[(3, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 17

```

[(3, 0), (7, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 18

```

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(6, 0), (3, 1), (1, 2), (4, 3), (0, 4), (4, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(6, 0), (3, 1), (1, 2), (4, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (3, 1), (1, 2), (4, 3), (0, 4), (4, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(6, 0), (3, 1), (1, 2), (4, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(6, 0), (4, 1), (1, 2), (4, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(6, 0), (4, 1), (1, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(6, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 6

```

[(6, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

```

[(5, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 8

```

[(1, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 9

```

[(1, 0), (4, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 10

```

[(1, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 11

```

[(7, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 12

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 13

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 14

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|Q|*|*|*|*|*|*|*|

Step: 15

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|*|*|

Step: 16

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 17

[(7, 0), (5, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 18

[(7, 0), (1, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 19

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 20

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 21

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|

```

Step: 22

```

[(2, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|

```

Step: 23

```

[(6, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```


*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 24

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	Q	

Step: 25

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 26

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	Q	

Step: 27

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 28

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 29

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (0, 6), (2, 7)]

*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 30

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 31

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (0, 6), (2, 7)]

*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 32

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 33

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 34

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 35

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 36

```

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|

Step: 37

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 38

[(7, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|*|*|Q|*|*|*|*|

Success:

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(1, 0), (1, 1), (0, 2), (7, 3), (4, 4), (0, 5), (0, 6), (4, 7)]

|*|*|Q|*|*|Q|Q|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 2

[(1, 0), (6, 1), (0, 2), (7, 3), (4, 4), (0, 5), (0, 6), (4, 7)]

```

|*|*|Q|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(1, 0), (6, 1), (0, 2), (7, 3), (4, 4), (0, 5), (5, 6), (4, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(1, 0), (6, 1), (0, 2), (7, 3), (4, 4), (0, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (1, 1), (1, 2), (5, 3), (4, 4), (0, 5), (0, 6), (0, 7)]
|Q|*|*|*|*|Q|Q|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (1, 2), (5, 3), (4, 4), (0, 5), (0, 6), (0, 7)]
|*|*|*|*|*|Q|Q|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (1, 2), (5, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (1, 1), (7, 2), (5, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|Q|*|*|*|*|*|

Step: 5

[(3, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (0, 7)]

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 6

[(3, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 7

[(3, 0), (1, 1), (7, 2), (5, 3), (2, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 8

[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 9

[(3, 0), (1, 1), (7, 2), (5, 3), (2, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 10

```

[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 11

```

[(3, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 12

```

[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 13

```

[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```



```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 14

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 15

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (6, 1), (0, 2), (1, 3), (7, 4), (2, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

[(6, 0), (6, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(6, 0), (6, 1), (0, 2), (1, 3), (7, 4), (5, 5), (2, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(6, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (2, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(6, 0), (0, 1), (3, 2), (1, 3), (7, 4), (5, 5), (2, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (6, 1), (0, 2), (1, 3), (7, 4), (2, 5), (1, 6), (4, 7)]

```

|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 2

```

[(6, 0), (6, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```

[(6, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 6

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 7

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 8

[(6, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 9

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 10

[(6, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 11

[(6, 0), (2, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 12

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 14

[(6, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(0, 0), (4, 1), (1, 2), (4, 3), (2, 4), (2, 5), (2, 6), (3, 7)]
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*	*
*	*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (4, 1), (1, 2), (4, 3), (2, 4), (7, 5), (2, 6), (3, 7)]
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 3

[(0, 0), (4, 1), (1, 2), (4, 3), (2, 4), (7, 5), (3, 6), (3, 7)]
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q	*
*	Q	*	Q	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(2, 0), (6, 1), (1, 2), (5, 3), (7, 4), (4, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(4, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Success:

[(4, 0), (6, 1), (1, 2), (5, 3), (2, 4), (0, 5), (3, 6), (7, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(1, 0), (3, 1), (0, 2), (7, 3), (3, 4), (0, 5), (0, 6), (0, 7)]

*	*	Q	*	*	Q	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(1, 0), (3, 1), (0, 2), (7, 3), (3, 4), (0, 5), (0, 6), (4, 7)]

*	*	Q	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(1, 0), (3, 1), (0, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(1, 0), (3, 1), (0, 2), (7, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|


```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(1, 0), (6, 1), (1, 2), (3, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (6, 1), (1, 2), (3, 3), (7, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(1, 0), (6, 1), (1, 2), (3, 3), (7, 4), (5, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(1, 0), (6, 1), (0, 2), (3, 3), (7, 4), (5, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(1, 0), (6, 1), (1, 2), (3, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
Q	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (6, 1), (1, 2), (3, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (6, 1), (1, 2), (6, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (6, 1), (1, 2), (6, 3), (0, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(2, 0), (7, 1), (1, 2), (6, 3), (0, 4), (5, 5), (0, 6), (4, 7)]
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 6

[(2, 0), (7, 1), (1, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Success:

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(4, 0), (2, 1), (1, 2), (1, 3), (4, 4), (7, 5), (1, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(4, 0), (2, 1), (1, 2), (6, 3), (4, 4), (7, 5), (1, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(4, 0), (2, 1), (1, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(4, 0), (2, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(5, 0), (2, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (1, 1), (0, 2), (2, 3), (7, 4), (1, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (6, 1), (0, 2), (2, 3), (7, 4), (1, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 3

[(1, 0), (6, 1), (0, 2), (2, 3), (7, 4), (7, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 4

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(1, 0), (6, 1), (5, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 6

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 7

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

```

|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 9

```

[(1, 0), (6, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 10

```

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 11

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 12

```
[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 13

```
[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 14

```
[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 15

```
[(1, 0), (6, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```


Step: 16

[(1, 0), (6, 1), (2, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 17

[(1, 0), (6, 1), (6, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(1, 0), (4, 1), (6, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(0, 0), (2, 1), (0, 2), (6, 3), (2, 4), (7, 5), (0, 6), (2, 7)]

Q	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(0, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (0, 6), (2, 7)]

|Q|*|Q|*|*|*|Q|*|

```
|*|*|*|*|Q|*|*|*| |
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(0, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (2, 7)]
|Q|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|Q|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (2, 1), (0, 2), (6, 3), (2, 4), (7, 5), (0, 6), (2, 7)]
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(0, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
Q	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(0, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
Q	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 6

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 7

[(5, 0), (1, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 8

[(5, 0), (1, 1), (6, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(5, 0), (1, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(2, 0), (6, 1), (5, 2), (6, 3), (6, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (1, 1), (5, 2), (6, 3), (6, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (1, 1), (5, 2), (6, 3), (6, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	
*	*	*	*	*	Q	*	

Search Failed

Initial:

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (4, 5), (3, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 2

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (4, 5), (5, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 3

[(0, 0), (3, 1), (6, 2), (7, 3), (1, 4), (4, 5), (5, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(0, 0), (3, 1), (6, 2), (7, 3), (1, 4), (4, 5), (5, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(0, 0), (3, 1), (6, 2), (7, 3), (1, 4), (1, 5), (5, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(0, 0), (3, 1), (6, 2), (4, 3), (1, 4), (1, 5), (5, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (2, 1), (7, 2), (6, 3), (4, 4), (2, 5), (3, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(0, 0), (2, 1), (7, 2), (6, 3), (4, 4), (2, 5), (5, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (2, 1), (7, 2), (6, 3), (4, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (7, 2), (1, 3), (4, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```


*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (2, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (1, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (1, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	

Step: 3

[(4, 0), (2, 1), (0, 2), (6, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (4, 1), (3, 2), (5, 3), (5, 4), (2, 5), (4, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	Q
*	*	*	*	*	*	*	*

|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (4, 1), (3, 2), (5, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

Step: 3

[(0, 0), (4, 1), (3, 2), (5, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

Step: 4

[(0, 0), (7, 1), (3, 2), (5, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 5

[(0, 0), (7, 1), (3, 2), (1, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 6

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(0, 0), (7, 1), (3, 2), (1, 3), (5, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(0, 0), (7, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|

```

Step: 9

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 11

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*

Step: 12

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 13

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*

Step: 14

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 15

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 16

```

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 17

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 18

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 19

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 20

```
[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 21

```
[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 22

```
[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 23

```
[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|*|*|Q|*|*|*|

Step: 24

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 25

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

Step: 26

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 27

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 28

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 29

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 30

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 31

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 32

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```



```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
```

Step: 33

```
[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 34

```
[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 35

```
[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 36

```
[(0, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 37

```

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 38

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 39

```

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 40

```

[(0, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 41

```

[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(2, 0), (5, 1), (2, 2), (5, 3), (4, 4), (4, 5), (1, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (2, 2), (0, 3), (4, 4), (4, 5), (1, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 4

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (5, 1), (2, 2), (5, 3), (4, 4), (4, 5), (1, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (5, 1), (2, 2), (5, 3), (7, 4), (4, 5), (1, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(5, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 6

[(5, 0), (7, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*

Step: 7

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 8

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(5, 0), (7, 1), (4, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 10

```

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(5, 0), (7, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 13

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 14

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 15

[(5, 0), (7, 1), (4, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 16

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 17

[(5, 0), (7, 1), (4, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 18

```

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 19

```

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 20

```

[(5, 0), (7, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 21

```

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```


*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 22

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 23

[(5, 0), (7, 1), (4, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 24

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 25

[(5, 0), (7, 1), (2, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 26

[(5, 0), (7, 1), (6, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 27

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (7, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search

Initial:

[(5, 0), (7, 1), (3, 2), (6, 3), (7, 4), (6, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	Q	*	*	*
*	Q	*	*	Q	*	*	*	

Step: 2

[(5, 0), (7, 1), (3, 2), (6, 3), (7, 4), (1, 5), (4, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (7, 1), (3, 2), (6, 3), (0, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (3, 1), (6, 2), (2, 3), (0, 4), (1, 5), (6, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (3, 1), (6, 2), (2, 3), (0, 4), (1, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Success:

```
[(7, 0), (3, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (7, 1), (6, 2), (7, 3), (5, 4), (6, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 2

```
[(5, 0), (7, 1), (1, 2), (7, 3), (5, 4), (6, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|Q|*|Q|*|*|*|*|

Step: 3

[(5, 0), (7, 1), (1, 2), (7, 3), (0, 4), (6, 5), (4, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|Q|*|*|*|*|

Step: 4

[(5, 0), (7, 1), (1, 2), (7, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|Q|*|*|*|*|

Success:

[(5, 0), (7, 1), (1, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

Hill Climbing Search Analysis

Initial:

[(6, 0), (1, 1), (6, 2), (3, 3), (6, 4), (0, 5), (5, 6), (2, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (1, 1), (6, 2), (3, 3), (6, 4), (0, 5), (5, 6), (2, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (1, 1), (6, 2), (3, 3), (6, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (6, 2), (3, 3), (6, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (1, 1), (6, 2), (3, 3), (0, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (1, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Step: 5

```
[(7, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Success:

```
[(1, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(5, 0), (0, 1), (6, 2), (5, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|Q|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (6, 2), (1, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|Q|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (0, 1), (6, 2), (1, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (0, 1), (7, 2), (1, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 5

[(2, 0), (0, 1), (7, 2), (1, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (6, 1), (7, 2), (3, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(0, 0), (6, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (4, 1), (1, 2), (4, 3), (2, 4), (6, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	Q	*

Step: 3

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 4

```
[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (0, 1), (3, 2), (3, 3), (2, 4), (1, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 2

```
[(6, 0), (0, 1), (3, 2), (5, 3), (2, 4), (1, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 3

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (1, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 4

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (1, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (6, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(6, 0), (3, 1), (2, 2), (3, 3), (3, 4), (2, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|Q|*|
|*|Q|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (3, 1), (0, 2), (3, 3), (3, 4), (2, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (3, 1), (0, 2), (3, 3), (5, 4), (2, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(6, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 5

[(6, 0), (3, 1), (0, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Success:

[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (2, 1), (3, 2), (4, 3), (4, 4), (4, 5), (7, 6), (4, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 2

```

[(7, 0), (2, 1), (3, 2), (1, 3), (4, 4), (4, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 3

```

[(7, 0), (2, 1), (3, 2), (1, 3), (4, 4), (4, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (2, 1), (3, 2), (1, 3), (6, 4), (4, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (2, 1), (3, 2), (1, 3), (6, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 6

[(7, 0), (2, 1), (3, 2), (1, 3), (6, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	Q	

Step: 7

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	Q	

Step: 8

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	Q	

Step: 9

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (4, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 10

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 11

[(7, 0), (5, 1), (7, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*

Success:

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (7, 1), (4, 2), (1, 3), (2, 4), (7, 5), (5, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(1, 0), (7, 1), (4, 2), (1, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*


```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 3

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*|

Step: 7

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 8

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 9

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 10

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 11

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 16

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 17

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 18

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 19

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 20

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 21

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 22

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 23

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 24

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 25

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 26

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 27

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 28

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

|*|Q|*|*|*|*|*|

Step: 29

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 30

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 31

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 32

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 33

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 34

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 35

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 36

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 37

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```



```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 38

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 39

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 40

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 41

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 42

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 43

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 44

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 45

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 47

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 48

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 49

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 50

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

|*|Q|*|*|*|*|*|

Step: 51

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 52

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 53

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 54

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 55

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 56

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 57

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 58

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 59

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 60

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 61

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 62

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 63

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 64

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 65

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 66

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 67

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 68

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 69

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 70

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 71

```
[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 72

```
[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```


|*|Q|*|*|*|*|*|

Step: 73

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 74

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 75

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 76

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 77

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 78

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 79

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 80

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 81

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 82

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 83

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 84

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 85

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 86

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 87

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 88

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 89

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 90

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 91

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 92

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 93

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 94

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

|*|Q|*|*|*|*|*|

Step: 95

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 96

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 97

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 98

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 99

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 100

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 101

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 102

```

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 103

```

[(1, 0), (7, 1), (2, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 104

[(1, 0), (7, 1), (4, 2), (6, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Random Restart Hill Climbing Search

Initial:

[(0, 0), (4, 1), (2, 2), (3, 3), (4, 4), (5, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (4, 1), (2, 2), (3, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (4, 1), (7, 2), (3, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|*|Q|*|*|*|*|

Step: 4

[(0, 0), (4, 1), (7, 2), (3, 3), (0, 4), (6, 5), (1, 6), (5, 7)]

|Q|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

Success:

[(2, 0), (4, 1), (7, 2), (3, 3), (0, 4), (6, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(5, 0), (4, 1), (0, 2), (0, 3), (3, 4), (2, 5), (4, 6), (7, 7)]

|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 2

[(5, 0), (4, 1), (6, 2), (0, 3), (3, 4), (2, 5), (4, 6), (7, 7)]

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 3

[(5, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (4, 6), (7, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 7

```

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 8

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (5, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 9

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 10

[(2, 0), (6, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 11

[(2, 0), (0, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 12

[(2, 0), (3, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 13

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 14

[(2, 0), (6, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 15

[(2, 0), (3, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 16

[(2, 0), (0, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 17

```

[(2, 0), (3, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 18

```

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 19

```

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 20

```

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 21

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (1, 6), (7, 7)]
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 22

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 23

[(2, 0), (0, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 24

[(2, 0), (6, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q

Step: 25

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 26

```

[(2, 0), (0, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 27

```

[(2, 0), (3, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 28

```

[(2, 0), (6, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 29

```

[(2, 0), (0, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 30

[(2, 0), (4, 1), (6, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 31

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (4, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 32

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Success:

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (0, 1), (7, 2), (6, 3), (4, 4), (7, 5), (2, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 2

[(2, 0), (0, 1), (7, 2), (6, 3), (4, 4), (7, 5), (1, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 3

[(2, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(2, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(2, 0), (0, 1), (7, 2), (6, 3), (4, 4), (7, 5), (2, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 2

```

[(2, 0), (0, 1), (7, 2), (6, 3), (4, 4), (7, 5), (1, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 3

```

[(2, 0), (0, 1), (7, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 4

```

[(2, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(6, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(2, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(4, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 9

```

[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|

Step: 10

[(0, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 11

[(0, 0), (7, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

Step: 12

[(0, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 13

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 14

[(2, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Success:

```
[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(2, 0), (7, 1), (0, 2), (3, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
```

```
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 2

```
[(2, 0), (7, 1), (5, 2), (3, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 3

```
[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (7, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 4

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (1, 1), (6, 2), (5, 3), (7, 4), (1, 5), (2, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(5, 0), (1, 1), (6, 2), (5, 3), (7, 4), (1, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (1, 1), (6, 2), (5, 3), (7, 4), (1, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|Q|*|*|*|

Step: 4

[(5, 0), (1, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 5

[(5, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(3, 0), (4, 1), (0, 2), (2, 3), (4, 4), (2, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|Q|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(3, 0), (4, 1), (0, 2), (2, 3), (5, 4), (2, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|Q|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(3, 0), (4, 1), (0, 2), (7, 3), (5, 4), (2, 5), (2, 6), (7, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 4

```
[(6, 0), (4, 1), (0, 2), (7, 3), (5, 4), (2, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (6, 2), (7, 3), (7, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|Q|Q|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (6, 2), (2, 3), (7, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|Q|*|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (6, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```



```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
```

Step: 4

[(1, 0), (5, 1), (6, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

[(1, 0), (3, 1), (6, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

[(2, 0), (2, 1), (1, 2), (7, 3), (1, 4), (1, 5), (5, 6), (1, 7)]

```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|Q|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

[(2, 0), (2, 1), (0, 2), (7, 3), (1, 4), (1, 5), (5, 6), (1, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Step: 3

[(7, 0), (2, 1), (0, 2), (7, 3), (1, 4), (1, 5), (5, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 4

[(7, 0), (2, 1), (0, 2), (7, 3), (1, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 5

[(7, 0), (2, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 6

[(7, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Search Failed

Initial:

```

[(4, 0), (3, 1), (4, 2), (7, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|Q|*|

```

Step: 2

```

[(4, 0), (3, 1), (0, 2), (7, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|Q|*|

```

Step: 3

```

[(4, 0), (3, 1), (0, 2), (2, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 4

```

[(4, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Search Failed

Initial:

```

[(5, 0), (0, 1), (3, 2), (0, 3), (3, 4), (5, 5), (2, 6), (1, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (0, 1), (3, 2), (0, 3), (3, 4), (5, 5), (2, 6), (1, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (0, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(0, 0), (4, 1), (3, 2), (3, 3), (6, 4), (6, 5), (2, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	Q	*	*	*	*
*	Q	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (4, 1), (7, 2), (3, 3), (6, 4), (6, 5), (2, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (7, 2), (3, 3), (6, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (6, 2), (2, 3), (0, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (6, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

[(7, 0), (1, 1), (6, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Success:

[(7, 0), (1, 1), (4, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (6, 1), (1, 2), (7, 3), (3, 4), (4, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	Q	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (1, 2), (7, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 3

[(2, 0), (6, 1), (1, 2), (7, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*| |
|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(2, 0), (6, 1), (1, 2), (7, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 6

```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 7

```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 8

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 9

[(2, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (4, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 10

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 11

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 12


```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 13

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(2, 0), (7, 1), (5, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 17

[(2, 0), (7, 1), (5, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	

Step: 18

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 19

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 20

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

|*|Q|*|*|*|*|*|

Step: 21

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

Step: 22

[(1, 0), (7, 1), (7, 2), (3, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|Q|*|*|*|*|

Step: 23

[(1, 0), (5, 1), (7, 2), (3, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 24

[(1, 0), (5, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*

|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 25

[(3, 0), (5, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(0, 0), (7, 1), (3, 2), (7, 3), (5, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (3, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (7, 1), (3, 2), (7, 3), (5, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (3, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (3, 2), (1, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (7, 1), (3, 2), (1, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 5

```
[(0, 0), (7, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|

Step: 6

[(4, 0), (7, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Success:

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(1, 0), (2, 1), (4, 2), (1, 3), (0, 4), (4, 5), (0, 6), (1, 7)]
*	*	*	*	Q	*	Q	*
Q	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (2, 1), (4, 2), (1, 3), (0, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	Q	*	Q	*
Q	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

```

[(1, 0), (2, 1), (6, 2), (1, 3), (0, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|Q|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(5, 0), (2, 1), (6, 2), (1, 3), (0, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Success:

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(6, 0), (0, 1), (2, 2), (5, 3), (7, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*	*

Step: 2

[(6, 0), (0, 1), (2, 2), (5, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 3

[(6, 0), (0, 1), (2, 2), (7, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*	*

Success:

[(6, 0), (0, 1), (2, 2), (7, 3), (5, 4), (3, 5), (1, 6), (4, 7)]
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (3, 1), (7, 2), (3, 3), (2, 4), (1, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	*
*	*	*	*	Q	*	*	*	*
Q	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(3, 0), (3, 1), (7, 2), (5, 3), (2, 4), (1, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (0, 1), (7, 2), (5, 3), (2, 4), (1, 5), (4, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(3, 0), (0, 1), (7, 2), (5, 3), (2, 4), (6, 5), (4, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 5

[(3, 0), (0, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (3, 1), (7, 2), (3, 3), (2, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (7, 2), (2, 3), (2, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
```

```
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 6

```
[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 7

```
[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 8

```
[(3, 0), (3, 1), (7, 2), (7, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
```

Step: 9

```
[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 10

[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 11

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 12

[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 13

[(6, 0), (3, 1), (7, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 14


```

|*|Q|*|*|*|*|*| |
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 19

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 20

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 21

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 22

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|

Step: 23

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 24

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 25

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 26

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|

|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

Step: 27

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|Q|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 28

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 29

```

[(6, 0), (3, 1), (5, 2), (0, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 30

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 31

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```


*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 32

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 33

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 34

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 35

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 36

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 37

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 38

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 39

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 40

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 41

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 42

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 43

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 44

```
[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|Q|*|*|*|Q|

Step: 45

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 46

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

Step: 47

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 48

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 49

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 50

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 51

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 52

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 53

```

[(0, 0), (3, 1), (1, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 54

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	

Step: 55

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	

Step: 56

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*	

Step: 57

[(0, 0), (3, 1), (1, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 58

```

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 59

```

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 60

```

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 61

```

[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 62

```

[(3, 0), (6, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 63

```

[(3, 0), (6, 1), (2, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (6, 1), (2, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(3, 0), (5, 1), (6, 2), (0, 3), (3, 4), (2, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (1, 1), (6, 2), (0, 3), (3, 4), (2, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```


|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (1, 1), (6, 2), (0, 3), (3, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (1, 1), (6, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 5

[(3, 0), (1, 1), (7, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (3, 1), (2, 2), (6, 3), (5, 4), (3, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 2

```

[(5, 0), (7, 1), (2, 2), (6, 3), (5, 4), (3, 5), (1, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (7, 1), (2, 2), (6, 3), (5, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (0, 1), (2, 2), (6, 3), (5, 4), (3, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(5, 0), (0, 1), (2, 2), (6, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(6, 0), (3, 1), (6, 2), (4, 3), (4, 4), (1, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Step: 2

[(6, 0), (3, 1), (0, 2), (4, 3), (4, 4), (1, 5), (7, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Step: 3

[(6, 0), (3, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q

Step: 4

[(6, 0), (3, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(3, 0), (1, 1), (7, 2), (3, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (7, 2), (4, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (6, 1), (4, 2), (0, 3), (3, 4), (1, 5), (7, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 2

[(3, 0), (6, 1), (4, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(4, 0), (6, 1), (4, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (6, 1), (2, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(4, 0), (4, 1), (2, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(2, 0), (4, 1), (2, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Success:

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Hill Climbing Search Analysis

Initial:

[(6, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (0, 6), (2, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (0, 6), (2, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (6, 1), (0, 2), (7, 3), (1, 4), (5, 5), (0, 6), (2, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (0, 6), (2, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*

|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (6, 1), (0, 2), (1, 3), (1, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*

Step: 4

[(6, 0), (6, 1), (0, 2), (5, 3), (1, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|

|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*

Step: 5

[(4, 0), (6, 1), (0, 2), (5, 3), (1, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*

Step: 6

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*

Step: 7

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|


```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Success:

```

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

```

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(1, 0), (1, 1), (6, 2), (4, 3), (1, 4), (4, 5), (3, 6), (4, 7)]

```

```

|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (1, 1), (6, 2), (4, 3), (0, 4), (4, 5), (3, 6), (4, 7)]

```

```

|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (3, 6), (4, 7)]

```

```

|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (3, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(4, 0), (0, 1), (6, 2), (2, 3), (0, 4), (0, 5), (4, 6), (4, 7)]
*	Q	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (0, 1), (6, 2), (2, 3), (0, 4), (0, 5), (4, 6), (4, 7)]
*	Q	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (1, 1), (6, 2), (2, 3), (0, 4), (0, 5), (4, 6), (4, 7)]

|*|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(3, 0), (1, 1), (6, 2), (2, 3), (0, 4), (7, 5), (4, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(2, 0), (6, 1), (3, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (5, 1), (3, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

Step: 3

[(2, 0), (5, 1), (3, 2), (1, 3), (0, 4), (2, 5), (6, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (6, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(7, 0), (7, 1), (0, 2), (2, 3), (2, 4), (5, 5), (7, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	Q	*

Step: 2

[(7, 0), (7, 1), (0, 2), (2, 3), (2, 4), (5, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 3

[(7, 0), (7, 1), (0, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 4

[(7, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 5

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (3, 1), (5, 2), (0, 3), (0, 4), (1, 5), (1, 6), (1, 7)]

*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (3, 1), (5, 2), (0, 3), (0, 4), (6, 5), (1, 6), (1, 7)]

*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

Step: 3

[(2, 0), (3, 1), (5, 2), (0, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	

Step: 4

[(2, 0), (5, 1), (5, 2), (0, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	

Step: 5

[(2, 0), (5, 1), (7, 2), (0, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Success:

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(5, 0), (5, 1), (5, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (5, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(5, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(5, 0), (5, 1), (4, 2), (3, 3), (4, 4), (6, 5), (5, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|Q|
|Q|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (5, 1), (0, 2), (3, 3), (4, 4), (6, 5), (5, 6), (4, 7)]
|*|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (5, 1), (0, 2), (3, 3), (4, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (5, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|

```


|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

Step: 6

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(5, 0), (5, 1), (4, 2), (3, 3), (4, 4), (6, 5), (5, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	Q	*	*	*	Q
Q	Q	*	*	*	*	Q	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	

Step: 2

[(5, 0), (5, 1), (4, 2), (3, 3), (4, 4), (6, 5), (1, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	Q	*	*	*	Q
Q	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	

Step: 3

[(5, 0), (5, 1), (0, 2), (3, 3), (4, 4), (6, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
Q	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	

Step: 4

[(5, 0), (3, 1), (0, 2), (3, 3), (4, 4), (6, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 5

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 7

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]

*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (4, 1), (4, 2), (5, 3), (3, 4), (4, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (2, 2), (5, 3), (3, 4), (4, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (4, 1), (2, 2), (5, 3), (3, 4), (4, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(6, 0), (4, 1), (2, 2), (5, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(6, 0), (4, 1), (0, 2), (5, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(7, 0), (6, 1), (0, 2), (5, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
*	*	Q	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (6, 1), (0, 2), (5, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (6, 1), (0, 2), (2, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (3, 1), (0, 2), (2, 3), (4, 4), (6, 5), (0, 6), (3, 7)]

*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (6, 1), (3, 2), (0, 3), (5, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (6, 1), (3, 2), (0, 3), (5, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (6, 1), (3, 2), (0, 3), (5, 4), (1, 5), (4, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(7, 0), (3, 1), (1, 2), (0, 3), (1, 4), (0, 5), (1, 6), (6, 7)]

```

|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (3, 1), (1, 2), (0, 3), (1, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (3, 1), (1, 2), (0, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (3, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (3, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (1, 1), (5, 2), (3, 3), (2, 4), (4, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (1, 1), (5, 2), (7, 3), (2, 4), (4, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|*|Q|*|*|*|*|

Step: 5

[(1, 0), (1, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(5, 0), (0, 1), (4, 2), (3, 3), (0, 4), (4, 5), (0, 6), (4, 7)]

|*|Q|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (0, 1), (4, 2), (3, 3), (0, 4), (4, 5), (1, 6), (4, 7)]

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (0, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (4, 7)]

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (4, 7)]


```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (6, 1), (2, 2), (7, 3), (5, 4), (2, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(6, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (4, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (5, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

[(3, 0), (6, 1), (2, 2), (7, 3), (2, 4), (0, 5), (5, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (5, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|

Step: 8

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (5, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 9

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 10

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 11

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 12

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*| |
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 16

```

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 17

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 18

[(3, 0), (6, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 19

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 20

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 21

```

[(3, 0), (6, 1), (0, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 22

```

[(3, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(1, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 24

```

[(4, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 25

```

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 26

```

[(0, 0), (6, 1), (1, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 27

```

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 28

```

[(4, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 29

```

[(4, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|

Step: 30

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 31

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Success:

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Hill Climbing Search Analysis

Initial:

[(1, 0), (2, 1), (2, 2), (2, 3), (1, 4), (7, 5), (4, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|Q|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 2

[(1, 0), (6, 1), (2, 2), (2, 3), (1, 4), (7, 5), (4, 6), (3, 7)]


```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (2, 2), (0, 3), (1, 4), (7, 5), (4, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (2, 2), (0, 3), (5, 4), (7, 5), (4, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (2, 1), (2, 2), (2, 3), (1, 4), (7, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (6, 1), (2, 2), (2, 3), (1, 4), (7, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
```

```

|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(1, 0), (6, 1), (2, 2), (2, 3), (5, 4), (7, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(1, 0), (6, 1), (2, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(1, 0), (6, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(1, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 7

[(7, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 8

[(4, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(4, 0), (1, 1), (5, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(4, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 11

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (3, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(5, 0), (1, 1), (0, 2), (7, 3), (1, 4), (5, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (0, 2), (7, 3), (1, 4), (6, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(5, 0), (1, 1), (0, 2), (7, 3), (2, 4), (6, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (1, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(5, 0), (1, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(1, 0), (1, 1), (0, 2), (7, 3), (0, 4), (6, 5), (2, 6), (7, 7)]
*	*	Q	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|

Step: 2

[(1, 0), (4, 1), (0, 2), (7, 3), (0, 4), (6, 5), (2, 6), (7, 7)]
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q

Step: 3

[(1, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q

Search Failed

Initial:

[(5, 0), (5, 1), (1, 2), (1, 3), (4, 4), (0, 5), (1, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	Q	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (5, 1), (1, 2), (1, 3), (4, 4), (0, 5), (3, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

```
[(5, 0), (5, 1), (1, 2), (1, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (5, 1), (1, 2), (1, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (1, 2), (5, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (1, 2), (5, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (3, 1), (7, 2), (5, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (3, 1), (7, 2), (2, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (2, 1), (1, 2), (4, 3), (3, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (2, 1), (1, 2), (4, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```


*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (5, 1), (1, 2), (4, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (5, 1), (7, 2), (4, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (3, 1), (0, 2), (2, 3), (1, 4), (2, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 2

[(7, 0), (3, 1), (0, 2), (2, 3), (1, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 3

[(7, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (7, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*

Search Failed

Initial:

[(5, 0), (4, 1), (5, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(5, 0), (4, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(5, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (0, 1), (2, 2), (1, 3), (6, 4), (4, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (0, 1), (2, 2), (1, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (0, 1), (5, 2), (1, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(2, 0), (0, 1), (5, 2), (1, 3), (6, 4), (4, 5), (7, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (6, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (2, 5), (1, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|Q|*|*|*|*|*|

Step: 5

[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|Q|*|*|*|*|*|

Success:

[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (3, 1), (4, 2), (4, 3), (1, 4), (1, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|Q|*|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(4, 0), (3, 1), (7, 2), (4, 3), (1, 4), (1, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(4, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (3, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 7

```

[(3, 0), (7, 1), (0, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 8

[(3, 0), (7, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 9

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Success:

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(6, 0), (3, 1), (7, 2), (5, 3), (6, 4), (1, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	Q	*	*	*

|*|*|Q|*|*|*|*|*|

Step: 2

[(6, 0), (3, 1), (7, 2), (5, 3), (4, 4), (1, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(6, 0), (3, 1), (7, 2), (5, 3), (4, 4), (2, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 4

[(6, 0), (3, 1), (7, 2), (1, 3), (4, 4), (2, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 5

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (2, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 6

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|


```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (3, 1), (7, 2), (5, 3), (6, 4), (1, 5), (0, 6), (3, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (7, 2), (5, 3), (6, 4), (1, 5), (0, 6), (3, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (4, 1), (7, 2), (5, 3), (6, 4), (2, 5), (0, 6), (3, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|Q|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (7, 2), (5, 3), (6, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (4, 1), (7, 2), (5, 3), (7, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|*|
```

Step: 6

```
[(1, 0), (4, 1), (7, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|*|
```

Step: 7

```
[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|Q|*|Q|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|*|
```

Step: 8

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*

Step: 9

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 10

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*

Step: 11

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 12

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 13

```

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 15

```

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 16

```

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

Step: 17

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*

Step: 18

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 19

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 20

[(1, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Success:

[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(1, 0), (0, 1), (4, 2), (3, 3), (2, 4), (6, 5), (0, 6), (5, 7)]
*	Q	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (0, 1), (4, 2), (3, 3), (2, 4), (6, 5), (2, 6), (5, 7)]
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (0, 1), (4, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
*	Q	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 4

[(7, 0), (0, 1), (4, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (4, 1), (5, 2), (1, 3), (0, 4), (6, 5), (4, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	

Step: 2

[(2, 0), (4, 1), (5, 2), (1, 3), (0, 4), (6, 5), (3, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	

Step: 3

[(2, 0), (4, 1), (5, 2), (1, 3), (0, 4), (6, 5), (3, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(7, 0), (3, 1), (4, 2), (0, 3), (2, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (3, 1), (3, 2), (0, 3), (2, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (0, 5), (0, 6), (5, 7)]
Q	*	*	*	*	Q	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (0, 6), (5, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 4

[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (1, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (1, 1), (2, 2), (5, 3), (5, 4), (2, 5), (2, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (1, 1), (2, 2), (5, 3), (5, 4), (2, 5), (2, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (1, 1), (2, 2), (5, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (1, 1), (7, 2), (5, 3), (5, 4), (2, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (7, 2), (5, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (5, 1), (4, 2), (2, 3), (5, 4), (7, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 2

```
[(1, 0), (5, 1), (4, 2), (2, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 4

```
[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 6

```
[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 7

```
[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 8

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]

*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]

*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 11

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 13

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 14

```

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 15

```

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 16

```

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|

```

|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 17

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 18

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 20

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 21

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (0, 7)]

```

|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 22

```

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 24

```

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 25

```

[(6, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 26

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 27

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 28

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 29

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 30

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 31

[(3, 0), (5, 1), (0, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]

*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 32

[(3, 0), (5, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 33

[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (7, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 34

[(3, 0), (5, 1), (0, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]

|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 35

```

[(3, 0), (5, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 36

```

[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 38

```

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (5, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 39

[(3, 0), (7, 1), (0, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 40

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 41

[(3, 0), (7, 1), (6, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 42

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 43

[(3, 0), (7, 1), (0, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]

```

|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 44

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 45

```

[(3, 0), (7, 1), (6, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 47

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Success:

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(7, 0), (4, 1), (5, 2), (5, 3), (2, 4), (6, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (4, 1), (2, 2), (5, 3), (2, 4), (6, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (4, 1), (2, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

|Q|*|*|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(7, 0), (4, 1), (5, 2), (5, 3), (2, 4), (6, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

Step: 3

[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Success:

[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(0, 0), (7, 1), (3, 2), (6, 3), (4, 4), (4, 5), (4, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	Q	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(0, 0), (7, 1), (3, 2), (6, 3), (4, 4), (1, 5), (4, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (3, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (3, 1), (2, 2), (3, 3), (0, 4), (6, 5), (4, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (3, 1), (7, 2), (3, 3), (0, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (3, 1), (7, 2), (3, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (3, 1), (7, 2), (2, 3), (1, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (5, 1), (7, 2), (1, 3), (4, 4), (0, 5), (1, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (0, 5), (1, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```


*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (0, 5), (7, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Search Failed

Initial:

[(0, 0), (1, 1), (2, 2), (4, 3), (7, 4), (6, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	Q	*

Step: 2

[(0, 0), (1, 1), (2, 2), (4, 3), (7, 4), (3, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 3

[(0, 0), (5, 1), (2, 2), (4, 3), (7, 4), (3, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|Q|*|Q|*|

Step: 4

[(0, 0), (5, 1), (1, 2), (4, 3), (7, 4), (3, 5), (7, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

Step: 5

[(0, 0), (5, 1), (1, 2), (4, 3), (6, 4), (3, 5), (7, 6), (2, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(1, 0), (6, 1), (4, 2), (5, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(3, 0), (6, 1), (4, 2), (5, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (6, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (1, 1), (3, 2), (7, 3), (4, 4), (3, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(0, 0), (1, 1), (3, 2), (7, 3), (7, 4), (3, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*

Step: 3

[(0, 0), (1, 1), (3, 2), (7, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*

Step: 4

[(0, 0), (6, 1), (3, 2), (7, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*

Step: 5

[(0, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

|*|*|*|*|Q|*|*|*|

Step: 6

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 7

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 8

[(2, 0), (7, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

Step: 9

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 10

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (0, 6), (5, 7)]

|*|*|*|Q|*|*|Q|*|

```

|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|

```

Step: 11

```

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|

```

Step: 12

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|Q|*|*|*| |
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|

```

Step: 13

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|

```

Step: 14

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 15

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 16

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 17

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 18

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (1, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(2, 0), (3, 1), (0, 2), (6, 3), (0, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 2

```

[(2, 0), (3, 1), (0, 2), (6, 3), (4, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```



```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (3, 1), (0, 2), (6, 3), (0, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (3, 1), (0, 2), (6, 3), (1, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(6, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(6, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 9

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 11

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 13

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 14

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 15

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 16

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 17

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 18

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 19

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 20

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 21

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 22

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 23

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 24

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 25

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 26

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 27

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	

Step: 28

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	

Step: 29

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	

Step: 30

[(1, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	

Step: 31

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 32

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 33

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 34

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 35

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|


```
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 36

```
[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 37

```
[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 38

```
[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 39

```
[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 40

[(6, 0), (0, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 41

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 42

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 43

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 44

[(6, 0), (0, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

```

|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 45

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 46

```

[(6, 0), (3, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 47

```

[(6, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(4, 0), (0, 1), (4, 2), (1, 3), (4, 4), (3, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(4, 0), (0, 1), (4, 2), (1, 3), (4, 4), (2, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (1, 3), (4, 4), (2, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (0, 1), (4, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(2, 0), (3, 1), (2, 2), (7, 3), (6, 4), (6, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 2

[(2, 0), (3, 1), (2, 2), (7, 3), (1, 4), (6, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(2, 0), (6, 1), (2, 2), (7, 3), (1, 4), (6, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(2, 0), (6, 1), (2, 2), (7, 3), (1, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

```
[(1, 0), (2, 1), (6, 2), (4, 3), (0, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (7, 2), (6, 3), (7, 4), (5, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (7, 2), (6, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (7, 2), (2, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (3, 1), (7, 2), (2, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (5, 2), (3, 3), (1, 4), (4, 5), (4, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

```
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (2, 1), (5, 2), (3, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (2, 1), (5, 2), (3, 3), (6, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (5, 2), (3, 3), (6, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (0, 2), (4, 3), (0, 4), (3, 5), (2, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```


Step: 2

[(1, 0), (2, 1), (0, 2), (7, 3), (0, 4), (3, 5), (2, 6), (4, 7)]

*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(1, 0), (2, 1), (0, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(1, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(3, 0), (6, 1), (2, 2), (1, 3), (1, 4), (5, 5), (3, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (6, 1), (2, 2), (1, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (2, 2), (1, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(3, 0), (6, 1), (2, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(3, 0), (7, 1), (2, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(3, 0), (2, 1), (3, 2), (2, 3), (0, 4), (6, 5), (4, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
```

*	*	*	*	*	*	Q	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	

Step: 2

[(3, 0), (7, 1), (3, 2), (2, 3), (0, 4), (6, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*

Step: 4

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Success:

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (0, 1), (4, 2), (1, 3), (2, 4), (6, 5), (2, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (2, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (2, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (2, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
```

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (3, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 7

```

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(6, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 10

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 11

[(5, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 12

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 13

[(0, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 14

$[(7, 0), (2, 1), (4, 2), (1, 3), (7, 4), (0, 5), (3, 6), (6, 7)]$
 $|*|*|*|*|*|Q|*|*|$
 $|*|*|*|Q|*|*|*|*|$
 $|*|Q|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|Q|*|$
 $|*|*|Q|*|*|*|*|*|$
 $|*|*|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|*|Q|$
 $|Q|*|*|*|Q|*|*|*|$

Step: 15

$[(7, 0), (2, 1), (4, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]$
 $|*|*|*|*|*|Q|*|*|$
 $|*|*|*|Q|*|*|*|*|$
 $|*|Q|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|Q|*|$
 $|*|*|Q|*|Q|*|*|*|$
 $|*|*|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|*|Q|$
 $|Q|*|*|*|*|*|*|*|$

Step: 16

$[(7, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]$
 $|*|*|*|*|*|Q|*|*|$
 $|*|*|*|Q|*|*|*|*|$
 $|*|Q|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|Q|*|$
 $|*|*|*|*|Q|*|*|*|$
 $|*|*|Q|*|*|*|*|*|$
 $|*|*|*|*|*|*|*|Q|$
 $|Q|*|*|*|*|*|*|*|$

Step: 17

$[(7, 0), (2, 1), (4, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]$
 $|*|*|*|*|*|Q|*|*|$
 $|*|*|*|Q|*|*|*|*|$
 $|*|Q|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|Q|*|$
 $|*|*|Q|*|Q|*|*|*|$
 $|*|*|*|*|*|*|*|*|$
 $|*|*|*|*|*|*|*|Q|$
 $|Q|*|*|*|*|*|*|*|$

Step: 18

$[(7, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]$
 $|*|*|*|*|*|Q|*|*|$
 $|*|*|*|Q|*|*|*|*|$
 $|*|Q|*|*|*|*|*|*|$

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 19

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 20

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (7, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 21

```

[(6, 0), (2, 1), (5, 2), (1, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 22

```

[(4, 0), (2, 1), (5, 2), (1, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```


|*|*|*|*|*|*|*|Q|

Step: 23

[(6, 0), (2, 1), (5, 2), (1, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 24

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 25

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (0, 5), (3, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

Step: 26

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 27

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 28

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 29

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 30

```

[(5, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 31

```

[(6, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 32

[(0, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 33

[(5, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 34

[(5, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 35

[(5, 0), (2, 1), (5, 2), (1, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 36

```

[(5, 0), (2, 1), (6, 2), (1, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(0, 0), (2, 1), (3, 2), (0, 3), (1, 4), (1, 5), (0, 6), (5, 7)]
|Q|*|*|Q|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (2, 1), (3, 2), (6, 3), (1, 4), (1, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|

```

```
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (2, 1), (3, 2), (6, 3), (1, 4), (1, 5), (5, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (1, 5), (5, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 6

```
[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (2, 1), (3, 2), (0, 3), (1, 4), (1, 5), (0, 6), (5, 7)]
Q	*	*	Q	*	*	Q	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (2, 1), (3, 2), (7, 3), (1, 4), (1, 5), (0, 6), (5, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(0, 0), (2, 1), (3, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(0, 0), (6, 1), (3, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(2, 0), (6, 1), (3, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(2, 0), (6, 1), (2, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Success:

[(3, 0), (6, 1), (2, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (7, 1), (3, 2), (1, 3), (2, 4), (3, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(3, 0), (7, 1), (3, 2), (1, 3), (2, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 4

```
[(3, 0), (7, 1), (3, 2), (7, 3), (0, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 5

```
[(2, 0), (7, 1), (3, 2), (7, 3), (0, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (0, 1), (2, 2), (3, 3), (7, 4), (4, 5), (7, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
```



```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 2

```
[(3, 0), (0, 1), (2, 2), (3, 3), (6, 4), (4, 5), (7, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(6, 0), (6, 1), (3, 2), (2, 3), (1, 4), (3, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (4, 2), (2, 3), (1, 4), (3, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|

Step: 4

[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (1, 6), (3, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(5, 0), (1, 1), (2, 2), (1, 3), (6, 4), (6, 5), (2, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|Q|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (1, 1), (2, 2), (0, 3), (6, 4), (6, 5), (2, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|Q|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (1, 1), (4, 2), (0, 3), (6, 4), (6, 5), (2, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|Q|

|*|*|*|*|*|*|*|*|

Step: 4

[(5, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*

Step: 5

[(5, 0), (1, 1), (4, 2), (0, 3), (3, 4), (6, 5), (2, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (4, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (3, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(3, 0), (4, 1), (7, 2), (2, 3), (6, 4), (4, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*	*

Step: 2

[(3, 0), (4, 1), (7, 2), (2, 3), (6, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (7, 2), (2, 3), (6, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*	*
*	Q	Q	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (3, 1), (5, 2), (7, 3), (5, 4), (7, 5), (5, 6), (1, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*

```
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (7, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (2, 1), (3, 2), (0, 3), (3, 4), (2, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

[(6, 0), (2, 1), (3, 2), (0, 3), (7, 4), (2, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 3

[(6, 0), (2, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 4

[(6, 0), (3, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(4, 0), (1, 1), (7, 2), (7, 3), (1, 4), (6, 5), (7, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	Q	*	*	Q	*

Step: 2

[(4, 0), (1, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

```
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|Q|*|*|*|*|
```

Step: 3

```
[(4, 0), (1, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
```

Step: 4

```
[(4, 0), (1, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(4, 0), (0, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (2, 1), (7, 2), (7, 3), (7, 4), (6, 5), (6, 6), (5, 7)]
|*|*|*|*|*|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|Q|*|
|*|*|Q|Q|Q|*|*|*|
```

Step: 2

```
[(1, 0), (2, 1), (7, 2), (7, 3), (7, 4), (0, 5), (6, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|Q|Q|Q|*|*|*|
```

Step: 3

```
[(1, 0), (2, 1), (4, 2), (7, 3), (7, 4), (0, 5), (6, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
```

Step: 4

```
[(1, 0), (2, 1), (4, 2), (7, 3), (3, 4), (0, 5), (6, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```


Step: 5

[(1, 0), (2, 1), (4, 2), (7, 3), (3, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (2, 1), (4, 2), (7, 3), (3, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (1, 1), (2, 2), (3, 3), (6, 4), (6, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (7, 1), (2, 2), (3, 3), (6, 4), (6, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(2, 0), (7, 1), (2, 2), (3, 3), (6, 4), (6, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (7, 1), (2, 2), (3, 3), (6, 4), (6, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 9

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 10

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 11

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 12

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 14

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 15

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 16

```

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 17

```
[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 18

```
[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 19

```
[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 20

```
[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|Q|

Step: 21

[(5, 0), (2, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 22

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 23

[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (6, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 24

[(5, 0), (2, 1), (0, 2), (7, 3), (7, 4), (4, 5), (6, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

Step: 25

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (4, 5), (6, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 26

```
[(5, 0), (2, 1), (0, 2), (7, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
```

Step: 27

```
[(5, 0), (2, 1), (0, 2), (3, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 28

```
[(5, 0), (2, 1), (0, 2), (7, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
```

Step: 29

```
[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 30

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 31

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 32

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 33

[(5, 0), (2, 1), (4, 2), (7, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*

Step: 34

[(5, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 35

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 36

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 37

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 38

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(5, 0), (6, 1), (5, 2), (6, 3), (2, 4), (3, 5), (6, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (7, 1), (5, 2), (6, 3), (2, 4), (3, 5), (6, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (5, 2), (0, 3), (2, 4), (3, 5), (6, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*

|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

Step: 4

[(5, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 5

[(5, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Success:

[(1, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Hill climbing Search with Sideways Analysis

Initial:

[(5, 0), (6, 1), (5, 2), (6, 3), (2, 4), (3, 5), (6, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 2

```

[(5, 0), (2, 1), (5, 2), (6, 3), (2, 4), (3, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (2, 1), (5, 2), (7, 3), (2, 4), (3, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(0, 0), (0, 1), (0, 2), (1, 3), (3, 4), (5, 5), (4, 6), (1, 7)]
Q	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (4, 6), (1, 7)]
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (0, 1), (7, 2), (1, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(0, 0), (5, 1), (7, 2), (1, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

Step: 5

[(0, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]

Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Success:

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(6, 0), (7, 1), (5, 2), (1, 3), (5, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 2

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*

Step: 4

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*

Step: 5

[(2, 0), (7, 1), (5, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*

Step: 6

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*

Step: 7

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 8

```
[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 9

```
[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 10

```
[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 11

```
[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```


|*|Q|*|*|*|*|*|

Step: 12

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 13

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 14

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

Step: 15

[(2, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 16

[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(1, 0), (1, 1), (2, 2), (3, 3), (4, 4), (6, 5), (0, 6), (1, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (1, 1), (2, 2), (3, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (1, 1), (2, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
```

```
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(1, 0), (4, 1), (2, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(1, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(1, 0), (1, 1), (2, 2), (3, 3), (4, 4), (6, 5), (0, 6), (1, 7)]
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (1, 1), (2, 2), (7, 3), (4, 4), (6, 5), (0, 6), (1, 7)]
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

Step: 3

[(1, 0), (1, 1), (2, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
Q	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(1, 0), (3, 1), (2, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(1, 0), (3, 1), (7, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 6

[(1, 0), (3, 1), (7, 2), (7, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 7

[(1, 0), (3, 1), (7, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

```

|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 8

```

[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 9

```

[(1, 0), (3, 1), (7, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 10

```

[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 11

```

[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 12

[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 13

[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 14

[(3, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 15

[(3, 0), (1, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 16

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 17

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 18

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 19

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 20

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 21

```
[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(7, 0), (7, 1), (2, 2), (1, 3), (4, 4), (3, 5), (5, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (7, 1), (2, 2), (1, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```


*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 3

[(7, 0), (7, 1), (2, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*	
Q	Q	*	*	*	*	*	*	

Step: 4

[(7, 0), (5, 1), (2, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (5, 1), (2, 2), (6, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (3, 1), (2, 2), (3, 3), (2, 4), (1, 5), (1, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	Q	*	*	Q
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (3, 1), (2, 2), (0, 3), (2, 4), (1, 5), (1, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (3, 1), (3, 2), (0, 3), (2, 4), (1, 5), (1, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(4, 0), (3, 1), (3, 2), (0, 3), (2, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 5

[(4, 0), (3, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 6

[(4, 0), (0, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (7, 1), (1, 2), (6, 3), (6, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (7, 1), (3, 2), (6, 3), (6, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (2, 1), (3, 2), (6, 3), (6, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (2, 1), (0, 2), (6, 3), (6, 4), (1, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (2, 1), (0, 2), (6, 3), (6, 4), (1, 5), (5, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 6

```
[(7, 0), (2, 1), (0, 2), (6, 3), (6, 4), (1, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 7

```
[(7, 0), (2, 1), (0, 2), (6, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 8

```

[(7, 0), (2, 1), (0, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|

```

Success:

```

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(6, 0), (3, 1), (2, 2), (1, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|Q|Q|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (3, 1), (7, 2), (1, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|

```

```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(6, 0), (3, 1), (7, 2), (7, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|

```

Step: 4

```

[(6, 0), (3, 1), (7, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|

```

Step: 5

```

[(6, 0), (3, 1), (7, 2), (7, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|

```

Step: 6

```

[(6, 0), (4, 1), (7, 2), (7, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (3, 1), (2, 2), (1, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	Q
*	*	Q	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (3, 1), (2, 2), (7, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	Q	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (2, 5), (6, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 5

[(6, 0), (4, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(6, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 7

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 8

[(6, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 9

[(5, 0), (3, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|


```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 10

```

[(5, 0), (3, 1), (0, 2), (7, 3), (7, 4), (2, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|

```

Step: 11

```

[(5, 0), (3, 1), (0, 2), (7, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|

```

Step: 12

```

[(5, 0), (3, 1), (0, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

Step: 14

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 15

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 16

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	Q	*

Step: 17

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 18

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (7, 6), (1, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|

```

Step: 19

```

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 22

```

[(5, 0), (3, 1), (0, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 23

```
[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 24

```
[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 25

```
[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 26

```
[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 27

[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 28

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 29

[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 30

[(5, 0), (3, 1), (0, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 31

[(5, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 32

```

[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 33

```

[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 34

```

[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 35

```

[(7, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

Step: 36

[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 37

[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 38

[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 39

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 40

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (1, 7)]

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(7, 0), (0, 1), (2, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (2, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```


*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (4, 1), (6, 2), (7, 3), (6, 4), (5, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	Q	*	*	*
*	*	*	Q	*	*	*	Q

Step: 2

[(3, 0), (4, 1), (6, 2), (1, 3), (6, 4), (5, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(3, 0), (0, 1), (6, 2), (1, 3), (6, 4), (5, 5), (2, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(3, 0), (0, 1), (6, 2), (1, 3), (6, 4), (5, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 5

[(3, 0), (0, 1), (7, 2), (1, 3), (6, 4), (5, 5), (2, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (2, 1), (5, 2), (5, 3), (3, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	Q	*	*	*	Q	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	

Step: 2

[(2, 0), (2, 1), (7, 2), (5, 3), (3, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	Q	*	*	*	Q	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	

Step: 3

[(4, 0), (2, 1), (7, 2), (5, 3), (3, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	Q	*	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	

Step: 4

```
[(4, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (4, 1), (0, 2), (6, 3), (5, 4), (3, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 2

```
[(7, 0), (4, 1), (0, 2), (6, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 3

```
[(7, 0), (4, 1), (1, 2), (6, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 4

```
[(2, 0), (4, 1), (1, 2), (6, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(2, 0), (3, 1), (5, 2), (7, 3), (1, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 2

```
[(2, 0), (6, 1), (5, 2), (7, 3), (1, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 3

```
[(2, 0), (6, 1), (5, 2), (7, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 4

```
[(2, 0), (6, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(1, 0), (3, 1), (4, 2), (5, 3), (2, 4), (6, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(1, 0), (3, 1), (4, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(1, 0), (3, 1), (5, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(1, 0), (3, 1), (5, 2), (5, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Success:

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (7, 1), (4, 2), (2, 3), (6, 4), (5, 5), (2, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*

Step: 2

[(7, 0), (7, 1), (4, 2), (2, 3), (6, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*

Step: 3

[(1, 0), (7, 1), (4, 2), (2, 3), (6, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (4, 2), (2, 3), (6, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|

```

Step: 6

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 7

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 9

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*

Step: 10

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 11

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 12

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 13


```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 18

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 19

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 20

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 21

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

|*|Q|*|*|*|*|*|

Step: 22

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

Step: 23

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|

Step: 24

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

Step: 25

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

Step: 26

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 27

```

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 28

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 29

```

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 30

```

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 31

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 32

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (3, 5), (3, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 33

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 34

[(1, 0), (6, 1), (4, 2), (0, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 35

```

[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Success:

```

[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(3, 0), (7, 1), (7, 2), (6, 3), (6, 4), (5, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (7, 1), (7, 2), (6, 3), (0, 4), (5, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (7, 1), (7, 2), (4, 3), (0, 4), (5, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 4

[(3, 0), (7, 1), (7, 2), (4, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (7, 1), (7, 2), (6, 3), (6, 4), (5, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 2

[(3, 0), (7, 1), (7, 2), (6, 3), (1, 4), (5, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

```

|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 5

```

[(2, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 6

```

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 7

```

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```


Step: 8

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 9

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 10

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 11

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 12

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 13

```

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 15

```

[(2, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 16

```

[(2, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

Step: 17

[(2, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 18

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*

Step: 19

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 20

[(2, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 21

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 22

```

[(3, 0), (7, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|

```

Step: 23

```

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 24

```

[(3, 0), (3, 1), (7, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 25

```

[(3, 0), (5, 1), (7, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 26

```
[(3, 0), (5, 1), (7, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
```

Success:

```
[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(4, 0), (6, 1), (4, 2), (6, 3), (4, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (6, 1), (4, 2), (0, 3), (4, 4), (6, 5), (6, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|Q|*|
```

|*|*|*|*|*|*|*|*|

Step: 3

[(4, 0), (6, 1), (4, 2), (0, 3), (1, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(4, 0), (6, 1), (4, 2), (0, 3), (1, 4), (3, 5), (6, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

Step: 5

[(4, 0), (6, 1), (4, 2), (0, 3), (1, 4), (3, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(5, 0), (7, 1), (6, 2), (6, 3), (0, 4), (5, 5), (1, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 2

[(5, 0), (7, 1), (6, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (7, 1), (1, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(2, 0), (7, 1), (1, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Success:

```

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (7, 1), (0, 2), (5, 3), (3, 4), (0, 5), (0, 6), (6, 7)]
|*|*|Q|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (7, 1), (0, 2), (5, 3), (3, 4), (0, 5), (0, 6), (6, 7)]
|*|*|Q|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (7, 1), (2, 2), (5, 3), (3, 4), (0, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (7, 1), (2, 2), (5, 3), (3, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```


|*|Q|*|*|*|*|*|

Step: 6

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 7

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (4, 7)]

|*|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 8

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]

|*|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 9

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 10

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]

|*|*|*|*|*|Q|Q|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 18

```

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 19

```

[(1, 0), (3, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 20

```

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

```
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (1, 1), (3, 2), (5, 3), (5, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(3, 0), (6, 1), (6, 2), (6, 3), (5, 4), (6, 5), (5, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|Q|*|
|*|Q|Q|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (6, 1), (6, 2), (6, 3), (5, 4), (0, 5), (5, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|Q|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

[(3, 0), (6, 1), (6, 2), (1, 3), (5, 4), (0, 5), (5, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (6, 1), (6, 2), (1, 3), (5, 4), (0, 5), (0, 6), (4, 7)]

*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(3, 0), (6, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (1, 1), (5, 2), (5, 3), (7, 4), (7, 5), (7, 6), (1, 7)]

*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	Q	Q	*	

Step: 2

[(3, 0), (1, 1), (5, 2), (5, 3), (0, 4), (7, 5), (7, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

```
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(3, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 5

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(4, 0), (6, 1), (6, 2), (1, 3), (4, 4), (4, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```



```

|Q|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (6, 1), (6, 2), (1, 3), (4, 4), (4, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (6, 1), (6, 2), (1, 3), (4, 4), (4, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(3, 0), (6, 1), (6, 2), (1, 3), (4, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(3, 0), (6, 1), (6, 2), (1, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 6

[(3, 0), (6, 1), (4, 2), (1, 3), (0, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(5, 0), (6, 1), (0, 2), (7, 3), (2, 4), (1, 5), (1, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(5, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (1, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (1, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (7, 1), (2, 2), (2, 3), (3, 4), (1, 5), (0, 6), (1, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (7, 1), (2, 2), (2, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (0, 1), (0, 2), (3, 3), (5, 4), (2, 5), (5, 6), (5, 7)]
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (0, 2), (3, 3), (5, 4), (2, 5), (5, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (6, 1), (2, 2), (7, 3), (5, 4), (5, 5), (1, 6), (2, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 2

[(5, 0), (6, 1), (2, 2), (7, 3), (5, 4), (3, 5), (1, 6), (2, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(5, 0), (6, 1), (2, 2), (7, 3), (5, 4), (3, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(5, 0), (0, 1), (2, 2), (7, 3), (5, 4), (3, 5), (1, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Success:

[(6, 0), (0, 1), (2, 2), (7, 3), (5, 4), (3, 5), (1, 6), (4, 7)]

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(6, 0), (5, 1), (2, 2), (3, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (5, 1), (2, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 3

```

[(6, 0), (5, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(6, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(6, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 8

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*

Step: 9

[(6, 0), (0, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|Q|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|Q|*

|*|*|*|*|Q|*|*|*

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*

|Q|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*

Step: 10

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|*|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|Q|*

|*|*|*|*|Q|*|*|*

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*

|Q|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*

Step: 11

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|Q|*

|*|*|*|*|Q|*|*|*

|*|Q|*|*|*|*|*|*

|*|*|*|*|*|Q|*|*

|Q|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*

Step: 12

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|*|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|Q|*

|*|*|*|*|Q|*|*|*

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*

|Q|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*

Step: 13

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|


```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 15

```

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 16

```

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 17

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|

```

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 18

[(6, 0), (4, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 19

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 20

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 21

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 22

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 23

```

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 24

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 25

```

[(6, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 26

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 27

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 28

[(6, 0), (1, 1), (7, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 29

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 30

[(6, 0), (1, 1), (7, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

|*|*|Q|Q|*|*|*|*|

Step: 31

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 32

[(6, 0), (1, 1), (7, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

Step: 33

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 34

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 35

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 36

```

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 37

```

[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 38

```

[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 39

```

[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|

```

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 40

[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 41

[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 42

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 43

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 44

```

[(6, 0), (1, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 45

```

[(6, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 46

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 47

```

[(6, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 48

```

[(3, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Success:

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (7, 1), (5, 2), (7, 3), (6, 4), (2, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 2

[(1, 0), (7, 1), (5, 2), (7, 3), (6, 4), (2, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 3

[(1, 0), (7, 1), (5, 2), (7, 3), (6, 4), (4, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|

Step: 4

[(1, 0), (7, 1), (5, 2), (3, 3), (6, 4), (4, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (7, 1), (5, 2), (7, 3), (6, 4), (2, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 2

[(1, 0), (7, 1), (5, 2), (7, 3), (6, 4), (2, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 3

[(1, 0), (7, 1), (5, 2), (7, 3), (6, 4), (4, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 4

[(1, 0), (7, 1), (5, 2), (1, 3), (6, 4), (4, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(1, 0), (7, 1), (5, 2), (1, 3), (6, 4), (4, 5), (0, 6), (7, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 6

[(1, 0), (7, 1), (5, 2), (0, 3), (6, 4), (4, 5), (0, 6), (7, 7)]

*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q

Step: 7

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (0, 6), (7, 7)]

*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 8

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 9

```

[(1, 0), (5, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 10

```

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 11

```

[(1, 0), (5, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 12

```

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 13

[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 14

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 15

[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 16

[(1, 0), (3, 1), (5, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 17

[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (2, 6), (7, 7)]

```
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 18

```
[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 19

```
[(1, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(1, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(2, 0), (3, 1), (7, 2), (3, 3), (7, 4), (2, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

```

|*|Q|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 2

```

[(2, 0), (3, 1), (7, 2), (3, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 3

```

[(1, 0), (3, 1), (7, 2), (3, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 4

```

[(1, 0), (3, 1), (6, 2), (3, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (6, 2), (2, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(2, 0), (5, 1), (1, 2), (3, 3), (7, 4), (6, 5), (5, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 2

[(2, 0), (5, 1), (1, 2), (3, 3), (7, 4), (6, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 3

[(2, 0), (5, 1), (1, 2), (3, 3), (7, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(5, 0), (4, 1), (2, 2), (6, 3), (7, 4), (4, 5), (7, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

Step: 2


```

[(5, 0), (5, 1), (2, 2), (6, 3), (7, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

Step: 3

```

[(5, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

Step: 4

```

[(5, 0), (5, 1), (2, 2), (0, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(4, 0), (4, 1), (2, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (4, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (7, 1), (6, 2), (7, 3), (7, 4), (5, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|Q|*|Q|Q|*|*|*|
```

Step: 2

```
[(3, 0), (0, 1), (6, 2), (7, 3), (7, 4), (5, 5), (6, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
*	*	*	Q	Q	*	*	*

Step: 3

[(3, 0), (0, 1), (6, 2), (4, 3), (7, 4), (5, 5), (6, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 4

[(3, 0), (0, 1), (7, 2), (4, 3), (7, 4), (5, 5), (6, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*

Step: 5

[(3, 0), (0, 1), (7, 2), (4, 3), (2, 4), (5, 5), (6, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (2, 1), (5, 2), (0, 3), (1, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (2, 1), (5, 2), (1, 3), (1, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(6, 0), (2, 1), (6, 2), (1, 3), (1, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(6, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (2, 1), (3, 2), (3, 3), (0, 4), (1, 5), (3, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (2, 1), (3, 2), (5, 3), (0, 4), (1, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

```
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (3, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (2, 1), (3, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(4, 0), (2, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (5, 1), (1, 2), (1, 3), (2, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*| |
|Q|*|Q|Q|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (1, 2), (6, 3), (2, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (3, 2), (6, 3), (2, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 6

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(2, 0), (7, 1), (0, 2), (1, 3), (7, 4), (3, 5), (6, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Step: 2

[(2, 0), (7, 1), (0, 2), (1, 3), (5, 4), (3, 5), (6, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (3, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	

Step: 4

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (4, 1), (2, 2), (2, 3), (7, 4), (5, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (2, 2), (2, 3), (7, 4), (5, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*| |
|Q|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (2, 2), (2, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (2, 2), (2, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```



```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(1, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (7, 1), (2, 2), (2, 3), (3, 4), (1, 5), (0, 6), (7, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 2

```
[(0, 0), (7, 1), (2, 2), (2, 3), (3, 4), (1, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

|*|Q|*|*|*|*|*|*|

Step: 4

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 5

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]

|*|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Search Failed

Initial:

[(7, 0), (5, 1), (6, 2), (3, 3), (3, 4), (7, 5), (7, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|Q|Q|*|

Step: 2

[(0, 0), (5, 1), (6, 2), (3, 3), (3, 4), (7, 5), (7, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

Step: 3

[(0, 0), (5, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 4

[(0, 0), (5, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Search Failed

Initial:

[(1, 0), (1, 1), (7, 2), (2, 3), (7, 4), (2, 5), (2, 6), (1, 7)]
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	Q
*	*	*	Q	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(1, 0), (1, 1), (7, 2), (2, 3), (7, 4), (2, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 3

[(1, 0), (1, 1), (7, 2), (2, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (1, 1), (6, 2), (2, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(1, 0), (3, 1), (6, 2), (2, 3), (7, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (5, 2), (1, 3), (3, 4), (7, 5), (6, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (5, 2), (1, 3), (3, 4), (7, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|

Step: 3

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (6, 6), (2, 7)]
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 4

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(1, 0), (6, 1), (3, 2), (7, 3), (3, 4), (2, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(1, 0), (6, 1), (3, 2), (7, 3), (0, 4), (2, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (2, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (0, 1), (0, 2), (5, 3), (7, 4), (4, 5), (7, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|*|
```

Step: 2

```
[(6, 0), (0, 1), (0, 2), (5, 3), (7, 4), (4, 5), (7, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 3

```
[(6, 0), (0, 1), (0, 2), (5, 3), (7, 4), (4, 5), (7, 6), (3, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

Step: 4

```

[(6, 0), (0, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(3, 0), (3, 1), (5, 2), (6, 3), (3, 4), (1, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (3, 1), (5, 2), (7, 3), (3, 4), (1, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (3, 1), (5, 2), (7, 3), (5, 4), (1, 5), (6, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Step: 4

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Step: 5

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 7


```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 8

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 9

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 10

```

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 11

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 12

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|

Step: 16

[(7, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|Q|*|*|*|*|

Success:

[(7, 0), (3, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

Hill Climbing Search Analysis

Initial:

[(1, 0), (7, 1), (3, 2), (7, 3), (7, 4), (4, 5), (5, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|Q|*|*|*|

Step: 2

[(1, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (5, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

Step: 3

[(1, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 4

```

[(1, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(1, 0), (7, 1), (3, 2), (7, 3), (7, 4), (4, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|Q|*|*|*|

```

Step: 2

```

[(1, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 3

```

[(0, 0), (7, 1), (3, 2), (7, 3), (2, 4), (4, 5), (5, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 4

```

[(0, 0), (6, 1), (3, 2), (7, 3), (2, 4), (4, 5), (5, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(0, 0), (6, 1), (3, 2), (7, 3), (2, 4), (7, 5), (5, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

```

Step: 6

```

[(0, 0), (6, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(0, 0), (6, 1), (3, 2), (0, 3), (2, 4), (7, 5), (5, 6), (1, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Success:

[(4, 0), (6, 1), (3, 2), (0, 3), (2, 4), (7, 5), (5, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (1, 1), (1, 2), (7, 3), (6, 4), (5, 5), (4, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (1, 1), (1, 2), (7, 3), (6, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (1, 1), (1, 2), (7, 3), (5, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 4

```

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(6, 0), (5, 1), (6, 2), (1, 3), (5, 4), (2, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(6, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (3, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(6, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 7

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```


|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 8

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (7, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 9

[(3, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 10

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 11

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 12

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 13

```

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 14

```

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 15

```

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 16

```

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 17

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 18

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 20

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 21

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 22

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 23

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 24

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 25

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 26

```

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 27

```

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 28

```

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 29

```

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

Step: 30

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 31

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 32

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 33

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 34

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]

```

|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 35

```

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 36

```

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 38

```

[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 39

```
[(0, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 40

```
[(0, 0), (4, 1), (6, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 41

```
[(0, 0), (4, 1), (6, 2), (0, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 42

```
[(0, 0), (4, 1), (6, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```


Step: 43

[(6, 0), (4, 1), (6, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (7, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 2

[(2, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(6, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (5, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (5, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (7, 2), (4, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Random Restart Hill Climbing Search

Initial:

```
[(3, 0), (4, 1), (0, 2), (3, 3), (7, 4), (5, 5), (6, 6), (1, 7)]
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(3, 0), (4, 1), (0, 2), (3, 3), (7, 4), (2, 5), (6, 6), (1, 7)]
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(3, 0), (4, 1), (0, 2), (3, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (4, 1), (0, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (2, 2), (7, 3), (4, 4), (7, 5), (1, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	Q	*	Q

Step: 2

[(6, 0), (0, 1), (2, 2), (7, 3), (4, 4), (7, 5), (1, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	Q

Step: 3

[(6, 0), (0, 1), (2, 2), (7, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 4

[(6, 0), (0, 1), (2, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(5, 0), (0, 1), (2, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(4, 0), (0, 1), (3, 2), (2, 3), (1, 4), (7, 5), (3, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(4, 0), (0, 1), (5, 2), (2, 3), (1, 4), (7, 5), (3, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(4, 0), (0, 1), (5, 2), (2, 3), (1, 4), (7, 5), (6, 6), (3, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (5, 2), (6, 3), (7, 4), (6, 5), (5, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|Q|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(6, 0), (1, 1), (5, 2), (6, 3), (7, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (5, 2), (4, 3), (7, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (4, 3), (7, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(6, 0), (1, 1), (7, 2), (4, 3), (7, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
```

Step: 6

```
[(6, 0), (1, 1), (7, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (3, 2), (3, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 2

```
[(1, 0), (4, 1), (0, 2), (3, 3), (4, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|Q|*|

Step: 3

[(1, 0), (4, 1), (0, 2), (3, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 4

[(1, 0), (4, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 5

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(5, 0), (4, 1), (5, 2), (1, 3), (0, 4), (3, 5), (6, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (4, 1), (5, 2), (1, 3), (0, 4), (3, 5), (6, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (4, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (4, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (2, 1), (6, 2), (7, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
Q	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	Q	Q	*	*	*	*

Step: 2

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (6, 1), (0, 2), (7, 3), (6, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (0, 2), (7, 3), (1, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (0, 2), (7, 3), (1, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

Success:

[(7, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (6, 6), (3, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*	

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (7, 1), (2, 2), (7, 3), (2, 4), (4, 5), (3, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*

Step: 2

[(4, 0), (7, 1), (2, 2), (7, 3), (2, 4), (4, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*

Step: 3

[(5, 0), (7, 1), (2, 2), (7, 3), (2, 4), (4, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*

Step: 4

[(5, 0), (7, 1), (2, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*

Step: 5

[(5, 0), (7, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*

Step: 6

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 7

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 8

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

```

|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|

```

Step: 9

```

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|

```

Step: 10

```

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 11

```

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 12

```

[(5, 0), (1, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|

Step: 13

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 14

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 15

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 16

[(0, 0), (4, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 17

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 18

```

[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 19

```

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(2, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|

```

Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 22

[(2, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 23

[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 24

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 25

[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 26


```

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 27

```

[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 28

```

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 29

```

[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 30

```

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 31

```

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 32

```

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 33

```

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 34

```

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|

Step: 35

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 36

[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 37

[(0, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 38

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 39

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 40

```

[(5, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 41

```

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 42

```

[(5, 0), (0, 1), (2, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 43

```

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 44

[(5, 0), (0, 1), (2, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 45

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 46

[(5, 0), (0, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 47

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 48

```

[(5, 0), (0, 1), (2, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 49

```

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 50

```

[(5, 0), (0, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 51

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 52

```

[(5, 0), (0, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 53

[(5, 0), (0, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 54

[(5, 0), (0, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 55

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 56

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|

Step: 57

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 58

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 59

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 60

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 61

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|


```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 62

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 63

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 64

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 65

```

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*

Step: 66

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 67

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*

Step: 68

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 69

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 70

```

[(5, 0), (1, 1), (4, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 71

```

[(5, 0), (1, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 72

```

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 73

```

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 74

```

[(5, 0), (1, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 75

[(5, 0), (7, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*

Step: 76

[(5, 0), (1, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 77

[(5, 0), (7, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*

Step: 78

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|

Step: 79

[(2, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 80

[(2, 0), (4, 1), (1, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 81

[(2, 0), (4, 1), (1, 2), (7, 3), (4, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Success:

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Hill Climbing Search Analysis

Initial:

[(1, 0), (5, 1), (3, 2), (2, 3), (4, 4), (0, 5), (0, 6), (0, 7)]

```
|*|*|*|*|*|Q|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (3, 2), (2, 3), (4, 4), (7, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (3, 2), (6, 3), (4, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (5, 1), (3, 2), (2, 3), (4, 4), (0, 5), (0, 6), (0, 7)]
|*|*|*|*|*|Q|Q|Q|
|Q|*|*|*|*|*|*|*|
```

```

|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (5, 1), (3, 2), (2, 3), (4, 4), (7, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(1, 0), (5, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(1, 0), (5, 1), (3, 2), (6, 3), (4, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(1, 0), (5, 1), (3, 2), (6, 3), (4, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 6

[(1, 0), (5, 1), (2, 2), (6, 3), (4, 4), (7, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 7

[(1, 0), (5, 1), (2, 2), (6, 3), (4, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 8

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(1, 0), (5, 1), (2, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(3, 0), (5, 1), (2, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]


```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 11

```

[(1, 0), (5, 1), (2, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 12

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 13

```

[(1, 0), (5, 1), (2, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 14

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 15

```
[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 16

```
[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 17

```
[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 18

```
[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 19

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 20

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 21

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 22

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 23

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 24

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 25

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 26

```

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 27

```

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 28

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 29

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 30

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 31

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 32

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 33

```

[(2, 0), (5, 1), (7, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 34

```

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 35

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 36

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 37

```
[(1, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 38

```
[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 39

```
[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 40

```
[(0, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 41

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 42

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 43

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 44

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 45

[(2, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 46

[(2, 0), (5, 1), (1, 2), (6, 3), (3, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 47

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Success:

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (3, 1), (6, 2), (5, 3), (1, 4), (7, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 2

[(3, 0), (3, 1), (6, 2), (5, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 3

[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 4

[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (2, 1), (1, 2), (5, 3), (3, 4), (3, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (1, 2), (5, 3), (7, 4), (3, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 3

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (3, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 4

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (2, 2), (5, 3), (1, 4), (1, 5), (0, 6), (0, 7)]

|*|*|*|*|*|*|Q|Q|

```
|*|*|*|*|Q|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (2, 1), (2, 2), (5, 3), (7, 4), (1, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (2, 1), (2, 2), (5, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (5, 1), (0, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (0, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (7, 1), (7, 2), (4, 3), (1, 4), (6, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (7, 1), (7, 2), (4, 3), (1, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|Q|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (7, 1), (7, 2), (4, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|*|Q|Q|*|*|*|*|*|

Step: 4

[(2, 0), (7, 1), (7, 2), (4, 3), (1, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|Q|*|*|*|*|*|

Step: 5

[(2, 0), (5, 1), (7, 2), (4, 3), (1, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(1, 0), (3, 1), (4, 2), (4, 3), (6, 4), (1, 5), (1, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(1, 0), (3, 1), (0, 2), (4, 3), (6, 4), (1, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(1, 0), (3, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (7, 7)]

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(3, 0), (3, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(3, 0), (7, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Success:

```
[(3, 0), (7, 1), (0, 2), (4, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (5, 1), (3, 2), (3, 3), (5, 4), (3, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|Q|Q|*|Q|*|*| |
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(1, 0), (5, 1), (3, 2), (3, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(1, 0), (5, 1), (1, 2), (3, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(7, 0), (5, 1), (1, 2), (3, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

Step: 5

```
[(7, 0), (5, 1), (1, 2), (0, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```


|Q|*|*|*|*|*|Q|*|

Step: 6

[(7, 0), (5, 1), (1, 2), (0, 3), (6, 4), (3, 5), (6, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|Q|*|*|*|*|*|*|*|

Step: 7

[(7, 0), (5, 1), (3, 2), (0, 3), (6, 4), (3, 5), (6, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|Q|*|*|*|*|*|*|*|

Step: 8

[(7, 0), (5, 1), (3, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 9

[(7, 0), (1, 1), (3, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 10

[(4, 0), (1, 1), (3, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 11

```
[(7, 0), (1, 1), (3, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 12

```
[(7, 0), (1, 1), (4, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 13

```
[(7, 0), (1, 1), (4, 2), (0, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 14

```
[(7, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 15

[(7, 0), (1, 1), (4, 2), (6, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	

Step: 16

[(7, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 17

[(7, 0), (1, 1), (4, 2), (6, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	

Step: 18

[(7, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 19

[(5, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 20

[(6, 0), (1, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 21

[(6, 0), (1, 1), (3, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 22

[(6, 0), (1, 1), (3, 2), (7, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 23

[(6, 0), (1, 1), (3, 2), (0, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 24

```
[(6, 0), (1, 1), (3, 2), (0, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 25

```
[(6, 0), (1, 1), (3, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 26

```
[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 27

```
[(6, 0), (1, 1), (3, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Step: 28

[(6, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Hill Climbing Search Analysis

Initial:

[(5, 0), (2, 1), (0, 2), (1, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (2, 1), (0, 2), (7, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(4, 0), (2, 1), (0, 2), (7, 3), (1, 4), (6, 5), (5, 6), (0, 7)]

*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(4, 0), (2, 1), (0, 2), (7, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(4, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(4, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(5, 0), (2, 1), (0, 2), (1, 3), (1, 4), (6, 5), (5, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (2, 1), (0, 2), (3, 3), (1, 4), (6, 5), (5, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Success:

[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]

*	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Random Restart Hill Climbing Search

Initial:

[(4, 0), (0, 1), (2, 2), (5, 3), (7, 4), (0, 5), (0, 6), (0, 7)]

*	Q	*	*	*	Q	Q	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*

Step: 2

[(4, 0), (0, 1), (2, 2), (5, 3), (7, 4), (0, 5), (0, 6), (3, 7)]

*	Q	*	*	*	Q	Q	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	

Step: 3

[(4, 0), (6, 1), (2, 2), (5, 3), (7, 4), (0, 5), (0, 6), (3, 7)]

*	*	*	*	*	Q	Q	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	

Step: 4

```

[(4, 0), (6, 1), (1, 2), (5, 3), (7, 4), (0, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Search Failed

Initial:

```

[(0, 0), (3, 1), (4, 2), (3, 3), (4, 4), (4, 5), (0, 6), (0, 7)]
|Q|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (3, 1), (4, 2), (7, 3), (4, 4), (4, 5), (0, 6), (0, 7)]
|Q|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(1, 0), (3, 1), (4, 2), (7, 3), (4, 4), (4, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(1, 0), (3, 1), (5, 2), (7, 3), (4, 4), (4, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (5, 2), (7, 3), (4, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(5, 0), (0, 1), (2, 2), (7, 3), (3, 4), (4, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(5, 0), (0, 1), (2, 2), (7, 3), (3, 4), (1, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(5, 0), (0, 1), (2, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (6, 1), (2, 2), (2, 3), (3, 4), (3, 5), (1, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (6, 1), (2, 2), (2, 3), (7, 4), (3, 5), (1, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (1, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

[(7, 0), (6, 1), (6, 2), (1, 3), (1, 4), (3, 5), (3, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (6, 1), (6, 2), (1, 3), (1, 4), (5, 5), (3, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (2, 1), (6, 2), (1, 3), (1, 4), (5, 5), (3, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*

Step: 5

[(7, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*

Step: 6

[(2, 0), (2, 1), (6, 2), (1, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (6, 1), (7, 2), (7, 3), (4, 4), (2, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*

Step: 2

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (2, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (3, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (7, 2), (4, 3), (4, 4), (6, 5), (2, 6), (0, 7)]
```

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (7, 2), (4, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
```

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (7, 2), (4, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (0, 1), (7, 2), (4, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

|*|*|Q|*|*|*|*|*

Search Failed

Initial:

[(6, 0), (6, 1), (2, 2), (7, 3), (3, 4), (2, 5), (3, 6), (7, 7)]

|*|*|*|*|*|*|*|*

|*|*|*|*|*|*|*|*

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*

|*|*|*|*|*|*|*|*

|Q|Q|*|*|*|*|*|*

|*|*|*|Q|*|*|*|Q|

Step: 2

[(6, 0), (6, 1), (2, 2), (7, 3), (3, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*

|*|*|*|*|*|*|*|*

|Q|Q|*|*|*|*|*|*

|*|*|*|Q|*|*|*|Q|

Step: 3

[(6, 0), (6, 1), (2, 2), (7, 3), (3, 4), (0, 5), (3, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*

|*|*|*|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*|

Step: 4

[(6, 0), (4, 1), (2, 2), (7, 3), (3, 4), (0, 5), (3, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:


```

[(4, 0), (6, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (1, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (6, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(0, 0), (1, 1), (7, 2), (5, 3), (1, 4), (3, 5), (3, 6), (3, 7)]
|Q|*|*|*|*|*|*| |
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (3, 6), (3, 7)]
|Q|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|

```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
Q	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (1, 1), (7, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (4, 1), (5, 2), (6, 3), (6, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(5, 0), (1, 1), (5, 2), (6, 3), (6, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Q	*	Q	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(5, 0), (1, 1), (5, 2), (6, 3), (2, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(4, 0), (1, 1), (5, 2), (6, 3), (2, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (2, 2), (7, 3), (0, 4), (3, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (3, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (3, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (3, 5), (7, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Search Failed

Initial:

[(5, 0), (6, 1), (7, 2), (7, 3), (7, 4), (0, 5), (5, 6), (2, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	Q	Q	*	*	*

Step: 2

[(5, 0), (6, 1), (4, 2), (7, 3), (7, 4), (0, 5), (5, 6), (2, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*

Step: 3

[(1, 0), (6, 1), (4, 2), (7, 3), (7, 4), (0, 5), (5, 6), (2, 7)]

|*|*|*|*|*|Q|*|*|

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*

Step: 4

[(1, 0), (6, 1), (4, 2), (7, 3), (4, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (1, 1), (5, 2), (6, 3), (5, 4), (4, 5), (4, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	Q
Q	*	Q	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (1, 1), (5, 2), (6, 3), (0, 4), (4, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (1, 1), (5, 2), (6, 3), (0, 4), (7, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

*	*	*	*	*	*	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (1, 1), (1, 2), (6, 3), (0, 4), (7, 5), (4, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(7, 0), (1, 1), (0, 2), (5, 3), (1, 4), (3, 5), (2, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	Q	*	*	Q	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (0, 2), (5, 3), (1, 4), (3, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (1, 1), (0, 2), (5, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

Step: 5

[(7, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (6, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|Q|*|*|*|*|*|*|*|

Success:

[(7, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (6, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(2, 0), (4, 1), (6, 2), (4, 3), (3, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (4, 1), (6, 2), (4, 3), (3, 4), (5, 5), (0, 6), (2, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```


*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (5, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 11

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(1, 0), (4, 1), (6, 2), (0, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(1, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (6, 1), (0, 2), (5, 3), (5, 4), (4, 5), (6, 6), (5, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	Q
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (6, 1), (0, 2), (5, 3), (5, 4), (4, 5), (6, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (6, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (6, 1), (0, 2), (5, 3), (5, 4), (4, 5), (6, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (6, 1), (0, 2), (5, 3), (5, 4), (4, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (6, 1), (0, 2), (5, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Success:

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(1, 0), (7, 1), (4, 2), (1, 3), (5, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

Step: 2

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (4, 2), (2, 3), (5, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	*

Step: 4

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (5, 1), (0, 2), (4, 3), (6, 4), (0, 5), (1, 6), (3, 7)]
*	*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	*	

Step: 2

```
[(3, 0), (5, 1), (0, 2), (4, 3), (6, 4), (0, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (5, 1), (0, 2), (4, 3), (6, 4), (0, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (3, 2), (6, 3), (1, 4), (6, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (1, 1), (3, 2), (6, 3), (1, 4), (6, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

```

|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(6, 0), (1, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(4, 0), (1, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(3, 0), (3, 1), (1, 2), (2, 3), (0, 4), (7, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
Q	Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 2

[(3, 0), (6, 1), (1, 2), (2, 3), (0, 4), (7, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 3

[(6, 0), (6, 1), (1, 2), (2, 3), (0, 4), (7, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 4

[(6, 0), (1, 1), (1, 2), (2, 3), (0, 4), (7, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 5


```

[(6, 0), (1, 1), (6, 2), (2, 3), (0, 4), (7, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(6, 0), (1, 1), (6, 2), (2, 3), (0, 4), (7, 5), (3, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Success:

```

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (3, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Hill Climbing Search Analysis

Initial:

[(4, 0), (7, 1), (2, 2), (5, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(4, 0), (7, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(3, 0), (7, 1), (2, 2), (4, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (7, 1), (2, 2), (5, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(4, 0), (7, 1), (2, 2), (6, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(4, 0), (7, 1), (1, 2), (6, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(4, 0), (7, 1), (3, 2), (6, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (3, 2), (6, 3), (1, 4), (5, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 6

[(4, 0), (7, 1), (3, 2), (6, 3), (1, 4), (5, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 7

[(4, 0), (7, 1), (3, 2), (6, 3), (1, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 8

[(4, 0), (7, 1), (3, 2), (6, 3), (1, 4), (5, 5), (5, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 9

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 10

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Success:

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search

Initial:

[(2, 0), (6, 1), (6, 2), (7, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 2

[(2, 0), (6, 1), (3, 2), (7, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 3

[(2, 0), (6, 1), (3, 2), (7, 3), (4, 4), (0, 5), (5, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(2, 0), (6, 1), (3, 2), (7, 3), (4, 4), (1, 5), (5, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (0, 1), (5, 2), (0, 3), (1, 4), (5, 5), (7, 6), (3, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(2, 0), (0, 1), (5, 2), (0, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(2, 0), (0, 1), (5, 2), (1, 3), (1, 4), (4, 5), (7, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(0, 0), (3, 1), (3, 2), (1, 3), (2, 4), (0, 5), (2, 6), (5, 7)]

Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (3, 2), (6, 3), (2, 4), (0, 5), (2, 6), (5, 7)]

Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (1, 2), (6, 3), (2, 4), (0, 5), (2, 6), (5, 7)]

Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(0, 0), (3, 1), (1, 2), (6, 3), (7, 4), (0, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|Q|*|*|

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (3, 1), (1, 2), (3, 3), (4, 4), (1, 5), (7, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(4, 0), (3, 1), (1, 2), (3, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
```


Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(4, 0), (3, 1), (1, 2), (6, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(7, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 6

[(6, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(6, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 8

[(6, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 9

[(2, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 10

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Success:

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Hill Climbing Search Analysis

Initial:

```
[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (1, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (2, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (0, 1), (1, 2), (6, 3), (1, 4), (5, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (0, 1), (4, 2), (6, 3), (1, 4), (5, 5), (2, 6), (5, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (1, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (2, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (0, 1), (1, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (0, 1), (6, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 5

[(3, 0), (0, 1), (6, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 6

[(3, 0), (0, 1), (6, 2), (4, 3), (1, 4), (5, 5), (0, 6), (2, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 7

[(3, 0), (0, 1), (6, 2), (4, 3), (1, 4), (7, 5), (0, 6), (2, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 8

[(3, 0), (1, 1), (6, 2), (4, 3), (1, 4), (7, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|Q|*|*|Q|*|*|*| |
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
```

Step: 9

```
[(3, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (0, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|Q|*| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
```

Success:

```
[(3, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (2, 1), (6, 2), (2, 3), (0, 4), (3, 5), (2, 6), (1, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (6, 2), (2, 3), (0, 4), (3, 5), (3, 6), (1, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (6, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (1, 1), (7, 2), (0, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (1, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|Q|*|Q|*|*|*|*|*

Search Failed

Initial:

[(2, 0), (1, 1), (7, 2), (4, 3), (7, 4), (0, 5), (5, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|Q|

Step: 2

[(2, 0), (1, 1), (7, 2), (4, 3), (7, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

Step: 3

[(2, 0), (1, 1), (6, 2), (4, 3), (7, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(5, 0), (6, 1), (0, 2), (1, 3), (3, 4), (0, 5), (4, 6), (5, 7)]

|*|*|Q|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2


```

[(5, 0), (6, 1), (0, 2), (1, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 3

```

[(5, 0), (2, 1), (0, 2), (1, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Search Failed

Initial:

```

[(7, 0), (3, 1), (5, 2), (6, 3), (7, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|Q|

```

Step: 2

```

[(7, 0), (3, 1), (5, 2), (2, 3), (7, 4), (1, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	Q

Step: 3

[(0, 0), (3, 1), (5, 2), (2, 3), (7, 4), (1, 5), (3, 6), (7, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 4

[(0, 0), (3, 1), (5, 2), (2, 3), (7, 4), (1, 5), (3, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(0, 0), (3, 1), (5, 2), (2, 3), (7, 4), (1, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (6, 1), (7, 2), (3, 3), (6, 4), (7, 5), (5, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

*	*	*	*	*	*	Q	*
Q	Q	*	*	Q	*	*	Q
*	*	Q	*	*	Q	*	*

Step: 2

[(6, 0), (6, 1), (7, 2), (3, 3), (0, 4), (7, 5), (5, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*

Step: 3

[(6, 0), (2, 1), (7, 2), (3, 3), (0, 4), (7, 5), (5, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*

Step: 4

[(6, 0), (2, 1), (7, 2), (3, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Search Failed

Initial:

[(2, 0), (6, 1), (5, 2), (6, 3), (1, 4), (7, 5), (1, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(2, 0), (6, 1), (5, 2), (6, 3), (1, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(2, 0), (6, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(4, 0), (6, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (7, 2), (3, 3), (7, 4), (4, 5), (7, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|*|

```

Step: 2

```

[(6, 0), (1, 1), (7, 2), (3, 3), (0, 4), (4, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

Step: 3

```

[(6, 0), (1, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (4, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|

```

Step: 5

```

[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (3, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Success:

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (3, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (4, 1), (0, 2), (4, 3), (5, 4), (5, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(3, 0), (0, 1), (0, 2), (4, 3), (5, 4), (5, 5), (2, 6), (7, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (0, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

[(3, 0), (6, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(3, 0), (0, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 6

[(3, 0), (6, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 7

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 8

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(2, 0), (5, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (0, 7)]
|*|*|*|*|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (7, 2), (1, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```



```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (5, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (0, 7)]
|*|*|*|*|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (7, 2), (1, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Success:

[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(2, 0), (7, 1), (1, 2), (6, 3), (6, 4), (3, 5), (5, 6), (7, 7)]

*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	Q	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 2

[(2, 0), (7, 1), (1, 2), (6, 3), (0, 4), (3, 5), (5, 6), (7, 7)]

*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 3

[(2, 0), (4, 1), (1, 2), (6, 3), (0, 4), (3, 5), (5, 6), (7, 7)]

*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	

Search Failed

Initial:

[(3, 0), (1, 1), (0, 2), (6, 3), (4, 4), (1, 5), (6, 6), (0, 7)]

*	*	Q	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (5, 1), (0, 2), (6, 3), (4, 4), (1, 5), (6, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (1, 5), (6, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (5, 1), (2, 2), (0, 3), (5, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (2, 2), (0, 3), (5, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(4, 0), (0, 1), (1, 2), (4, 3), (3, 4), (2, 5), (1, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (0, 1), (1, 2), (4, 3), (7, 4), (2, 5), (1, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 3

[(4, 0), (0, 1), (1, 2), (5, 3), (7, 4), (2, 5), (1, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	Q	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (0, 1), (1, 2), (5, 3), (7, 4), (2, 5), (6, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 5

[(4, 0), (0, 1), (1, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (0, 2), (3, 3), (0, 4), (0, 5), (2, 6), (7, 7)]
*	*	Q	*	Q	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 2

```
[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (0, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 3

```
[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (0, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (5, 2), (3, 3), (6, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (4, 1), (5, 2), (6, 3), (2, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(5, 0), (1, 1), (5, 2), (6, 3), (2, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(4, 0), (1, 1), (5, 2), (6, 3), (2, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (1, 1), (1, 2), (0, 3), (5, 4), (2, 5), (3, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (1, 1), (1, 2), (7, 3), (5, 4), (2, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(2, 0), (1, 1), (1, 2), (7, 3), (5, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

```
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(2, 0), (4, 1), (1, 2), (7, 3), (5, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (6, 1), (7, 2), (3, 3), (5, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 2

```
[(3, 0), (6, 1), (7, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 3

```
[(3, 0), (6, 1), (0, 2), (3, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```


Search Failed

Initial:

[(0, 0), (3, 1), (7, 2), (6, 3), (0, 4), (4, 5), (2, 6), (6, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (7, 2), (6, 3), (1, 4), (4, 5), (2, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (7, 2), (6, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	

Step: 4

[(0, 0), (3, 1), (7, 2), (6, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	Q	*	*	*
*	*	Q	*	*	*	*	*	

Step: 5

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (7, 2), (1, 3), (7, 4), (0, 5), (4, 6), (6, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	Q	*	*	*

Step: 2

[(2, 0), (0, 1), (7, 2), (1, 3), (7, 4), (0, 5), (4, 6), (6, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 3

[(2, 0), (5, 1), (7, 2), (1, 3), (7, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Search Failed

Initial:

[(2, 0), (5, 1), (7, 2), (0, 3), (0, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	Q	Q	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (7, 2), (0, 3), (0, 4), (6, 5), (4, 6), (0, 7)]
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (7, 2), (0, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (6, 1), (0, 2), (2, 3), (3, 4), (0, 5), (7, 6), (6, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|Q|*|*|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|

Step: 2

[(7, 0), (6, 1), (0, 2), (2, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 3

[(4, 0), (6, 1), (0, 2), (2, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (6, 1), (0, 2), (2, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Success:

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(7, 0), (1, 1), (1, 2), (2, 3), (6, 4), (4, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (1, 1), (1, 2), (2, 3), (6, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (5, 1), (1, 2), (2, 3), (6, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (5, 1), (1, 2), (1, 3), (6, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (5, 1), (1, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(7, 0), (1, 1), (1, 2), (2, 3), (6, 4), (4, 5), (3, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (1, 2), (2, 3), (6, 4), (3, 5), (3, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (1, 1), (1, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*

Step: 6

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 7

[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 8

```

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 9

```

[(7, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|

```

Step: 10

```

[(7, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 11

```

[(7, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|

```

Step: 12

```

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```



```

|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 13

```

[(1, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|*| |
|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 15

```

[(7, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|

```

Step: 16

```

[(1, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|*| |
|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|

Step: 17

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 18

[(1, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 19

[(1, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 20

[(1, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Success:

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(0, 0), (0, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (4, 7)]
|Q|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(0, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (4, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(4, 0), (7, 1), (5, 2), (4, 3), (0, 4), (7, 5), (2, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 2

[(4, 0), (7, 1), (5, 2), (4, 3), (1, 4), (7, 5), (2, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

[(4, 0), (7, 1), (5, 2), (4, 3), (1, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 4

[(4, 0), (7, 1), (5, 2), (6, 3), (1, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*

|*|Q|*|*|*|Q|*|*|

Step: 5

[(4, 0), (2, 1), (5, 2), (6, 3), (1, 4), (7, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(3, 0), (7, 1), (3, 2), (7, 3), (7, 4), (2, 5), (1, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|Q|*|*|*|

Step: 2

[(3, 0), (7, 1), (3, 2), (7, 3), (0, 4), (2, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

Step: 3

[(3, 0), (7, 1), (4, 2), (7, 3), (0, 4), (2, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

Step: 4

[(3, 0), (7, 1), (4, 2), (7, 3), (0, 4), (6, 5), (1, 6), (5, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (5, 1), (1, 2), (0, 3), (5, 4), (5, 5), (6, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|Q|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (5, 1), (1, 2), (0, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (5, 1), (1, 2), (0, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (4, 1), (1, 2), (0, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Success:

[(2, 0), (4, 1), (1, 2), (7, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (1, 5), (7, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 2

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (4, 5), (7, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

Step: 3

[(2, 0), (0, 1), (5, 2), (3, 3), (1, 4), (4, 5), (7, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (1, 5), (7, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 2

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (4, 5), (7, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 3

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (4, 5), (7, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 4

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (4, 5), (6, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 5

[(2, 0), (7, 1), (5, 2), (0, 3), (1, 4), (4, 5), (6, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 6

[(2, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Success:

[(1, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(5, 0), (0, 1), (2, 2), (2, 3), (3, 4), (5, 5), (1, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (5, 5), (1, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (5, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(5, 0), (0, 1), (2, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (7, 1), (6, 2), (1, 3), (3, 4), (3, 5), (6, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	Q

Step: 2

[(3, 0), (7, 1), (6, 2), (1, 3), (3, 4), (0, 5), (6, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	Q

Step: 3

[(3, 0), (7, 1), (4, 2), (1, 3), (3, 4), (0, 5), (6, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	Q

Step: 4

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	Q

Step: 5

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]

*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (3, 1), (6, 2), (3, 3), (5, 4), (5, 5), (5, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	Q	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	

Step: 2

[(7, 0), (3, 1), (6, 2), (3, 3), (5, 4), (5, 5), (5, 6), (4, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	Q	Q	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 3

[(7, 0), (3, 1), (6, 2), (3, 3), (5, 4), (0, 5), (5, 6), (4, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	Q	*	
*	*	Q	*	*	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 4

[(7, 0), (3, 1), (6, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (3, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (0, 1), (6, 2), (7, 3), (0, 4), (6, 5), (0, 6), (2, 7)]

Q	Q	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(5, 0), (0, 1), (6, 2), (7, 3), (0, 4), (6, 5), (0, 6), (2, 7)]

*	Q	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (1, 1), (6, 2), (7, 3), (0, 4), (6, 5), (0, 6), (2, 7)]

*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (5, 2), (7, 3), (0, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (0, 1), (6, 2), (2, 3), (4, 4), (6, 5), (0, 6), (6, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (0, 1), (6, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (0, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

|*|*|Q|*|*|*|*|*|

Step: 4

[(4, 0), (0, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 5

[(3, 0), (0, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(0, 0), (4, 1), (2, 2), (0, 3), (0, 4), (4, 5), (4, 6), (3, 7)]

|Q|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(0, 0), (4, 1), (2, 2), (0, 3), (0, 4), (4, 5), (1, 6), (3, 7)]

|Q|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(0, 0), (4, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (3, 7)]

Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(6, 0), (4, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(6, 0), (4, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (6, 5), (0, 6), (0, 7)]
*	*	*	Q	*	*	Q	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*


```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (6, 1), (2, 2), (0, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(1, 0), (6, 1), (2, 2), (0, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(1, 0), (6, 1), (2, 2), (5, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(1, 0), (6, 1), (3, 2), (2, 3), (0, 4), (2, 5), (4, 6), (3, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (6, 1), (3, 2), (2, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(1, 0), (6, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 4

[(1, 0), (5, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 5

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

```

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 7

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 8

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 9

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 11

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 12

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 13

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 14

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*	*

Step: 15

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 16

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 17

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*	*

Step: 18

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

|Q|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 19

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 20

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 21

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 22

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 23

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 24

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 25

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 26

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 27

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 28

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 29

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 30

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 31

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```


*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 32

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 33

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 34

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 35

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 36

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 37

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 38

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 39

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 40

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 41

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 42

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|

```

Step: 43

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 44

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 45

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 46

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 47

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 48

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 49

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 50

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 51

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 52

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 53

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 54

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	*

Step: 55

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	*

Step: 56

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	*

Step: 57

[(0, 0), (5, 1), (3, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	*

Step: 58

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 59

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 60

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 61

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 62

[(0, 0), (5, 1), (3, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 63

```

[(0, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 64

```

[(0, 0), (5, 1), (3, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 65

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 66

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```


|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 67

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 68

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 69

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 70

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 71

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 72

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 73

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 74

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 75

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 76

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 77

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 78

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 79

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 80

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 81

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 82

[(1, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 83

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 84

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (3, 5), (4, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 85

```

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (6, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 86

```

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 87

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 88

```

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 89

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 90

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 91

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 92

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 93

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 94

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 95

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 96

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 97

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 98

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 99

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 100

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 101

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 102

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 103

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 104

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (6, 2), (0, 3), (5, 4), (6, 5), (5, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	Q	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (6, 2), (0, 3), (5, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(5, 0), (2, 1), (6, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(0, 0), (0, 1), (3, 2), (3, 3), (0, 4), (5, 5), (3, 6), (4, 7)]
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (0, 1), (3, 2), (3, 3), (0, 4), (5, 5), (3, 6), (4, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
```

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (0, 1), (3, 2), (3, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (0, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(7, 0), (0, 1), (7, 2), (7, 3), (3, 4), (7, 5), (4, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|Q|*|Q|Q|*|Q|*|*|

Step: 2

[(6, 0), (0, 1), (7, 2), (7, 3), (3, 4), (7, 5), (4, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|Q|*|Q|*|*|

Step: 3

[(6, 0), (0, 1), (7, 2), (5, 3), (3, 4), (7, 5), (4, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

Step: 4

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (7, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

Step: 5

[(6, 0), (1, 1), (7, 2), (5, 3), (3, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

$[(7, 0), (0, 1), (7, 2), (7, 3), (3, 4), (7, 5), (4, 6), (0, 7)]$
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	Q	*	Q	*	*

Step: 2

$[(6, 0), (0, 1), (7, 2), (7, 3), (3, 4), (7, 5), (4, 6), (0, 7)]$
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	Q	*	*

Step: 3

$[(6, 0), (0, 1), (7, 2), (1, 3), (3, 4), (7, 5), (4, 6), (0, 7)]$
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 4

$[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (7, 5), (4, 6), (0, 7)]$
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 5

$[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (7, 5), (5, 6), (0, 7)]$
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 6

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (7, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|*|Q| | |
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 7

[(6, 0), (2, 1), (3, 2), (1, 3), (4, 4), (7, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 8

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (7, 5), (5, 6), (0, 7)]

```

|*|*|*|*|*|*|Q| |
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 9

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

```

|*|*|*|*|*|*|*| |
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|Q|*|*|

Success:

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(5, 0), (6, 1), (6, 2), (6, 3), (2, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (6, 1), (1, 2), (6, 3), (2, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (6, 1), (1, 2), (6, 3), (0, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|Q|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(5, 0), (6, 1), (1, 2), (7, 3), (0, 4), (3, 5), (0, 6), (2, 7)]

```
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (7, 1), (7, 2), (4, 3), (7, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (7, 2), (4, 3), (7, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (7, 2), (0, 3), (7, 4), (3, 5), (2, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (7, 2), (0, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```



```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 5

```
[(1, 0), (5, 1), (7, 2), (2, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
```

```
|*|*|*|*|*|*|Q| |
|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (3, 1), (5, 2), (1, 3), (1, 4), (4, 5), (4, 6), (4, 7)]
```

```
|*|*|*|*|*|*|*| |
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|Q|Q|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (5, 2), (1, 3), (1, 4), (4, 5), (4, 6), (4, 7)]
```

```
|Q|*|*|*|*|*|*| |
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (3, 1), (5, 2), (1, 3), (1, 4), (4, 5), (2, 6), (4, 7)]
```

```
|Q|*|*|*|*|*|*| |
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 4

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(0, 0), (5, 1), (5, 2), (7, 3), (3, 4), (4, 5), (3, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(0, 0), (5, 1), (5, 2), (7, 3), (3, 4), (4, 5), (3, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

```
[(0, 0), (5, 1), (5, 2), (7, 3), (6, 4), (4, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (5, 2), (7, 3), (6, 4), (4, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (7, 1), (1, 2), (3, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (4, 2), (3, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (4, 2), (7, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	Q	*	Q	*	*	*	*	*

Step: 4

[(3, 0), (1, 1), (4, 2), (7, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (6, 1), (1, 2), (1, 3), (2, 4), (6, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*	*

Step: 2

[(7, 0), (6, 1), (1, 2), (1, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*	
*	*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*	*

Step: 3

[(7, 0), (6, 1), (1, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 4

[(0, 0), (6, 1), (1, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
Q	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	

Search Failed

Initial:

[(5, 0), (4, 1), (5, 2), (0, 3), (7, 4), (3, 5), (4, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 2

[(5, 0), (1, 1), (5, 2), (0, 3), (7, 4), (3, 5), (4, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (1, 1), (4, 2), (0, 3), (7, 4), (3, 5), (4, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 4

[(5, 0), (1, 1), (4, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(0, 0), (1, 1), (1, 2), (1, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	Q	Q	Q	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (1, 1), (6, 2), (1, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	Q	*	Q	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (2, 1), (6, 2), (1, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(0, 0), (2, 1), (6, 2), (3, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

```
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(0, 0), (2, 1), (6, 2), (3, 3), (7, 4), (4, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (4, 2), (2, 3), (4, 4), (7, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (6, 1), (4, 2), (2, 3), (4, 4), (7, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (4, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

```
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(5, 0), (6, 1), (6, 2), (5, 3), (5, 4), (0, 5), (2, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (6, 1), (6, 2), (3, 3), (5, 4), (0, 5), (2, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (6, 2), (3, 3), (5, 4), (0, 5), (2, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
```


|*|*|*|*|*|*|*|*|

Step: 4

[(1, 0), (6, 1), (6, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 5

[(1, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 6

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Search Failed

Initial:

[(4, 0), (4, 1), (7, 2), (6, 3), (3, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 2

[(4, 0), (4, 1), (7, 2), (5, 3), (3, 4), (3, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(4, 0), (4, 1), (7, 2), (5, 3), (3, 4), (6, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (1, 1), (7, 2), (5, 3), (3, 4), (6, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (0, 1), (1, 2), (2, 3), (5, 4), (6, 5), (7, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(4, 0), (0, 1), (5, 2), (2, 3), (5, 4), (6, 5), (7, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(4, 0), (0, 1), (5, 2), (2, 3), (2, 4), (6, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(4, 0), (0, 1), (5, 2), (2, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(4, 0), (0, 1), (5, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (4, 1), (2, 2), (3, 3), (6, 4), (4, 5), (3, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 2

[(0, 0), (4, 1), (2, 2), (3, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(0, 0), (4, 1), (5, 2), (3, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(0, 0), (7, 1), (5, 2), (3, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 5

[(0, 0), (7, 1), (5, 2), (1, 3), (6, 4), (4, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Search Failed

Initial:

```

[(0, 0), (6, 1), (1, 2), (0, 3), (5, 4), (4, 5), (2, 6), (3, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (6, 1), (1, 2), (0, 3), (5, 4), (7, 5), (2, 6), (3, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(4, 0), (6, 1), (1, 2), (0, 3), (5, 4), (7, 5), (2, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Search Failed

Initial:

```

[(0, 0), (6, 1), (4, 2), (6, 3), (1, 4), (1, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (6, 1), (4, 2), (6, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(0, 0), (6, 1), (3, 2), (6, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(0, 0), (6, 1), (3, 2), (5, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(3, 0), (7, 1), (4, 2), (2, 3), (7, 4), (6, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (4, 2), (2, 3), (1, 4), (6, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (4, 2), (2, 3), (1, 4), (6, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (7, 1), (7, 2), (0, 3), (5, 4), (0, 5), (2, 6), (3, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*

Step: 2

[(3, 0), (7, 1), (7, 2), (0, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (4, 2), (0, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 4

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (5, 1), (6, 2), (4, 3), (7, 4), (5, 5), (7, 6), (7, 7)]

*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q	

Step: 2

[(1, 0), (5, 1), (6, 2), (4, 3), (7, 4), (5, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	

Step: 3

[(1, 0), (5, 1), (6, 2), (4, 3), (7, 4), (0, 5), (3, 6), (7, 7)]

*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	

Step: 4

[(2, 0), (5, 1), (6, 2), (4, 3), (7, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|


```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Step: 5

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Search Failed

Initial:

```
[(1, 0), (0, 1), (7, 2), (0, 3), (2, 4), (6, 5), (1, 6), (5, 7)]
|*|Q|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (0, 1), (7, 2), (0, 3), (2, 4), (6, 5), (1, 6), (5, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (0, 1), (7, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (6, 1), (3, 2), (3, 3), (1, 4), (7, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(3, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Step: 4

[(3, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Success:

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Hill Climbing Search Analysis

Initial:

[(2, 0), (5, 1), (3, 2), (1, 3), (3, 4), (6, 5), (2, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (5, 1), (3, 2), (1, 3), (3, 4), (6, 5), (2, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (6, 5), (2, 6), (7, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(2, 0), (5, 1), (3, 2), (1, 3), (3, 4), (6, 5), (2, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (6, 5), (2, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(7, 0), (7, 1), (0, 2), (2, 3), (4, 4), (4, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (7, 1), (0, 2), (2, 3), (4, 4), (5, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (7, 1), (0, 2), (2, 3), (4, 4), (5, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (5, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 5

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (5, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (4, 1), (1, 2), (1, 3), (5, 4), (3, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(6, 0), (4, 1), (1, 2), (1, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(6, 0), (4, 1), (1, 2), (0, 3), (6, 4), (3, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (2, 1), (4, 2), (6, 3), (7, 4), (7, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 2

[(5, 0), (2, 1), (4, 2), (6, 3), (7, 4), (7, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 3

[(5, 0), (2, 1), (4, 2), (6, 3), (3, 4), (7, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (2, 1), (4, 2), (6, 3), (3, 4), (7, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 6

```
[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(0, 0), (7, 1), (5, 2), (7, 3), (5, 4), (4, 5), (7, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|Q|*|
```

Step: 2

```
[(0, 0), (7, 1), (5, 2), (7, 3), (1, 4), (4, 5), (7, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|Q|*|
```

Step: 3

```
[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (7, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```



```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 4

```
[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (7, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

Step: 5

```
[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (7, 1), (6, 2), (3, 3), (3, 4), (3, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|Q|*|
```

Step: 2

```
[(7, 0), (7, 1), (6, 2), (3, 3), (3, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

|Q|Q|*|*|*|*|Q|*|

Step: 3

[(2, 0), (7, 1), (6, 2), (3, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

Step: 4

[(2, 0), (4, 1), (6, 2), (3, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(3, 0), (7, 1), (0, 2), (5, 3), (6, 4), (5, 5), (6, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 2

[(3, 0), (7, 1), (0, 2), (2, 3), (6, 4), (5, 5), (6, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 3

[(3, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (6, 6), (0, 7)]

```

|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Success:

```

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (0, 1), (0, 2), (5, 3), (0, 4), (7, 5), (2, 6), (5, 7)]
|Q|Q|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(0, 0), (0, 1), (3, 2), (5, 3), (0, 4), (7, 5), (2, 6), (5, 7)]
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(0, 0), (0, 1), (3, 2), (6, 3), (0, 4), (7, 5), (2, 6), (5, 7)]
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(0, 0), (0, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (5, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(4, 0), (0, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(4, 0), (0, 1), (3, 2), (6, 3), (1, 4), (7, 5), (2, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|Q|*|Q|

Step: 7

[(4, 0), (0, 1), (5, 2), (6, 3), (1, 4), (7, 5), (2, 6), (7, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

Step: 8

[(4, 0), (0, 1), (5, 2), (6, 3), (1, 4), (6, 5), (2, 6), (7, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 9

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (7, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 10

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 11

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Success:

[(4, 0), (0, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (3, 1), (0, 2), (3, 3), (7, 4), (0, 5), (7, 6), (2, 7)]

*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 2

[(1, 0), (6, 1), (0, 2), (3, 3), (7, 4), (0, 5), (7, 6), (2, 7)]

*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 3

[(1, 0), (6, 1), (0, 2), (3, 3), (7, 4), (5, 5), (7, 6), (2, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 4

```
[(1, 0), (6, 1), (0, 2), (3, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (3, 1), (0, 2), (3, 3), (7, 4), (0, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 2

```
[(1, 0), (3, 1), (0, 2), (3, 3), (7, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 3

```
[(1, 0), (3, 1), (0, 2), (0, 3), (7, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

Step: 4

[(1, 0), (3, 1), (0, 2), (0, 3), (7, 4), (5, 5), (6, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 5

[(1, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 6

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 7

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 8

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]


```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 9

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 11

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(6, 0), (3, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 14

[(6, 0), (2, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 15

[(6, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 16

[(6, 0), (2, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 17

[(6, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 18

[(6, 0), (2, 1), (0, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 19

[(6, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 20

[(4, 0), (2, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (7, 1), (0, 2), (4, 3), (1, 4), (0, 5), (4, 6), (1, 7)]
```

```
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (7, 1), (2, 2), (4, 3), (1, 4), (0, 5), (4, 6), (1, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (5, 1), (2, 2), (4, 3), (1, 4), (0, 5), (4, 6), (1, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (4, 6), (1, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(6, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (3, 1), (6, 2), (3, 3), (7, 4), (2, 5), (6, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 2

[(5, 0), (3, 1), (6, 2), (3, 3), (7, 4), (2, 5), (6, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (3, 1), (6, 2), (3, 3), (7, 4), (2, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 4

[(5, 0), (3, 1), (6, 2), (3, 3), (7, 4), (2, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*	

Step: 5

[(5, 0), (0, 1), (6, 2), (3, 3), (7, 4), (2, 5), (7, 6), (2, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*	

Step: 6

[(5, 0), (0, 1), (6, 2), (3, 3), (7, 4), (2, 5), (4, 6), (2, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(1, 0), (6, 1), (4, 2), (6, 3), (3, 4), (2, 5), (3, 6), (5, 7)]

*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	

Step: 2

[(1, 0), (6, 1), (4, 2), (6, 3), (0, 4), (2, 5), (3, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|*|

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (2, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (5, 2), (5, 3), (6, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|Q|Q|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (5, 2), (1, 3), (6, 4), (6, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (5, 2), (1, 3), (6, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (5, 1), (3, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (6, 1), (2, 2), (0, 3), (1, 4), (3, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

|*|*|*|*|*|*|Q|*|

Step: 2

[(6, 0), (6, 1), (2, 2), (0, 3), (1, 4), (3, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(0, 0), (6, 1), (6, 2), (6, 3), (1, 4), (3, 5), (4, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(0, 0), (2, 1), (6, 2), (6, 3), (1, 4), (3, 5), (4, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(0, 0), (2, 1), (6, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

```

[(0, 0), (7, 1), (5, 2), (5, 3), (4, 4), (1, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (7, 1), (5, 2), (5, 3), (4, 4), (1, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (2, 1), (5, 2), (5, 3), (4, 4), (1, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (2, 1), (5, 2), (7, 3), (4, 4), (1, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(2, 0), (7, 1), (6, 2), (2, 3), (4, 4), (2, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|Q|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (7, 1), (6, 2), (2, 3), (4, 4), (6, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (7, 1), (5, 2), (2, 3), (4, 4), (6, 5), (3, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(2, 0), (7, 1), (5, 2), (2, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(2, 0), (7, 1), (5, 2), (1, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (2, 1), (6, 2), (2, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (6, 2), (2, 3), (5, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(5, 0), (3, 1), (6, 2), (2, 3), (5, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 5

```
[(5, 0), (3, 1), (6, 2), (2, 3), (7, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (3, 2), (2, 3), (7, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (7, 2), (2, 3), (7, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (5, 1), (4, 2), (2, 3), (6, 4), (4, 5), (7, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(4, 0), (5, 1), (4, 2), (2, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(4, 0), (5, 1), (0, 2), (2, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (4, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (3, 5), (4, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (1, 5), (4, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (2, 2), (7, 3), (2, 4), (0, 5), (2, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(6, 0), (1, 1), (2, 2), (7, 3), (2, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

|*|*|*|Q|*|*|*|*|

Step: 3

[(6, 0), (1, 1), (2, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(6, 0), (1, 1), (7, 2), (7, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

Search Failed

Initial:

[(0, 0), (2, 1), (0, 2), (4, 3), (0, 4), (6, 5), (0, 6), (4, 7)]

|Q|*|Q|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (2, 1), (0, 2), (4, 3), (0, 4), (6, 5), (0, 6), (4, 7)]

|*|*|Q|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (6, 5), (0, 6), (4, 7)]


```
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Step: 6

```
[(5, 0), (2, 1), (0, 2), (6, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(0, 0), (0, 1), (1, 2), (1, 3), (7, 4), (7, 5), (2, 6), (4, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 2

```
[(0, 0), (0, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (4, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 3

```
[(6, 0), (0, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 4

```
[(6, 0), (0, 1), (3, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (3, 2), (1, 3), (3, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

Step: 2

[(5, 0), (1, 1), (3, 2), (1, 3), (3, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 3

[(5, 0), (1, 1), (3, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (1, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(6, 0), (6, 1), (0, 2), (1, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 2

```

[(3, 0), (6, 1), (0, 2), (1, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 3

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(3, 0), (6, 1), (0, 2), (2, 3), (6, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|

```

Step: 7

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 8

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 9

```

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|

Step: 10

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 11

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 12

[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 13

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

Success:

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (4, 1), (4, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (7, 2), (5, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(6, 0), (2, 1), (7, 2), (5, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (4, 1), (4, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (4, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```


|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

Step: 4

[(2, 0), (7, 1), (7, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*

Step: 5

[(2, 0), (7, 1), (1, 2), (3, 3), (0, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 6

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 7

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 8

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 9

```

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 10

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 13

[(2, 0), (7, 1), (5, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 14

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 15

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 16

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 17

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 18

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 19

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 20

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 21

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 22

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 23

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 24

```

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 25

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

Step: 26

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 27

[(2, 0), (6, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 28

[(2, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 29

[(2, 0), (6, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 30

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 31

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 32

```

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 33

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 34

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 35

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 36

[(2, 0), (7, 1), (1, 2), (4, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 37

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 38

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 39

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 40

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 41

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 42

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 43

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 44

```

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 45

```

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 47

```

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

Step: 48

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 49

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 50

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 51

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 52

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 53

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 54

```

[(2, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 55

```

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|

```

Step: 56

```

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 57

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 58

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 59

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 60

[(7, 0), (2, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Step: 61

[(7, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 62

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 63

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 64

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 65

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (7, 7)]

|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 66

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Success:

[(3, 0), (0, 1), (4, 2), (7, 3), (5, 4), (2, 5), (6, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(1, 0), (4, 1), (0, 2), (2, 3), (5, 4), (6, 5), (3, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (0, 2), (2, 3), (5, 4), (7, 5), (3, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(1, 0), (4, 1), (0, 2), (2, 3), (5, 4), (7, 5), (6, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (1, 1), (1, 2), (7, 3), (2, 4), (4, 5), (2, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (1, 1), (1, 2), (7, 3), (2, 4), (4, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (1, 1), (3, 2), (7, 3), (2, 4), (4, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (4, 5), (3, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (4, 5), (4, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(2, 0), (6, 1), (2, 2), (0, 3), (5, 4), (1, 5), (4, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Search Failed

Initial:

[(3, 0), (3, 1), (7, 2), (3, 3), (3, 4), (5, 5), (1, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|Q|Q|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 2

[(3, 0), (3, 1), (7, 2), (0, 3), (3, 4), (5, 5), (1, 6), (2, 7)]

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (3, 1), (7, 2), (0, 3), (3, 4), (5, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (3, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(6, 0), (3, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 6

```
[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (4, 1), (2, 2), (6, 3), (7, 4), (0, 5), (0, 6), (7, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Step: 2

```
[(4, 0), (2, 1), (2, 2), (6, 3), (7, 4), (0, 5), (0, 6), (7, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Step: 3

```
[(4, 0), (2, 1), (2, 2), (6, 3), (7, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (2, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|*|*|*|

Step: 5

[(4, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 6

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]

|*|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(2, 0), (0, 1), (5, 2), (7, 3), (3, 4), (6, 5), (0, 6), (2, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

Step: 2

[(2, 0), (0, 1), (5, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

Search Failed

Initial:

```

[(2, 0), (4, 1), (2, 2), (6, 3), (7, 4), (3, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 2

```

[(2, 0), (4, 1), (2, 2), (0, 3), (7, 4), (3, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```

[(2, 0), (4, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Search Failed

Initial:

```

[(2, 0), (3, 1), (6, 2), (7, 3), (7, 4), (1, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|

```

Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	Q	Q	*	*	*

Step: 2

[(2, 0), (3, 1), (6, 2), (4, 3), (7, 4), (1, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 3

[(2, 0), (3, 1), (6, 2), (4, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(7, 0), (6, 1), (7, 2), (0, 3), (4, 4), (2, 5), (7, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
Q	*	Q	*	*	*	Q	*

Step: 2

[(7, 0), (5, 1), (7, 2), (0, 3), (4, 4), (2, 5), (7, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	Q	*

Step: 3

[(3, 0), (5, 1), (7, 2), (0, 3), (4, 4), (2, 5), (7, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	Q	*

Step: 4

[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (2, 5), (7, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	Q	*

Step: 5

[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (6, 1), (3, 2), (6, 3), (3, 4), (0, 5), (7, 6), (6, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	Q	*	*	*	Q	
Q	*	*	*	*	*	Q	*	

Step: 2

[(7, 0), (6, 1), (3, 2), (6, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*	

Step: 3

[(7, 0), (1, 1), (3, 2), (6, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*	

Step: 4

[(7, 0), (1, 1), (4, 2), (6, 3), (3, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*	

Step: 5

[(7, 0), (1, 1), (4, 2), (6, 3), (3, 4), (0, 5), (2, 6), (5, 7)]

*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	

Search Failed

Initial:

[(4, 0), (7, 1), (0, 2), (1, 3), (7, 4), (6, 5), (3, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|


```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|Q|*|*|Q|
```

Step: 2

```
[(4, 0), (7, 1), (0, 2), (2, 3), (7, 4), (6, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|Q|*|*|Q|
```

Step: 3

```
[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (6, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(7, 0), (1, 1), (0, 2), (0, 3), (1, 4), (5, 5), (7, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
```

Step: 2

```
[(7, 0), (3, 1), (0, 2), (0, 3), (1, 4), (5, 5), (7, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|Q|*|
```

Step: 3

```
[(7, 0), (3, 1), (0, 2), (0, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (0, 1), (4, 2), (3, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (0, 1), (6, 2), (3, 3), (3, 4), (1, 5), (0, 6), (4, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (0, 1), (6, 2), (3, 3), (3, 4), (1, 5), (7, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 4

[(5, 0), (0, 1), (6, 2), (1, 3), (3, 4), (1, 5), (7, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

[(3, 0), (3, 1), (2, 2), (5, 3), (6, 4), (4, 5), (2, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(3, 0), (0, 1), (2, 2), (5, 3), (6, 4), (4, 5), (2, 6), (7, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (0, 1), (2, 2), (5, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(6, 0), (3, 1), (4, 2), (2, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (4, 2), (2, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (4, 2), (2, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Success:

```
[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (1, 1), (3, 2), (4, 3), (4, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (1, 1), (3, 2), (4, 3), (7, 4), (5, 5), (2, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 3

[(4, 0), (1, 1), (3, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (1, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 5

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 6

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 7

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (0, 6), (2, 7)]

```

|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(4, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(4, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(4, 0), (6, 1), (3, 2), (5, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 12

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(4, 0), (6, 1), (3, 2), (5, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 14

[(4, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 15

[(4, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(0, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (6, 1), (6, 2), (6, 3), (4, 4), (4, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (6, 1), (6, 2), (6, 3), (4, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(1, 0), (6, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(1, 0), (6, 1), (6, 2), (6, 3), (4, 4), (4, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (6, 1), (6, 2), (6, 3), (4, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(1, 0), (6, 1), (2, 2), (6, 3), (4, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(1, 0), (6, 1), (2, 2), (6, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (3, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 9

```

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|

Step: 10

[(1, 0), (6, 1), (2, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 11

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 12

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 13

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 14

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 15

```

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 16

```

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 17

```

[(1, 0), (6, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 18

```

[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(1, 0), (6, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 20

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 21

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 22

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 23

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 24

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 25

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 26

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 27

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 28

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 29

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 30

[(1, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 31

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

|*|*|*|*|*|*|Q|*|

Step: 32

[(5, 0), (0, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 33

[(5, 0), (0, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 34

[(5, 0), (0, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 35

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 36

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 37

```

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 38

```

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 39

```

[(5, 0), (0, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 40

```

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 41

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 42

[(5, 0), (7, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 43

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 44

[(5, 0), (7, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 45

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 46

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 47

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 48

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 49

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 50

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(7, 0), (0, 1), (0, 2), (0, 3), (2, 4), (6, 5), (1, 6), (0, 7)]
*	Q	Q	Q	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (0, 1), (0, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	Q	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (0, 1), (0, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (0, 1), (2, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (3, 1), (5, 2), (3, 3), (7, 4), (3, 5), (1, 6), (7, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 2

[(1, 0), (3, 1), (5, 2), (2, 3), (7, 4), (3, 5), (1, 6), (7, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 3

```

[(1, 0), (3, 1), (5, 2), (2, 3), (7, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 4

```

[(1, 0), (3, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Search Failed

Initial:

```

[(7, 0), (6, 1), (2, 2), (2, 3), (7, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|Q|*|*|

```

Step: 2

```

[(1, 0), (6, 1), (2, 2), (2, 3), (7, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 3

```

[(1, 0), (6, 1), (2, 2), (2, 3), (7, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Search Failed

Initial:

```
[(1, 0), (6, 1), (6, 2), (6, 3), (0, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(1, 0), (6, 1), (4, 2), (6, 3), (0, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(5, 0), (7, 1), (3, 2), (4, 3), (4, 4), (7, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 2

```
[(5, 0), (7, 1), (3, 2), (4, 3), (0, 4), (7, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```


*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*

Step: 3

[(5, 0), (7, 1), (1, 2), (4, 3), (0, 4), (7, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*

Step: 4

[(5, 0), (7, 1), (1, 2), (4, 3), (0, 4), (7, 5), (6, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*

Step: 5

[(5, 0), (7, 1), (1, 2), (4, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (6, 2), (6, 3), (0, 4), (1, 5), (7, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	Q

|*|Q|*|*|*|*|Q|*|

Step: 2

[(1, 0), (7, 1), (6, 2), (6, 3), (0, 4), (1, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 3

[(1, 0), (7, 1), (5, 2), (6, 3), (0, 4), (1, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 4

[(1, 0), (7, 1), (5, 2), (0, 3), (0, 4), (1, 5), (4, 6), (6, 7)]

|*|*|*|Q|Q|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 5

[(2, 0), (7, 1), (5, 2), (0, 3), (0, 4), (1, 5), (4, 6), (6, 7)]

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

Step: 6

[(2, 0), (7, 1), (5, 2), (0, 3), (5, 4), (1, 5), (4, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (5, 1), (5, 2), (6, 3), (2, 4), (7, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(0, 0), (5, 1), (5, 2), (6, 3), (2, 4), (7, 5), (0, 6), (3, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(0, 0), (5, 1), (1, 2), (6, 3), (2, 4), (7, 5), (0, 6), (3, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(0, 0), (5, 1), (1, 2), (6, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (7, 1), (7, 2), (6, 3), (3, 4), (3, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (2, 1), (7, 2), (6, 3), (3, 4), (3, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (2, 1), (4, 2), (6, 3), (3, 4), (3, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (2, 1), (4, 2), (6, 3), (3, 4), (0, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
```

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(7, 0), (5, 1), (4, 2), (2, 3), (6, 4), (5, 5), (5, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|Q|Q|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (5, 1), (4, 2), (2, 3), (6, 4), (5, 5), (3, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (5, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (2, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

```

[(7, 0), (6, 1), (1, 2), (5, 3), (3, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|

```

Step: 2

```

[(7, 0), (6, 1), (1, 2), (5, 3), (2, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|

```

Step: 3

```

[(4, 0), (6, 1), (1, 2), (5, 3), (2, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(4, 0), (6, 1), (1, 2), (5, 3), (2, 4), (5, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Success:

```

[(4, 0), (6, 1), (1, 2), (5, 3), (2, 4), (0, 5), (3, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (6, 1), (0, 2), (1, 3), (2, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 2

```
[(1, 0), (6, 1), (0, 2), (5, 3), (2, 4), (7, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(1, 0), (6, 1), (0, 2), (5, 3), (2, 4), (4, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(1, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 5

[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 7

[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 8

[(3, 0), (6, 1), (0, 2), (5, 3), (1, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 9

[(3, 0), (6, 1), (0, 2), (5, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 10

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Success:

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (6, 1), (2, 2), (3, 3), (4, 4), (0, 5), (7, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(2, 0), (6, 1), (1, 2), (3, 3), (4, 4), (0, 5), (7, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (6, 1), (1, 2), (3, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (6, 1), (2, 2), (3, 3), (4, 4), (0, 5), (7, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (6, 1), (1, 2), (3, 3), (4, 4), (0, 5), (7, 6), (2, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (6, 1), (1, 2), (3, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 6

```
[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 7

```
[(2, 0), (6, 1), (1, 2), (3, 3), (0, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 8

```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 9

```

[(2, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 10

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 16

[(2, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|

Step: 17

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

Step: 18

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 19

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

Step: 20

[(2, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 21

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 22

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 23

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 24

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 25

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 26

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 27

[(2, 0), (7, 1), (5, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 28

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 29

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 30


```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 31

```

[(2, 0), (7, 1), (5, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 32

```

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 33

```

[(2, 0), (7, 1), (5, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 34

```

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 35

```

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 36

```

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (6, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 37

```

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 38

```

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|*|Q|*|*|*|*|*|

Step: 39

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Step: 40

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (6, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|Q|*|*|*|*|*|

Step: 41

[(2, 0), (7, 1), (5, 2), (3, 3), (1, 4), (0, 5), (4, 6), (6, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

Step: 42

[(2, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

Step: 43

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|Q|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 44

```

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 45

```

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 47

```

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (7, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*

Step: 48

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 49

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 50

[(1, 0), (7, 1), (5, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 51

[(1, 0), (6, 1), (5, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 52

```

[(1, 0), (6, 1), (6, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 53

```

[(1, 0), (6, 1), (5, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 54

```

[(1, 0), (6, 1), (6, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 55

```

[(1, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(1, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(5, 0), (1, 1), (0, 2), (5, 3), (6, 4), (1, 5), (0, 6), (7, 7)]
|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(5, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (0, 6), (7, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (2, 1), (0, 2), (5, 3), (6, 4), (1, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(2, 0), (6, 1), (6, 2), (0, 3), (6, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	Q	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 2

[(2, 0), (6, 1), (6, 2), (0, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	Q	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 3

[(2, 0), (6, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Step: 4

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(0, 0), (5, 1), (0, 2), (0, 3), (3, 4), (0, 5), (7, 6), (6, 7)]

Q	*	Q	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*

Step: 2

[(0, 0), (5, 1), (0, 2), (1, 3), (3, 4), (0, 5), (7, 6), (6, 7)]

Q	*	Q	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*

Step: 3

[(0, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (7, 6), (6, 7)]

Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	Q	*

Step: 4

[(0, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (6, 7)]

Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 5

[(0, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (3, 1), (6, 2), (4, 3), (2, 4), (4, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (3, 1), (6, 2), (0, 3), (2, 4), (4, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (6, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (3, 1), (3, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (2, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (1, 5), (4, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(3, 0), (3, 1), (6, 2), (4, 3), (1, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (4, 2), (5, 3), (3, 4), (4, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (4, 2), (5, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (4, 2), (0, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (4, 2), (0, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(5, 0), (7, 1), (4, 2), (0, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (2, 1), (4, 2), (6, 3), (6, 4), (5, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 2

```
[(3, 0), (2, 1), (4, 2), (6, 3), (0, 4), (5, 5), (7, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 3

```
[(3, 0), (2, 1), (4, 2), (6, 3), (0, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(5, 0), (2, 1), (4, 2), (6, 3), (0, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Success:

[(5, 0), (2, 1), (4, 2), (6, 3), (0, 4), (3, 5), (1, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	Q

Step: 2

[(7, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*

Step: 3

[(7, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q

|Q|*|Q|*|*|*|*|

Step: 4

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 5

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 6

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 7

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

Step: 8

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 10

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 11

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 12

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```


*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 13

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 14

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 15

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 16

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 17

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 18

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 19

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 20

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 21

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 22

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 23

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 24

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 25

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|Q|*|*|*|*|*|

Step: 26

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 27

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 28

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 29

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 30

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 31

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 32

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 33

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 34

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 35

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 36

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 37

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 38

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 39

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 40

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 41

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 42

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 43

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 44

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 45

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 46

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 47

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```


|*|*|Q|*|*|*|*|*|

Step: 48

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 49

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 50

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 51

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 52

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 53

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 54

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 55

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 56

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 57

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 58

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 59

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 60

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 61

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 62

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 63

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 64

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 65

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 66

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 67

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 68

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 69

```
[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|Q|*|*|*|*|*|

Step: 70

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 71

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 72

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 73

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 74

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 75

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 76

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 77

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 78

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 79

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 80

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 81

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 82

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 83


```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 84

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 85

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 86

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 87

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 88

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 89

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 90

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 91

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|Q|*|*|*|*|*|

Step: 92

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 93

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 94

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 95

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

Step: 96

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 97

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 98

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 99

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 100

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 101

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 102

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 103

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 104

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (2, 2), (4, 3), (4, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (2, 2), (4, 3), (7, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (0, 1), (2, 2), (4, 3), (7, 4), (6, 5), (4, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(5, 0), (0, 1), (2, 2), (3, 3), (7, 4), (6, 5), (4, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(1, 0), (2, 1), (5, 2), (6, 3), (1, 4), (0, 5), (3, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (2, 1), (5, 2), (6, 3), (2, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (7, 1), (5, 2), (6, 3), (2, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (6, 2), (0, 3), (4, 4), (7, 5), (0, 6), (0, 7)]
*	Q	*	Q	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 2

[(7, 0), (0, 1), (6, 2), (0, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	Q	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 3

[(7, 0), (0, 1), (6, 2), (1, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 4

[(7, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 5

[(7, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (3, 2), (5, 3), (3, 4), (2, 5), (7, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
Q	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(3, 0), (2, 1), (0, 2), (5, 3), (3, 4), (2, 5), (7, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(3, 0), (5, 1), (0, 2), (5, 3), (3, 4), (2, 5), (7, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(3, 0), (5, 1), (0, 2), (6, 3), (3, 4), (2, 5), (7, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(5, 0), (5, 1), (0, 2), (6, 3), (3, 4), (2, 5), (7, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(4, 0), (6, 1), (4, 2), (4, 3), (3, 4), (0, 5), (1, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (4, 2), (4, 3), (3, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (6, 1), (4, 2), (7, 3), (3, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(2, 0), (6, 1), (4, 2), (7, 3), (3, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(2, 0), (6, 1), (4, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (1, 1), (3, 2), (0, 3), (1, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (3, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 4

[(7, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (5, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(3, 0), (0, 1), (3, 2), (1, 3), (4, 4), (0, 5), (7, 6), (1, 7)]

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

[(3, 0), (0, 1), (7, 2), (1, 3), (4, 4), (0, 5), (7, 6), (1, 7)]

|*|Q|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

Step: 3

[(3, 0), (0, 1), (7, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]

*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 4

[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 5

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*

Success:

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (7, 5), (0, 6), (0, 7)]
*	*	*	*	Q	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (7, 5), (0, 6), (0, 7)]
|*|*|*|*|Q|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	Q	*	*

Step: 3

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 6

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 7

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|Q|

```

Step: 8

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 10

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```



```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 12

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 13

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 14

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
```

Step: 15

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
```

|*|Q|*|*|*|*|*|

Step: 16

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 17

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 18

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

Step: 19

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 20

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 21

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 22

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 23

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 24

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 25

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 26

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 27

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 28

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 29

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 30

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 31

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 32

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 33

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 34

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

```

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 35

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

```

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 36

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

```

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 37

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

```

|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*|Q|

Step: 38

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 39

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 40

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 41

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

Step: 42

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 43

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 44

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 45

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```


*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 47

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 48

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 49

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 50

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 51

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 52

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 53

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 54

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 55

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 56

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 57

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 58

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 59

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*

|*|Q|*|*|*|*|*|

Step: 60

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 61

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|Q|

Step: 62

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 63

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 64

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 65

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 66

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 67

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 68

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 69

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 70

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 71

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 72

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 73

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 74

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 75

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 76

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 77

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 78

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 79

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 80

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 81

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*

|*|Q|*|*|*|*|*|

Step: 82

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 83

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 84

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|

Step: 85

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 86

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]

|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 87

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 88

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 89

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 90

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 91

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 92

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 93

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q	

Step: 94

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 95

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 96

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 97

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 98

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 99

```

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q

Step: 100

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 101

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	Q

Step: 102

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 103

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (5, 7)]
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	*

|*|Q|*|*|*|*|*|

Step: 104

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Search Failed

Random Restart Hill Climbing Search

Initial:

[(3, 0), (4, 1), (3, 2), (4, 3), (5, 4), (0, 5), (3, 6), (2, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|Q|*|Q|*|*|*|Q|*

|*|Q|*|Q|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 2

[(3, 0), (4, 1), (6, 2), (4, 3), (5, 4), (0, 5), (3, 6), (2, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|Q|*

|*|Q|*|Q|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (1, 1), (6, 2), (4, 3), (5, 4), (0, 5), (3, 6), (2, 7)]

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|Q|*

|*|*|*|Q|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

Step: 4

```
[(3, 0), (1, 1), (6, 2), (4, 3), (5, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(3, 0), (1, 1), (6, 2), (4, 3), (2, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (6, 1), (6, 2), (7, 3), (6, 4), (1, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|Q|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(1, 0), (6, 1), (2, 2), (7, 3), (6, 4), (1, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (2, 2), (7, 3), (6, 4), (1, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*

Step: 4

[(1, 0), (4, 1), (2, 2), (7, 3), (6, 4), (1, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (6, 1), (7, 2), (4, 3), (0, 4), (7, 5), (3, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 2

[(5, 0), (6, 1), (1, 2), (4, 3), (0, 4), (7, 5), (3, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(5, 0), (5, 1), (1, 2), (4, 3), (0, 4), (7, 5), (3, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*


```
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (3, 2), (0, 3), (2, 4), (5, 5), (5, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (3, 1), (3, 2), (0, 3), (2, 4), (5, 5), (5, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (3, 2), (0, 3), (2, 4), (5, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (4, 2), (5, 3), (7, 4), (6, 5), (5, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
```

|*|*|*|*|Q|*|*|*|

Step: 2

[(6, 0), (1, 1), (4, 2), (5, 3), (7, 4), (0, 5), (5, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|Q|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(6, 0), (1, 1), (4, 2), (5, 3), (7, 4), (0, 5), (5, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(6, 0), (1, 1), (4, 2), (5, 3), (7, 4), (0, 5), (3, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 5

[(6, 0), (1, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(3, 0), (3, 1), (1, 2), (1, 3), (3, 4), (2, 5), (6, 6), (6, 7)]

```
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (1, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (1, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (0, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(6, 0), (1, 1), (5, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (1, 1), (5, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(5, 0), (1, 1), (1, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(5, 0), (1, 1), (1, 2), (4, 3), (6, 4), (3, 5), (0, 6), (2, 7)]
|*|*|*|*|*|Q|*| |
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (7, 1), (7, 2), (2, 3), (1, 4), (1, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

Step: 2

[(5, 0), (7, 1), (7, 2), (2, 3), (1, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

Step: 3

[(3, 0), (7, 1), (7, 2), (2, 3), (1, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

Step: 4

[(3, 0), (7, 1), (7, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

Step: 5

[(3, 0), (7, 1), (6, 2), (2, 3), (5, 4), (1, 5), (4, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(1, 0), (5, 1), (7, 2), (1, 3), (5, 4), (7, 5), (2, 6), (2, 7)]
|*|*|*|*|*|*|*| |
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 2

```

[(1, 0), (5, 1), (7, 2), (1, 3), (3, 4), (7, 5), (2, 6), (2, 7)]
|*|*|*|*|*|*|*| |
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 3

```

[(1, 0), (5, 1), (7, 2), (1, 3), (3, 4), (7, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*| |
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 4

```

[(1, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (0, 1), (0, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 2

```
[(7, 0), (0, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 3

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 4

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(3, 0), (3, 1), (5, 2), (3, 3), (5, 4), (3, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (3, 1), (5, 2), (3, 3), (5, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (3, 1), (5, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(7, 0), (3, 1), (5, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5


```
[(7, 0), (3, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 6

```
[(7, 0), (3, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (0, 2), (6, 3), (0, 4), (3, 5), (0, 6), (2, 7)]
|*|*|Q|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (0, 2), (6, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (0, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(1, 0), (6, 1), (4, 2), (7, 3), (0, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (3, 1), (1, 2), (5, 3), (1, 4), (0, 5), (3, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (3, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (1, 2), (5, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 6

```
[(2, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 7

```

[(6, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(2, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(6, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 12

```
[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 13

```
[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 14

```
[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 15

```
[(2, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|

Success:

[(2, 0), (0, 1), (6, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Hill Climbing Search Analysis

Initial:

[(4, 0), (2, 1), (6, 2), (3, 3), (0, 4), (6, 5), (2, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(4, 0), (2, 1), (6, 2), (3, 3), (0, 4), (6, 5), (1, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 3

[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (6, 5), (1, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 4

[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (7, 7)]

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (2, 1), (6, 2), (3, 3), (0, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(4, 0), (2, 1), (5, 2), (3, 3), (0, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (7, 2), (3, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(2, 0), (2, 1), (6, 2), (4, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (5, 1), (6, 2), (4, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```



```
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (5, 1), (7, 2), (4, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 4

```
[(2, 0), (5, 1), (7, 2), (4, 3), (6, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(2, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (7, 1), (2, 2), (6, 3), (6, 4), (5, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|Q|
|Q|Q|*|*|*|*|*|*|
```

Step: 2

[(7, 0), (7, 1), (2, 2), (6, 3), (1, 4), (5, 5), (4, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 3

[(7, 0), (7, 1), (2, 2), (6, 3), (1, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	Q	*	*	*	*	*	*

Step: 4

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (3, 2), (4, 3), (1, 4), (1, 5), (7, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*

Step: 2

[(5, 0), (2, 1), (0, 2), (4, 3), (1, 4), (1, 5), (7, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(5, 0), (3, 1), (0, 2), (4, 3), (1, 4), (1, 5), (7, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(5, 0), (3, 1), (0, 2), (4, 3), (1, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(5, 0), (3, 1), (0, 2), (4, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 6

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(7, 0), (0, 1), (4, 2), (1, 3), (3, 4), (0, 5), (2, 6), (7, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q

Step: 2

[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (7, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q

Step: 3

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (7, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Success:

[(3, 0), (6, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (1, 1), (1, 2), (0, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (1, 1), (1, 2), (0, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (1, 1), (7, 2), (0, 3), (5, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(4, 0), (1, 1), (7, 2), (0, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(4, 0), (1, 1), (7, 2), (3, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
```

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (1, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (1, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 8

```

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (0, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 10

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	

Step: 11

[(4, 0), (1, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	

Step: 12

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	Q	*	Q	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	

Step: 13

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*

Success:

```

[(4, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (0, 5), (7, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|

```

Step: 2

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (0, 5), (6, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 3

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (6, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 4

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```



```
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(4, 0), (0, 1), (5, 2), (7, 3), (1, 4), (3, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (0, 5), (7, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|
```

Step: 2

```
[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (0, 5), (6, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 3

```
[(4, 0), (2, 1), (5, 2), (5, 3), (1, 4), (0, 5), (6, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(4, 0), (2, 1), (5, 2), (5, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (2, 1), (7, 2), (5, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 8

[(4, 0), (2, 1), (7, 2), (5, 3), (2, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 9

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 10

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	Q	*	*	*

Step: 11

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 12

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 13

```

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 15

```

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Step: 16

```

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

Step: 17

[(4, 0), (0, 1), (0, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 18

[(4, 0), (0, 1), (7, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*

Step: 19

[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 20

[(4, 0), (0, 1), (7, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*

Step: 21

[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (3, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 22

```
[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (0, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 23

```
[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (6, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (2, 1), (4, 2), (6, 3), (1, 4), (2, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|Q|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (1, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (1, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (1, 2), (2, 3), (0, 4), (3, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (3, 1), (1, 2), (2, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(1, 0), (6, 1), (1, 2), (2, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(0, 0), (7, 1), (6, 2), (4, 3), (1, 4), (5, 5), (7, 6), (3, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	

Step: 2


```

[(0, 0), (7, 1), (6, 2), (4, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 3

```

[(0, 0), (5, 1), (6, 2), (4, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(0, 0), (5, 1), (6, 2), (1, 3), (1, 4), (4, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(2, 0), (4, 1), (6, 2), (5, 3), (1, 4), (0, 5), (2, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (4, 1), (6, 2), (3, 3), (1, 4), (0, 5), (2, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|

```

Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (6, 2), (3, 3), (5, 4), (0, 5), (2, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (4, 1), (6, 2), (3, 3), (5, 4), (0, 5), (7, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(3, 0), (5, 1), (6, 2), (5, 3), (4, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(3, 0), (5, 1), (6, 2), (5, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

*	Q	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(3, 0), (6, 1), (6, 2), (5, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(3, 0), (6, 1), (2, 2), (5, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(6, 0), (3, 1), (1, 2), (0, 3), (4, 4), (6, 5), (0, 6), (7, 7)]
*	*	*	Q	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(5, 0), (3, 1), (1, 2), (0, 3), (4, 4), (6, 5), (0, 6), (7, 7)]
*	*	*	Q	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (7, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q

Success:

[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (1, 1), (1, 2), (6, 3), (6, 4), (5, 5), (2, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (1, 1), (1, 2), (6, 3), (6, 4), (5, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (1, 1), (1, 2), (6, 3), (6, 4), (3, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (1, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(4, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 6

```

[(5, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 7

```

[(5, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

Q	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 8

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 9

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 10

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 11

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 12

```

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 13

```

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 14

```

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 15

```

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 16

```

[(0, 0), (5, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 17

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 18

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 19

[(0, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 20

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

|*|*|Q|*|*|*|Q|*|

Success:

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Hill Climbing Search Analysis

Initial:

[(1, 0), (0, 1), (6, 2), (4, 3), (4, 4), (2, 5), (6, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (0, 1), (6, 2), (4, 3), (7, 4), (2, 5), (6, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(1, 0), (0, 1), (6, 2), (4, 3), (7, 4), (2, 5), (6, 6), (3, 7)]

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(5, 0), (0, 1), (6, 2), (4, 3), (7, 4), (2, 5), (6, 6), (3, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(5, 0), (0, 1), (6, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (0, 1), (6, 2), (4, 3), (4, 4), (2, 5), (6, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (0, 1), (6, 2), (1, 3), (4, 4), (2, 5), (6, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (0, 1), (6, 2), (1, 3), (7, 4), (2, 5), (6, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(5, 0), (0, 1), (6, 2), (1, 3), (7, 4), (2, 5), (6, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(5, 0), (0, 1), (6, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(5, 0), (2, 1), (7, 2), (1, 3), (5, 4), (3, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 2

[(5, 0), (2, 1), (7, 2), (1, 3), (4, 4), (3, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(5, 0), (2, 1), (7, 2), (1, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

Step: 4

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

Success:

[(6, 0), (2, 1), (7, 2), (1, 3), (4, 4), (0, 5), (5, 6), (3, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (4, 1), (3, 2), (7, 3), (0, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(0, 0), (4, 1), (3, 2), (7, 3), (2, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|

```

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 8

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

|*|*|*|Q|*|*|*|*|

Step: 9

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 10

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 11

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 12

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 13

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(0, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(2, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 16

```

[(2, 0), (4, 1), (1, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 17

```

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```


*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Success:

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (3, 1), (7, 2), (0, 3), (7, 4), (1, 5), (1, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(3, 0), (3, 1), (7, 2), (0, 3), (4, 4), (1, 5), (1, 6), (0, 7)]
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (3, 1), (7, 2), (0, 3), (4, 4), (1, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 4

[(2, 0), (3, 1), (7, 2), (0, 3), (4, 4), (1, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (3, 1), (7, 2), (0, 3), (7, 4), (1, 5), (1, 6), (0, 7)]

*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(5, 0), (3, 1), (7, 2), (0, 3), (7, 4), (1, 5), (1, 6), (0, 7)]

*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 3

[(5, 0), (3, 1), (7, 2), (0, 3), (7, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*

Step: 4

[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (6, 6), (0, 7)]

```
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(0, 0), (2, 1), (5, 2), (2, 3), (7, 4), (6, 5), (0, 6), (7, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
```

Step: 2

```
[(0, 0), (2, 1), (5, 2), (2, 3), (1, 4), (6, 5), (0, 6), (7, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(0, 0), (3, 1), (5, 2), (2, 3), (1, 4), (6, 5), (0, 6), (7, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (3, 1), (5, 2), (2, 3), (1, 4), (6, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(2, 0), (4, 1), (3, 2), (4, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(2, 0), (4, 1), (3, 2), (0, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

Step: 3

[(2, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q

Step: 4

[(2, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (7, 1), (5, 2), (4, 3), (2, 4), (2, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(3, 0), (7, 1), (5, 2), (4, 3), (2, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

```

[(3, 0), (7, 1), (5, 2), (4, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 5

```

[(1, 0), (7, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Success:

```

[(1, 0), (3, 1), (5, 2), (7, 3), (2, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (1, 1), (0, 2), (1, 3), (3, 4), (7, 5), (0, 6), (5, 7)]
|*|*|Q|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 2

```

[(7, 0), (1, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 3

```

[(7, 0), (1, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 4

```

[(5, 0), (1, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(5, 0), (1, 1), (6, 2), (4, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 6

[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 7

[(5, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(3, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (7, 1), (6, 2), (6, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	Q	Q	*	*	*
*	Q	*	*	*	*	Q	*

Step: 2


```

[(1, 0), (7, 1), (2, 2), (6, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 3

```

[(1, 0), (7, 1), (2, 2), (6, 3), (6, 4), (0, 5), (5, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(1, 0), (7, 1), (6, 2), (6, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 2

```

[(1, 0), (7, 1), (2, 2), (6, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 3

```

[(1, 0), (5, 1), (2, 2), (6, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 8

```
[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 9

```
[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 10

```
[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 11

```
[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 12

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (4, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (0, 5), (0, 6), (4, 7)]
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 18

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 19

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 20

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|*|

Step: 21

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|Q|*|

Step: 22

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 23

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 24

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

Step: 25

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]

|*|*|Q|*|*|*|*|

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(7, 0), (2, 1), (5, 2), (2, 3), (0, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (2, 1), (5, 2), (2, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (5, 1), (2, 2), (5, 3), (2, 4), (7, 5), (2, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|*|
```

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(0, 0), (5, 1), (2, 2), (5, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(0, 0), (5, 1), (2, 2), (6, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(0, 0), (5, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(0, 0), (5, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```


|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(7, 0), (6, 1), (2, 2), (1, 3), (7, 4), (3, 5), (3, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

Step: 2

[(7, 0), (6, 1), (2, 2), (1, 3), (7, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

Step: 3

[(7, 0), (6, 1), (4, 2), (1, 3), (7, 4), (3, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

Step: 4

[(7, 0), (6, 1), (4, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|Q|*|*|*|

Step: 5

[(1, 0), (6, 1), (4, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (6, 1), (5, 2), (5, 3), (0, 4), (7, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 2

[(3, 0), (6, 1), (5, 2), (2, 3), (0, 4), (7, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 3

[(3, 0), (6, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(4, 0), (7, 1), (7, 2), (1, 3), (4, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (7, 1), (7, 2), (2, 3), (4, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (7, 1), (7, 2), (2, 3), (6, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 4

```
[(4, 0), (7, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (2, 1), (1, 2), (0, 3), (1, 4), (0, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|Q|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (2, 1), (1, 2), (7, 3), (1, 4), (0, 5), (0, 6), (2, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(2, 0), (2, 1), (1, 2), (7, 3), (1, 4), (3, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(2, 0), (6, 1), (1, 2), (7, 3), (1, 4), (3, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (3, 2), (5, 3), (2, 4), (5, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

[(1, 0), (4, 1), (1, 2), (5, 3), (2, 4), (5, 5), (3, 6), (4, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (4, 1), (1, 2), (5, 3), (2, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (0, 1), (5, 2), (4, 3), (3, 4), (6, 5), (3, 6), (2, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (0, 1), (5, 2), (4, 3), (0, 4), (6, 5), (3, 6), (2, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(6, 0), (0, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (2, 7)]

|*|Q|*|*|Q|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (2, 1), (2, 2), (3, 3), (0, 4), (4, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (0, 1), (3, 2), (0, 3), (4, 4), (6, 5), (1, 6), (6, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (0, 1), (3, 2), (0, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (0, 1), (3, 2), (7, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|Q|*|*|*|*|

Step: 4

[(3, 0), (0, 1), (2, 2), (7, 3), (4, 4), (6, 5), (1, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(7, 0), (4, 1), (0, 2), (2, 3), (2, 4), (5, 5), (3, 6), (5, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (4, 1), (0, 2), (2, 3), (2, 4), (5, 5), (3, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (4, 1), (0, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:


```

[(0, 0), (7, 1), (1, 2), (1, 3), (1, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (7, 1), (1, 2), (1, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (7, 1), (1, 2), (6, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(0, 0), (5, 1), (1, 2), (6, 3), (6, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(7, 0), (1, 1), (0, 2), (0, 3), (3, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(4, 0), (6, 1), (3, 2), (5, 3), (4, 4), (4, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (3, 2), (5, 3), (2, 4), (4, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (6, 1), (3, 2), (5, 3), (2, 4), (4, 5), (2, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(0, 0), (6, 1), (3, 2), (5, 3), (2, 4), (4, 5), (1, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (6, 1), (1, 2), (3, 3), (7, 4), (3, 5), (6, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 2

[(0, 0), (6, 1), (1, 2), (2, 3), (7, 4), (3, 5), (6, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 3

[(0, 0), (6, 1), (1, 2), (2, 3), (7, 4), (3, 5), (7, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 4

[(0, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (7, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Search Failed

Initial:

[(5, 0), (3, 1), (3, 2), (0, 3), (3, 4), (5, 5), (0, 6), (3, 7)]

|*|*|*|Q|*|*|Q|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (3, 1), (3, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (3, 1), (6, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (3, 1), (6, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (6, 2), (0, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(1, 0), (0, 1), (2, 2), (7, 3), (3, 4), (1, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 2

[(1, 0), (0, 1), (2, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
*	Q	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (0, 1), (2, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (6, 1), (2, 2), (0, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
*	*	*	Q	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

|Q|*|*|*|*|*|*|Q|

Step: 2

[(7, 0), (6, 1), (2, 2), (0, 3), (1, 4), (4, 5), (0, 6), (3, 7)]

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (6, 1), (2, 2), (5, 3), (1, 4), (4, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(2, 0), (5, 1), (2, 2), (2, 3), (1, 4), (3, 5), (7, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

Step: 2

[(2, 0), (5, 1), (2, 2), (6, 3), (1, 4), (3, 5), (7, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

Step: 3

[(2, 0), (5, 1), (2, 2), (6, 3), (1, 4), (3, 5), (7, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (6, 2), (7, 3), (2, 4), (4, 5), (6, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(0, 0), (3, 1), (5, 2), (7, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (3, 1), (4, 2), (0, 3), (6, 4), (0, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
```



```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (4, 2), (0, 3), (7, 4), (0, 5), (0, 6), (3, 7)]
|*|*|*|Q|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (4, 2), (0, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (4, 2), (0, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (5, 1), (1, 2), (6, 3), (0, 4), (3, 5), (2, 6), (7, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(0, 0), (5, 1), (1, 2), (6, 3), (1, 4), (3, 5), (2, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (1, 2), (0, 3), (5, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (4, 2), (0, 3), (5, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (4, 2), (0, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Success:

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(5, 0), (1, 1), (0, 2), (0, 3), (1, 4), (0, 5), (5, 6), (6, 7)]

*	*	Q	Q	*	Q	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (1, 1), (0, 2), (0, 3), (1, 4), (7, 5), (5, 6), (6, 7)]

*	*	Q	Q	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 3

[(5, 0), (1, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (6, 7)]

*	*	Q	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (2, 1), (0, 2), (0, 3), (4, 4), (7, 5), (5, 6), (6, 7)]

|*|*|Q|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(5, 0), (2, 1), (0, 2), (0, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(5, 0), (2, 1), (0, 2), (3, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(5, 0), (2, 1), (0, 2), (3, 3), (0, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(5, 0), (2, 1), (0, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (4, 1), (1, 2), (2, 3), (4, 4), (3, 5), (1, 6), (1, 7)]
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (1, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (4, 1), (7, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(1, 0), (5, 1), (7, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 5

[(1, 0), (5, 1), (7, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 6

[(1, 0), (5, 1), (0, 2), (2, 3), (4, 4), (7, 5), (1, 6), (3, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(1, 0), (4, 1), (1, 2), (2, 3), (4, 4), (3, 5), (1, 6), (1, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (1, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]

```

|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (4, 1), (7, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (5, 1), (7, 2), (2, 3), (4, 4), (3, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(3, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 7

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 8

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (6, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 9

[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (6, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q

Step: 10

[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (4, 5), (1, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 11

[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (6, 5), (1, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q

Step: 12

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (6, 5), (1, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 13

[(3, 0), (5, 1), (0, 2), (2, 3), (0, 4), (6, 5), (1, 6), (7, 7)]

*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 14

[(3, 0), (5, 1), (0, 2), (2, 3), (6, 4), (6, 5), (1, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q

Step: 15

[(3, 0), (5, 1), (0, 2), (2, 3), (4, 4), (6, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 16

```

[(3, 0), (5, 1), (0, 2), (2, 3), (0, 4), (6, 5), (1, 6), (7, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 17

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 18

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 19

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

Step: 20

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 21

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 22

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 23

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 24

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (4, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 25

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 26

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 27

```

[(0, 0), (5, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(7, 0), (0, 1), (0, 2), (6, 3), (6, 4), (0, 5), (0, 6), (3, 7)]
*	Q	Q	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (2, 1), (0, 2), (6, 3), (6, 4), (0, 5), (0, 6), (3, 7)]
*	*	Q	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (2, 1), (0, 2), (6, 3), (4, 4), (0, 5), (0, 6), (3, 7)]
*	*	Q	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (2, 1), (0, 2), (6, 3), (4, 4), (0, 5), (5, 6), (3, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (0, 1), (3, 2), (6, 3), (4, 4), (6, 5), (0, 6), (4, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (0, 6), (4, 7)]

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 3

[(5, 0), (0, 1), (3, 2), (6, 3), (4, 4), (7, 5), (1, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 4

[(5, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(0, 0), (2, 1), (0, 2), (1, 3), (4, 4), (3, 5), (6, 6), (5, 7)]
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (2, 1), (7, 2), (1, 3), (4, 4), (3, 5), (6, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (2, 1), (7, 2), (1, 3), (4, 4), (3, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(0, 0), (2, 1), (7, 2), (7, 3), (4, 4), (3, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 5

[(6, 0), (2, 1), (7, 2), (7, 3), (4, 4), (3, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*

Step: 6

[(6, 0), (2, 1), (7, 2), (7, 3), (4, 4), (0, 5), (1, 6), (5, 7)]

*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	

Search Failed

Initial:

[(1, 0), (4, 1), (1, 2), (1, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	Q	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (1, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	Q	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (3, 1), (1, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 4

[(1, 0), (3, 1), (0, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (1, 1), (7, 2), (3, 3), (3, 4), (3, 5), (7, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 2

[(2, 0), (1, 1), (7, 2), (0, 3), (3, 4), (3, 5), (7, 6), (4, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 3

[(6, 0), (1, 1), (7, 2), (0, 3), (3, 4), (3, 5), (7, 6), (4, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Search Failed

Initial:

[(0, 0), (3, 1), (3, 2), (5, 3), (2, 4), (2, 5), (4, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (3, 2), (5, 3), (2, 4), (2, 5), (4, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 4

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(5, 0), (0, 1), (2, 2), (1, 3), (0, 4), (0, 5), (6, 6), (5, 7)]

|*|Q|*|*|Q|Q|*|*|

```
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (2, 2), (1, 3), (7, 4), (0, 5), (6, 6), (5, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (2, 2), (1, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (0, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (2, 1), (1, 2), (6, 3), (7, 4), (4, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (1, 2), (5, 3), (7, 4), (4, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (3, 2), (5, 3), (7, 4), (4, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (3, 2), (5, 3), (7, 4), (4, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	Q		
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Step: 6

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Step: 7

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Step: 8

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Step: 9

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 10

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 11

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 12

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 14

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 15

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 16

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 17

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 18

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 19

```

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 20

```

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 21

```

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 22

```

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```


*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 23

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	

Step: 24

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	Q	

Step: 25

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	

Step: 26

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	

Step: 27

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 28

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 29

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 30

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 31

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 32

```

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 33

```

[(6, 0), (0, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 34

```

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 35

```

[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 36

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 37

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 38

[(6, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 39

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (0, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(6, 0), (0, 1), (3, 2), (1, 3), (7, 4), (4, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (0, 1), (3, 2), (1, 3), (7, 4), (5, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (0, 1), (3, 2), (1, 3), (7, 4), (5, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (0, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(6, 0), (0, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Success:

[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(0, 0), (3, 1), (5, 2), (6, 3), (6, 4), (5, 5), (4, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (5, 2), (6, 3), (1, 4), (5, 5), (4, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (5, 2), (6, 3), (1, 4), (7, 5), (4, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(0, 0), (2, 1), (5, 2), (6, 3), (1, 4), (7, 5), (4, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (1, 2), (6, 3), (3, 4), (6, 5), (6, 6), (2, 7)]

*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 2

[(5, 0), (7, 1), (1, 2), (6, 3), (3, 4), (6, 5), (6, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (1, 2), (1, 3), (3, 4), (6, 5), (6, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (1, 3), (3, 4), (6, 5), (6, 6), (2, 7)]

|*|*|*|*|*|*|*|*|


```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (5, 1), (1, 2), (3, 3), (6, 4), (7, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(3, 0), (5, 1), (1, 2), (3, 3), (6, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (5, 1), (1, 2), (3, 3), (6, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (5, 1), (1, 2), (3, 3), (6, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(1, 0), (4, 1), (1, 2), (3, 3), (6, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (0, 1), (1, 2), (4, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (0, 1), (6, 2), (4, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (5, 1), (0, 2), (1, 3), (7, 4), (3, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 2

[(1, 0), (5, 1), (0, 2), (1, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(1, 0), (5, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 4

[(1, 0), (5, 1), (0, 2), (0, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(7, 0), (7, 1), (2, 2), (0, 3), (6, 4), (0, 5), (7, 6), (6, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	Q	*	*	*	*	Q	*

Step: 2

```

[(7, 0), (7, 1), (2, 2), (0, 3), (6, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|Q|*|

```

Step: 3

```

[(7, 0), (4, 1), (2, 2), (0, 3), (6, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 4

```

[(7, 0), (4, 1), (2, 2), (0, 3), (6, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(2, 0), (6, 1), (2, 2), (3, 3), (0, 4), (1, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 2

```

[(2, 0), (6, 1), (2, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(2, 0), (6, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (5, 1), (6, 2), (1, 3), (5, 4), (2, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (5, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(2, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(2, 0), (4, 1), (6, 2), (3, 3), (5, 4), (7, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (1, 1), (2, 2), (3, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(3, 0), (1, 1), (2, 2), (5, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(3, 0), (1, 1), (6, 2), (5, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(5, 0), (3, 1), (0, 2), (3, 3), (7, 4), (0, 5), (1, 6), (0, 7)]

|*|*|Q|*|*|Q|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 2

[(5, 0), (3, 1), (0, 2), (3, 3), (7, 4), (4, 5), (1, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(5, 0), (3, 1), (6, 2), (3, 3), (7, 4), (4, 5), (1, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(5, 0), (2, 1), (6, 2), (3, 3), (7, 4), (4, 5), (1, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (5, 6), (3, 7)]

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(4, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(0, 0), (1, 1), (0, 2), (5, 3), (0, 4), (5, 5), (4, 6), (7, 7)]
|Q|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(6, 0), (1, 1), (0, 2), (5, 3), (0, 4), (5, 5), (4, 6), (7, 7)]
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```



```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(6, 0), (1, 1), (0, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(6, 0), (1, 1), (3, 2), (5, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(0, 0), (6, 1), (6, 2), (4, 3), (0, 4), (2, 5), (1, 6), (4, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (6, 1), (6, 2), (4, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 3

[(0, 0), (6, 1), (6, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(0, 0), (5, 1), (6, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 5

[(3, 0), (5, 1), (6, 2), (2, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(1, 0), (0, 1), (5, 2), (2, 3), (2, 4), (3, 5), (7, 6), (1, 7)]
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

```
[(4, 0), (0, 1), (5, 2), (2, 3), (2, 4), (3, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(4, 0), (0, 1), (5, 2), (2, 3), (6, 4), (3, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (5, 2), (4, 3), (2, 4), (2, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(3, 0), (3, 1), (5, 2), (4, 3), (2, 4), (0, 5), (2, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (2, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	Q	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 4

[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 5

[(3, 0), (1, 1), (7, 2), (4, 3), (2, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (7, 1), (0, 2), (0, 3), (2, 4), (6, 5), (4, 6), (5, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(5, 0), (7, 1), (0, 2), (0, 3), (2, 4), (6, 5), (4, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (0, 2), (0, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (0, 3), (3, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (1, 1), (5, 2), (4, 3), (4, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*	
Q	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	

Step: 2

[(1, 0), (1, 1), (5, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*	
Q	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	

Step: 3

[(1, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (7, 7)]

*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(1, 0), (1, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (4, 1), (2, 2), (2, 3), (3, 4), (1, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (1, 5), (0, 6), (5, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
```

```
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (0, 2), (0, 3), (0, 4), (3, 5), (0, 6), (5, 7)]
```

```
|Q|*|Q|Q|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (7, 2), (0, 3), (0, 4), (3, 5), (0, 6), (5, 7)]
```

```
|Q|*|*|Q|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(0, 0), (3, 1), (7, 2), (2, 3), (0, 4), (3, 5), (0, 6), (5, 7)]
Q	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(0, 0), (3, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (5, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 5

[(0, 0), (3, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 6

[(0, 0), (3, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

```
[(5, 0), (1, 1), (2, 2), (3, 3), (4, 4), (1, 5), (6, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (2, 2), (0, 3), (4, 4), (1, 5), (6, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (1, 1), (2, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (0, 1), (2, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(5, 0), (0, 1), (2, 2), (0, 3), (6, 4), (1, 5), (7, 6), (5, 7)]
|*|Q|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(6, 0), (3, 1), (1, 2), (0, 3), (5, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (3, 1), (2, 2), (0, 3), (5, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (3, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (3, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(4, 0), (1, 1), (6, 2), (7, 3), (0, 4), (4, 5), (4, 6), (3, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(5, 0), (1, 1), (6, 2), (7, 3), (0, 4), (4, 5), (4, 6), (3, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (1, 1), (6, 2), (7, 3), (0, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (1, 1), (6, 2), (0, 3), (0, 4), (4, 5), (1, 6), (3, 7)]

*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

|*|*|*|*|*|*|*|

Step: 5

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (2, 4), (4, 5), (7, 6), (3, 7)]

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(6, 0), (3, 1), (7, 2), (7, 3), (5, 4), (7, 5), (5, 6), (4, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|Q|*

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|Q|*|*

Step: 2

[(6, 0), (3, 1), (7, 2), (7, 3), (5, 4), (0, 5), (5, 6), (4, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|Q|*

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*

Step: 3

[(6, 0), (3, 1), (7, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|

```

Success:

```

[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(0, 0), (7, 1), (6, 2), (5, 3), (5, 4), (5, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (7, 1), (6, 2), (5, 3), (5, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (7, 1), (1, 2), (5, 3), (5, 4), (1, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (7, 1), (1, 2), (5, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 5

```

[(0, 0), (7, 1), (1, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 6

```

[(0, 0), (3, 1), (1, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (7, 1), (6, 2), (5, 3), (5, 4), (5, 5), (6, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

*	*	*	Q	Q	Q	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 2

[(0, 0), (7, 1), (6, 2), (1, 3), (5, 4), (5, 5), (6, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (6, 2), (1, 3), (5, 4), (2, 5), (6, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 4

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 5

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 6

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 9

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 10

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```



```

|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 11

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 12

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 13

```

[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|Q|*|*|*|*|*|*

Step: 15

[(5, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|Q|*|*

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*

|Q|*|*|*|Q|*|*|*

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|*

Step: 16

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|Q|*|*

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*

|*|*|*|*|Q|*|*|*

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|*

Step: 17

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|*|*

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*

|*|*|*|*|Q|*|*|*

|*|*|*|*|*|*|Q|*

|*|Q|*|*|*|*|*|*

Step: 18

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]

|*|*|*|*|*|Q|*|*

|*|*|*|Q|*|*|*|*

|*|*|*|*|*|*|*|*

|Q|*|*|*|*|*|*|*

|*|*|Q|*|*|*|*|*

|*|*|*|*|Q|*|*|*

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*

Step: 19

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 20

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 21

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 22

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 23

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 24

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 25

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 26

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 27

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 28

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 29

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 30

```

[(3, 0), (1, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(3, 0), (0, 1), (3, 2), (1, 3), (0, 4), (5, 5), (6, 6), (3, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (0, 1), (3, 2), (1, 3), (0, 4), (5, 5), (6, 6), (2, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (0, 1), (3, 2), (1, 3), (0, 4), (5, 5), (6, 6), (2, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (0, 1), (3, 2), (1, 3), (7, 4), (5, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (4, 1), (4, 2), (5, 3), (0, 4), (5, 5), (4, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|Q|*|
```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (7, 2), (5, 3), (0, 4), (5, 5), (4, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (7, 2), (5, 3), (0, 4), (5, 5), (4, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 4

[(2, 0), (4, 1), (7, 2), (5, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 5

[(2, 0), (4, 1), (7, 2), (3, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (4, 1), (1, 2), (6, 3), (0, 4), (5, 5), (5, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (4, 1), (1, 2), (6, 3), (0, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(4, 0), (4, 1), (1, 2), (6, 3), (2, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*

Search Failed

Initial:

[(3, 0), (2, 1), (7, 2), (7, 3), (4, 4), (7, 5), (7, 6), (5, 7)]

|*|*|*|*|*|*|*|*|


```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|Q|Q|*|
```

Step: 2

```
[(3, 0), (2, 1), (7, 2), (7, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
```

Step: 3

```
[(3, 0), (2, 1), (7, 2), (7, 3), (4, 4), (0, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (6, 1), (4, 2), (5, 3), (5, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (4, 2), (1, 3), (5, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (4, 2), (1, 3), (5, 4), (7, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(0, 0), (5, 1), (3, 2), (7, 3), (5, 4), (6, 5), (7, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|Q|Q|
```

Step: 2

```
[(0, 0), (5, 1), (3, 2), (7, 3), (5, 4), (6, 5), (1, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 3

```
[(0, 0), (5, 1), (3, 2), (7, 3), (2, 4), (6, 5), (1, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|Q|*|*|*|Q|

Step: 4

[(0, 0), (5, 1), (3, 2), (6, 3), (2, 4), (6, 5), (1, 6), (7, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

Step: 5

[(0, 0), (5, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (7, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|Q|

Step: 6

[(0, 0), (5, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(3, 0), (6, 1), (4, 2), (6, 3), (1, 4), (0, 5), (5, 6), (0, 7)]

|*|*|*|*|*|Q|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (0, 5), (5, 6), (0, 7)]

```
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(3, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (3, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (6, 1), (5, 2), (2, 3), (0, 4), (0, 5), (0, 6), (1, 7)]
|*|*|*|*|Q|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (5, 2), (2, 3), (0, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(6, 0), (6, 1), (5, 2), (2, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|Q|*|

Step: 6

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 7

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 8

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 9

[(6, 0), (1, 1), (5, 2), (0, 3), (0, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 10

[(6, 0), (1, 1), (5, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 11

```
[(6, 0), (1, 1), (3, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 12

```
[(6, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(2, 0), (7, 1), (6, 2), (1, 3), (7, 4), (2, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 2

[(2, 0), (7, 1), (6, 2), (1, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 3

[(2, 0), (7, 1), (3, 2), (1, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 4

[(2, 0), (7, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (7, 1), (6, 2), (1, 3), (7, 4), (2, 5), (1, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|Q|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|

Step: 2

[(2, 0), (7, 1), (6, 2), (1, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 3

[(2, 0), (7, 1), (3, 2), (1, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 4

[(2, 0), (7, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*

Step: 5

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 6

[(2, 0), (7, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]

```

|*|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|

```

Step: 7

```

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(2, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(4, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(4, 0), (6, 1), (3, 2), (5, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 13

```

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 14

```

[(4, 0), (6, 1), (3, 2), (1, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 15

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (0, 6), (2, 7)]

*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 16

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 17

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (5, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 18

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 19

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (2, 6), (5, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 20

[(4, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Step: 21

[(6, 0), (6, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
Q	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Success:

[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (1, 1), (7, 2), (0, 3), (2, 4), (0, 5), (1, 6), (3, 7)]
*	*	*	Q	*	Q	*	*	*
*	Q	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*	*

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(3, 0), (1, 1), (7, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(4, 0), (1, 1), (7, 2), (0, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (5, 1), (0, 2), (1, 3), (3, 4), (5, 5), (4, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (5, 1), (0, 2), (1, 3), (3, 4), (5, 5), (4, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 4

[(3, 0), (5, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(0, 0), (3, 1), (5, 2), (4, 3), (2, 4), (0, 5), (3, 6), (0, 7)]

Q	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (3, 1), (5, 2), (4, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (5, 2), (4, 3), (2, 4), (0, 5), (3, 6), (6, 7)]

|Q|*|*|*|*|Q|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (5, 1), (2, 2), (7, 3), (2, 4), (1, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (2, 2), (7, 3), (2, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (2, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(3, 0), (5, 1), (2, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```



```
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (0, 2), (1, 3), (0, 4), (5, 5), (5, 6), (3, 7)]
|*|*|Q|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (0, 2), (1, 3), (0, 4), (5, 5), (5, 6), (2, 7)]
|*|*|Q|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (6, 2), (1, 3), (0, 4), (5, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (1, 1), (6, 2), (1, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Success:

[(3, 0), (1, 1), (6, 2), (4, 3), (0, 4), (7, 5), (5, 6), (2, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(1, 0), (0, 1), (3, 2), (3, 3), (4, 4), (7, 5), (6, 6), (6, 7)]

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|Q|*|*|

Step: 2

[(1, 0), (0, 1), (3, 2), (3, 3), (4, 4), (7, 5), (2, 6), (6, 7)]

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 3

[(1, 0), (0, 1), (5, 2), (3, 3), (4, 4), (7, 5), (2, 6), (6, 7)]

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 4

[(1, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

```

|*|Q|*|*|*|*|*| |
|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 6

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 8

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 9

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 10

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 11

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (6, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 13

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (0, 7)]

*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 14

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (3, 7)]

*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	

Success:

[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]

*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	Q	*	*	

Hill Climbing Search Analysis

Initial:

[(7, 0), (6, 1), (2, 2), (7, 3), (2, 4), (1, 5), (1, 6), (4, 7)]

*	*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*	
*	*	Q	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
Q	*	*	Q	*	*	*	*	

Step: 2

[(3, 0), (6, 1), (2, 2), (7, 3), (2, 4), (1, 5), (1, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (6, 1), (2, 2), (7, 3), (2, 4), (1, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 2

```

[(3, 0), (6, 1), (2, 2), (7, 3), (2, 4), (1, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|Q|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|*|*|Q|*|*|*|*|

Step: 7

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 8

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 9

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 10

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 11

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]

|*|Q|Q|*|*|*|*|*|


```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 12

```

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(3, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 15

```

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 16

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 17

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 18

[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 19

[(3, 0), (0, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 20

```

[(3, 0), (7, 1), (0, 2), (7, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (7, 1), (0, 2), (2, 3), (5, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(5, 0), (1, 1), (4, 2), (0, 3), (0, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|Q|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (6, 2), (0, 3), (0, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|Q|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (0, 1), (1, 2), (3, 3), (5, 4), (5, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (0, 1), (1, 2), (3, 3), (5, 4), (5, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
```

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (0, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 6

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

```

[(4, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(5, 0), (1, 1), (2, 2), (2, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(5, 0), (1, 1), (5, 2), (2, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(5, 0), (1, 1), (5, 2), (2, 3), (4, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(5, 0), (1, 1), (5, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(6, 0), (1, 1), (5, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (1, 1), (2, 2), (2, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (0, 2), (2, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(5, 0), (3, 1), (0, 2), (2, 3), (4, 4), (7, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 4

[(5, 0), (3, 1), (0, 2), (2, 3), (4, 4), (1, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 5

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (3, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 7

[(5, 0), (4, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 8

[(5, 0), (3, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 9

[(5, 0), (3, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(7, 0), (4, 1), (2, 2), (5, 3), (2, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 2

[(7, 0), (4, 1), (2, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (5, 1), (1, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (3, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (4, 1), (1, 2), (1, 3), (0, 4), (1, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 2

```

[(7, 0), (4, 1), (1, 2), (1, 3), (0, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 3

```

[(7, 0), (4, 1), (1, 2), (1, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 4

```

[(7, 0), (4, 1), (6, 2), (1, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 5

```

[(6, 0), (4, 1), (6, 2), (1, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|

Step: 6

[(6, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 7

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 8

[(6, 0), (4, 1), (0, 2), (5, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 9

[(6, 0), (4, 1), (0, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 10

[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|Q|*|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 11

```
[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 12

```
[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 13

```
[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 14

```
[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 15

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 16

[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 17

[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 18

[(6, 0), (4, 1), (0, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 19

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 20

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (7, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 21

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 22

```

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 24

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (5, 6), (1, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 25

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (1, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 26

[(6, 0), (4, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 27

[(6, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```


|*|*|*|*|*|Q|*|*|

Step: 28

[(1, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 29

[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 30

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 31

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 32

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 33

```
[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 34

```
[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 35

```
[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 36

```
[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 37

[(6, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 38

[(1, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 39

[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 40

[(6, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 41

```

[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 42

```

[(5, 0), (5, 1), (2, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 43

```

[(7, 0), (5, 1), (2, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 44

```

[(2, 0), (5, 1), (2, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(2, 0), (5, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(4, 0), (4, 1), (3, 2), (5, 3), (4, 4), (1, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
Q	Q	*	*	Q	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	

Step: 2

[(4, 0), (4, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	

Step: 3

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	

Success:

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (4, 1), (3, 2), (5, 3), (4, 4), (1, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
Q	Q	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (4, 1), (3, 2), (5, 3), (2, 4), (1, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (4, 1), (7, 2), (5, 3), (2, 4), (1, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (4, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 5

```

[(4, 0), (0, 1), (7, 2), (5, 3), (2, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (0, 1), (7, 2), (5, 3), (1, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (0, 1), (7, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 8

```

[(4, 0), (0, 1), (7, 2), (5, 3), (1, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 9

```

[(4, 0), (0, 1), (7, 2), (5, 3), (1, 4), (6, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 10

```

[(4, 0), (0, 1), (7, 2), (5, 3), (1, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 11

```

[(4, 0), (0, 1), (7, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|

```

Step: 12

```

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

Step: 13

```

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (2, 5), (6, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


|*|*|*|*|Q|*|*|*|

Success:

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(5, 0), (4, 1), (2, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|Q|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

Step: 2

[(6, 0), (4, 1), (2, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

Step: 3

[(6, 0), (4, 1), (1, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

Step: 4

[(6, 0), (4, 1), (1, 2), (7, 3), (5, 4), (7, 5), (2, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Search Failed

Initial:

```
[(4, 0), (4, 1), (3, 2), (1, 3), (0, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (4, 1), (3, 2), (1, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (4, 1), (3, 2), (1, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(0, 0), (7, 1), (3, 2), (1, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (3, 1), (0, 2), (5, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (4, 1), (0, 2), (5, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(2, 0), (4, 1), (1, 2), (5, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(2, 0), (4, 1), (1, 2), (3, 3), (0, 4), (3, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 5

[(2, 0), (4, 1), (1, 2), (3, 3), (0, 4), (2, 5), (7, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(2, 0), (6, 1), (7, 2), (1, 3), (7, 4), (5, 5), (7, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	Q	*

Step: 2

[(2, 0), (6, 1), (6, 2), (1, 3), (7, 4), (5, 5), (7, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 3

[(2, 0), (6, 1), (6, 2), (1, 3), (7, 4), (5, 5), (7, 6), (3, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 4

```
[(2, 0), (6, 1), (6, 2), (1, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(2, 0), (6, 1), (6, 2), (1, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (1, 1), (3, 2), (5, 3), (6, 4), (7, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(0, 0), (1, 1), (3, 2), (5, 3), (2, 4), (7, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(0, 0), (1, 1), (3, 2), (5, 3), (2, 4), (7, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

```

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(0, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(0, 0), (0, 1), (4, 2), (1, 3), (0, 4), (0, 5), (4, 6), (4, 7)]
|Q|Q|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|Q|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (4, 6), (4, 7)]
|Q|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|Q|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (0, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (1, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 6

```

[(7, 0), (1, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|

```

Step: 7

```

[(3, 0), (1, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(3, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 2

```

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|

```



```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 2

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (6, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(4, 0), (0, 1), (0, 2), (7, 3), (4, 4), (4, 5), (1, 6), (6, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (0, 1), (0, 2), (7, 3), (4, 4), (4, 5), (1, 6), (6, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (0, 1), (0, 2), (7, 3), (4, 4), (2, 5), (1, 6), (6, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 4

[(3, 0), (5, 1), (0, 2), (7, 3), (4, 4), (2, 5), (1, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (6, 2), (4, 3), (6, 4), (1, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|

```
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (2, 1), (6, 2), (4, 3), (7, 4), (1, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (3, 1), (6, 2), (4, 3), (7, 4), (1, 5), (0, 6), (5, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (3, 1), (6, 2), (4, 3), (7, 4), (1, 5), (0, 6), (2, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (4, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (7, 2), (5, 3), (3, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (7, 2), (7, 3), (3, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (2, 2), (6, 3), (7, 4), (3, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (3, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (5, 1), (2, 2), (6, 3), (1, 4), (3, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(1, 0), (2, 1), (6, 2), (2, 3), (3, 4), (0, 5), (5, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (2, 1), (6, 2), (7, 3), (3, 4), (0, 5), (5, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(1, 0), (2, 1), (6, 2), (7, 3), (3, 4), (0, 5), (3, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(1, 0), (2, 1), (4, 2), (7, 3), (3, 4), (0, 5), (3, 6), (5, 7)]

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(1, 0), (7, 1), (6, 2), (0, 3), (0, 4), (4, 5), (5, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(1, 0), (7, 1), (6, 2), (0, 3), (0, 4), (5, 5), (5, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (4, 1), (6, 2), (0, 3), (0, 4), (5, 5), (5, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (4, 1), (6, 2), (0, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(1, 0), (4, 1), (6, 2), (3, 3), (0, 4), (7, 5), (5, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(0, 0), (6, 1), (0, 2), (4, 3), (5, 4), (4, 5), (0, 6), (1, 7)]
```

```
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (6, 1), (0, 2), (7, 3), (5, 4), (4, 5), (0, 6), (1, 7)]
```

```
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(0, 0), (6, 1), (0, 2), (7, 3), (5, 4), (4, 5), (2, 6), (1, 7)]
```

```
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```


|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Step: 4

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (4, 5), (2, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (7, 5), (2, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 6

[(3, 0), (6, 1), (0, 2), (7, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 7

[(3, 0), (6, 1), (0, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 8

[(3, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 9

```

[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 10

```

[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 11

```

[(3, 0), (6, 1), (2, 2), (2, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 12

```

[(3, 0), (6, 1), (2, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 13

```
[(3, 0), (6, 1), (2, 2), (7, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Step: 14

```
[(3, 0), (6, 1), (2, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 15

```
[(3, 0), (6, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 16

```
[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 17

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 18

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 20

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 21

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|

```

|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 22

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 24

```

[(3, 0), (0, 1), (6, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 25

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 26

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 27

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 28

[(3, 0), (1, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

```

[(1, 0), (6, 1), (3, 2), (4, 3), (6, 4), (3, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 2

```

[(1, 0), (6, 1), (3, 2), (0, 3), (6, 4), (3, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 3

```

[(1, 0), (6, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(1, 0), (5, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(1, 0), (6, 1), (3, 2), (4, 3), (6, 4), (3, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 2

```

[(1, 0), (6, 1), (3, 2), (0, 3), (6, 4), (3, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 3

```

[(1, 0), (6, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(1, 0), (5, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(7, 0), (5, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```



```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

Step: 6

```
[(7, 0), (5, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Success:

```
[(7, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(4, 0), (5, 1), (7, 2), (6, 3), (6, 4), (1, 5), (1, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (5, 1), (7, 2), (0, 3), (6, 4), (1, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

[(4, 0), (5, 1), (7, 2), (0, 3), (6, 4), (3, 5), (1, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (5, 1), (7, 2), (0, 3), (6, 4), (3, 5), (1, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q

Search Failed

Initial:

[(0, 0), (3, 1), (2, 2), (7, 3), (5, 4), (7, 5), (7, 6), (7, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	Q	Q

Step: 2

[(0, 0), (3, 1), (2, 2), (7, 3), (5, 4), (7, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	Q	*

Step: 3

[(0, 0), (3, 1), (2, 2), (7, 3), (5, 4), (1, 5), (7, 6), (4, 7)]

|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|

```

Step: 4

```

[(0, 0), (3, 1), (2, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(0, 0), (3, 1), (0, 2), (7, 3), (5, 4), (1, 5), (1, 6), (4, 7)]
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(6, 0), (6, 1), (2, 2), (5, 3), (5, 4), (1, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (6, 1), (2, 2), (0, 3), (5, 4), (1, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (6, 1), (2, 2), (0, 3), (5, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(6, 0), (6, 1), (2, 2), (0, 3), (5, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(5, 0), (5, 1), (0, 2), (1, 3), (0, 4), (6, 5), (6, 6), (3, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (5, 1), (0, 2), (1, 3), (7, 4), (6, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

|*|*|*|*|Q|*|*|*|

Step: 3

[(5, 0), (5, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 4

[(5, 0), (2, 1), (0, 2), (1, 3), (7, 4), (4, 5), (6, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

[(5, 0), (7, 1), (4, 2), (4, 3), (6, 4), (5, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

Step: 2

[(5, 0), (7, 1), (4, 2), (1, 3), (6, 4), (5, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

Step: 3

[(5, 0), (7, 1), (4, 2), (1, 3), (6, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(5, 0), (7, 1), (4, 2), (1, 3), (6, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (7, 2), (4, 3), (7, 4), (5, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(6, 0), (2, 1), (7, 2), (4, 3), (7, 4), (5, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 3

[(6, 0), (2, 1), (7, 2), (2, 3), (7, 4), (5, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (7, 2), (2, 3), (0, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(6, 0), (2, 1), (7, 2), (2, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (0, 2), (0, 3), (3, 4), (2, 5), (7, 6), (5, 7)]
|*|*|Q|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(3, 0), (1, 1), (6, 2), (0, 3), (3, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 3

[(3, 0), (1, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (1, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(3, 0), (6, 1), (1, 2), (4, 3), (0, 4), (3, 5), (2, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (6, 1), (1, 2), (4, 3), (0, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3


```
[(3, 0), (6, 1), (1, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (7, 1), (1, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (4, 1), (4, 2), (0, 3), (2, 4), (7, 5), (7, 6), (7, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
```

Step: 2

```
[(0, 0), (4, 1), (4, 2), (0, 3), (2, 4), (7, 5), (7, 6), (1, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Step: 3

```
[(0, 0), (4, 1), (5, 2), (0, 3), (2, 4), (7, 5), (7, 6), (1, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
```

Search Failed

Initial:

```
[(0, 0), (2, 1), (5, 2), (6, 3), (3, 4), (4, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (2, 1), (5, 2), (6, 3), (1, 4), (4, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (2, 1), (5, 2), (7, 3), (1, 4), (4, 5), (5, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(0, 0), (2, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (1, 1), (6, 2), (7, 3), (0, 4), (2, 5), (4, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(5, 0), (1, 1), (6, 2), (7, 3), (0, 4), (2, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (1, 1), (6, 2), (3, 3), (0, 4), (2, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (1, 1), (6, 2), (3, 3), (0, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(0, 0), (6, 1), (0, 2), (0, 3), (6, 4), (7, 5), (4, 6), (0, 7)]

Q	*	Q	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(0, 0), (6, 1), (0, 2), (0, 3), (6, 4), (7, 5), (4, 6), (2, 7)]

Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(0, 0), (6, 1), (3, 2), (0, 3), (6, 4), (7, 5), (4, 6), (2, 7)]

|Q|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(0, 0), (6, 1), (3, 2), (0, 3), (7, 4), (7, 5), (4, 6), (2, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 5

```

[(0, 0), (6, 1), (3, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(0, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (5, 1), (2, 2), (5, 3), (0, 4), (2, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (3, 2), (5, 3), (0, 4), (2, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (2, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 6

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	Q	*	*	

Step: 7

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 8

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	

Step: 9

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 10

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 11

```

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 13

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 14

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```


|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 15

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 16

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 17

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 18

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 19

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

```

|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 20

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 21

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 22

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 24

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 25

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 26

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 27

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 28

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 29

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 30

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 31

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 32

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 33

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 34

```

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 35

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 36

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

Step: 37

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 38

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 39

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 40

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 41

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 42

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 43

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 44

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 45

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 46

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 47

[(0, 0), (5, 1), (3, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 48

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 49

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 50

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 51

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 52

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 53

[(0, 0), (5, 1), (3, 2), (6, 3), (7, 4), (2, 5), (4, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 54

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 55

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 56

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 57

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 58

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 59

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 60

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 61

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 62

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 63

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 64

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 65

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 66

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 67

```

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 68

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 69

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 70

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 71

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 72

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 73

[(2, 0), (5, 1), (1, 2), (6, 3), (3, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 74

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (0, 5), (4, 6), (7, 7)]

*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 75

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 76

[(5, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 77

```

[(5, 0), (7, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|

```

Step: 78

```

[(5, 0), (3, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 79

```

[(5, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 80

```

[(1, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 81

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 82

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (3, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 83

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 84

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 85

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]


```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 86

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 87

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 88

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 89

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 90

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 91

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 92

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 93

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 94

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 95

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 96

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 97

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 98

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 99

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 100

[(1, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 101

[(1, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 102

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 103

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (6, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 104

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (3, 5), (4, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 105

[(2, 0), (5, 1), (1, 2), (6, 3), (0, 4), (3, 5), (1, 6), (7, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(1, 0), (0, 1), (6, 2), (1, 3), (5, 4), (6, 5), (5, 6), (2, 7)]

*	Q	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

```

[(1, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (5, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (5, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (2, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(3, 0), (0, 1), (6, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Search Failed

Initial:

```

[(5, 0), (0, 1), (6, 2), (0, 3), (4, 4), (2, 5), (0, 6), (1, 7)]
|*|Q|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|

```

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (6, 2), (0, 3), (4, 4), (2, 5), (7, 6), (1, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(5, 0), (0, 1), (6, 2), (0, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (0, 1), (6, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(4, 0), (7, 1), (3, 2), (2, 3), (4, 4), (6, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|Q|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(4, 0), (7, 1), (3, 2), (2, 3), (4, 4), (6, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(4, 0), (7, 1), (3, 2), (2, 3), (6, 4), (6, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(4, 0), (7, 1), (3, 2), (2, 3), (6, 4), (1, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (3, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 6


```
[(4, 0), (7, 1), (5, 2), (2, 3), (6, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (6, 1), (2, 2), (4, 3), (7, 4), (1, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(2, 0), (6, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(2, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(2, 0), (0, 1), (6, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (6, 1), (1, 2), (2, 3), (6, 4), (2, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (1, 2), (2, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(6, 0), (4, 1), (1, 2), (2, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(6, 0), (4, 1), (1, 2), (5, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(6, 0), (4, 1), (1, 2), (5, 3), (0, 4), (2, 5), (3, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (6, 1), (1, 2), (2, 3), (6, 4), (2, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (6, 1), (1, 2), (2, 3), (6, 4), (2, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|Q|

Step: 3

[(6, 0), (6, 1), (1, 2), (2, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 4

[(4, 0), (6, 1), (1, 2), (2, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 5

[(4, 0), (6, 1), (1, 2), (5, 3), (6, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

Success:

[(4, 0), (6, 1), (1, 2), (5, 3), (2, 4), (0, 5), (3, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Random Restart Hill Climbing Search

Initial:

[(0, 0), (6, 1), (1, 2), (5, 3), (4, 4), (6, 5), (4, 6), (0, 7)]

```

|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (6, 1), (1, 2), (5, 3), (4, 4), (6, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (6, 1), (1, 2), (5, 3), (7, 4), (6, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(0, 0), (6, 1), (1, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(0, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (1, 1), (3, 2), (1, 3), (5, 4), (4, 5), (5, 6), (6, 7)]
```

```
|*|*|*|*|*|*|*|*| |
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|Q|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (3, 2), (1, 3), (5, 4), (4, 5), (2, 6), (6, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (1, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (0, 7)]
```

```
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|

Step: 5

[(6, 0), (1, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 6

[(6, 0), (1, 1), (3, 2), (7, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

Step: 7

[(6, 0), (1, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 8

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 9

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 13

```

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|Q| |
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```


*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 14

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 15

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 16

[(6, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 17

[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*

Success:

```

[(4, 0), (1, 1), (3, 2), (5, 3), (7, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(5, 0), (7, 1), (0, 2), (3, 3), (2, 4), (6, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (7, 1), (0, 2), (3, 3), (2, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (7, 1), (0, 2), (3, 3), (6, 4), (4, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (7, 1), (0, 2), (3, 3), (2, 4), (6, 5), (0, 6), (4, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (7, 1), (0, 2), (3, 3), (2, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (7, 1), (0, 2), (3, 3), (0, 4), (6, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (7, 1), (0, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 5

```
[(5, 0), (2, 1), (0, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(0, 0), (3, 1), (1, 2), (4, 3), (6, 4), (3, 5), (4, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (3, 1), (1, 2), (4, 3), (6, 4), (3, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

|*|*|*|*|*|*|*|*|

Step: 3

[(0, 0), (3, 1), (1, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(0, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Success:

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(3, 0), (3, 1), (4, 2), (3, 3), (5, 4), (6, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|Q|*|Q|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

[(3, 0), (3, 1), (4, 2), (2, 3), (5, 4), (6, 5), (7, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(3, 0), (1, 1), (4, 2), (2, 3), (5, 4), (6, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(3, 0), (1, 1), (4, 2), (2, 3), (5, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|

```

Step: 5

```

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(3, 0), (1, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 7

```
[(3, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(3, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(3, 0), (1, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|Q|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(3, 0), (5, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|*|*|Q|*|*|*|

Step: 3

[(3, 0), (5, 1), (0, 2), (2, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (1, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|Q|*|Q|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 2

[(3, 0), (5, 1), (0, 2), (1, 3), (7, 4), (5, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 3

[(3, 0), (5, 1), (0, 2), (1, 3), (7, 4), (5, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 4


```

[(3, 0), (5, 1), (0, 2), (4, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(6, 0), (1, 1), (4, 2), (6, 3), (6, 4), (4, 5), (1, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (1, 1), (4, 2), (0, 3), (6, 4), (4, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (1, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (1, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(6, 0), (1, 1), (3, 2), (0, 3), (6, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(0, 0), (5, 1), (7, 2), (1, 3), (7, 4), (3, 5), (3, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(0, 0), (5, 1), (7, 2), (1, 3), (7, 4), (3, 5), (3, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 3

[(0, 0), (5, 1), (7, 2), (1, 3), (7, 4), (3, 5), (2, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 4

[(0, 0), (5, 1), (7, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 5

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 6

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 7

```

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(0, 0), (5, 1), (3, 2), (5, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 13

```

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|Q|*|*|*|

Step: 14

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 15

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (7, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

Step: 16

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

Step: 17

[(0, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 18

[(2, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (2, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(2, 0), (5, 1), (3, 2), (1, 3), (7, 4), (4, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (6, 1), (4, 2), (0, 3), (1, 4), (0, 5), (7, 6), (1, 7)]
*	*	*	Q	*	Q	*	*	*
*	*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*

Step: 2

[(2, 0), (6, 1), (4, 2), (0, 3), (3, 4), (0, 5), (7, 6), (1, 7)]
*	*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*

Step: 3

[(2, 0), (6, 1), (4, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (6, 1), (4, 2), (0, 3), (1, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(2, 0), (6, 1), (4, 2), (0, 3), (7, 4), (0, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 3

```
[(2, 0), (6, 1), (4, 2), (0, 3), (7, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 4

```
[(2, 0), (6, 1), (4, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```


|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 5

[(2, 0), (4, 1), (4, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

[(2, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 7

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 8

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 9

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 10

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 11

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 12

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 13

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 14

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 15

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 16

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 17

```
[(2, 0), (0, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 18

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 19

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 20

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 21

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 22

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 23

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 24

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 25

```

[(2, 0), (0, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 26

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 27

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 28

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	

Step: 29

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	

Step: 30

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 31

[(7, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 32

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 33

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 34

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 35

```

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 36

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 37

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 38

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 39

```
[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```


Step: 40

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 41

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 42

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]

*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 43

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 44

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (5, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 45

```

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 46

```

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (5, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 47

```

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 48

```

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 49

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 50

[(1, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 51

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (2, 7)]
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 52

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 53

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (5, 6), (2, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 54

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (7, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 55

```

[(0, 0), (4, 1), (6, 2), (1, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 56

```

[(0, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 57

```

[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Success:

```
[(2, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (5, 1), (7, 2), (5, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (7, 2), (5, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (7, 2), (7, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|Q|Q|*|*|*|*|

Search Failed

Initial:

[(1, 0), (3, 1), (4, 2), (1, 3), (2, 4), (5, 5), (1, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(1, 0), (3, 1), (4, 2), (6, 3), (2, 4), (5, 5), (1, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(1, 0), (3, 1), (0, 2), (6, 3), (2, 4), (5, 5), (1, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 4

[(1, 0), (3, 1), (0, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Search Failed

Initial:

```

[(2, 0), (3, 1), (6, 2), (1, 3), (2, 4), (3, 5), (6, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|

```

Step: 2

```

[(2, 0), (3, 1), (6, 2), (1, 3), (2, 4), (0, 5), (6, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|

```

Step: 3

```

[(2, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (6, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(2, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(3, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (0, 2), (0, 3), (2, 4), (7, 5), (0, 6), (4, 7)]
|*|*|Q|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (0, 2), (0, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (0, 2), (7, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
```

Step: 4

```
[(5, 0), (3, 1), (0, 2), (7, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```


|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

Step: 5

[(5, 0), (3, 1), (0, 2), (7, 3), (2, 4), (4, 5), (1, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (5, 2), (0, 3), (1, 4), (6, 5), (6, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	Q
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (5, 2), (0, 3), (1, 4), (3, 5), (6, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (2, 1), (5, 2), (0, 3), (1, 4), (3, 5), (6, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 4

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(4, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(0, 0), (1, 1), (5, 2), (2, 3), (4, 4), (1, 5), (6, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (1, 1), (5, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(0, 0), (3, 1), (5, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(7, 0), (4, 1), (2, 2), (4, 3), (1, 4), (0, 5), (0, 6), (0, 7)]
|*|*|*|*|*|Q|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (4, 1), (2, 2), (4, 3), (1, 4), (0, 5), (0, 6), (6, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (4, 1), (2, 2), (4, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (5, 1), (2, 2), (4, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (6, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(0, 0), (7, 1), (2, 2), (3, 3), (4, 4), (2, 5), (0, 6), (5, 7)]
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

|*|Q|*|*|*|*|*|

Step: 2

[(0, 0), (7, 1), (2, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

|Q|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 3

[(0, 0), (7, 1), (1, 2), (6, 3), (4, 4), (2, 5), (0, 6), (5, 7)]

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 4

[(0, 0), (7, 1), (1, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 5

[(4, 0), (7, 1), (1, 2), (6, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (4, 1), (4, 2), (6, 3), (6, 4), (6, 5), (2, 6), (7, 7)]

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (6, 5), (2, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (6, 3), (1, 4), (6, 5), (2, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(2, 0), (5, 1), (2, 2), (1, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (3, 2), (1, 3), (7, 4), (5, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (3, 1), (5, 2), (4, 3), (6, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(2, 0), (3, 1), (5, 2), (4, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(2, 0), (3, 1), (5, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(2, 0), (3, 1), (6, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 5

[(0, 0), (3, 1), (6, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 6

[(0, 0), (2, 1), (6, 2), (6, 3), (1, 4), (7, 5), (4, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(5, 0), (4, 1), (6, 2), (1, 3), (4, 4), (2, 5), (2, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (4, 1), (6, 2), (1, 3), (4, 4), (2, 5), (7, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3


```
[(5, 0), (4, 1), (6, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (0, 1), (6, 2), (1, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(5, 0), (2, 1), (5, 2), (0, 3), (2, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(5, 0), (1, 1), (5, 2), (0, 3), (2, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(5, 0), (1, 1), (5, 2), (0, 3), (2, 4), (7, 5), (3, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 4

[(4, 0), (1, 1), (5, 2), (0, 3), (2, 4), (7, 5), (3, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(6, 0), (5, 1), (6, 2), (3, 3), (3, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (5, 1), (6, 2), (3, 3), (3, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (5, 1), (6, 2), (3, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*

*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (5, 1), (7, 2), (3, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 5

[(2, 0), (5, 1), (7, 2), (4, 3), (0, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (0, 1), (0, 2), (7, 3), (3, 4), (0, 5), (1, 6), (3, 7)]
*	Q	Q	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (0, 1), (0, 2), (7, 3), (4, 4), (0, 5), (1, 6), (3, 7)]
*	Q	Q	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (0, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (0, 1), (0, 2), (7, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(4, 0), (6, 1), (3, 2), (4, 3), (3, 4), (6, 5), (1, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 2

[(4, 0), (6, 1), (3, 2), (0, 3), (3, 4), (6, 5), (1, 6), (7, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(4, 0), (6, 1), (3, 2), (0, 3), (2, 4), (6, 5), (1, 6), (7, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (0, 1), (3, 2), (0, 3), (2, 4), (6, 5), (1, 6), (7, 7)]
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (6, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(4, 0), (4, 1), (3, 2), (5, 3), (4, 4), (0, 5), (1, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (2, 1), (3, 2), (5, 3), (4, 4), (0, 5), (1, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Q	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (2, 1), (7, 2), (5, 3), (4, 4), (0, 5), (1, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (2, 1), (7, 2), (5, 3), (7, 4), (0, 5), (1, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (5, 1), (4, 2), (4, 3), (5, 4), (6, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (5, 1), (4, 2), (4, 3), (1, 4), (6, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (7, 1), (4, 2), (4, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Step: 4

[(3, 0), (7, 1), (4, 2), (1, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(6, 0), (4, 1), (2, 2), (7, 3), (5, 4), (5, 5), (6, 6), (3, 7)]

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|Q|Q|*|

|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

Step: 2

[(6, 0), (4, 1), (2, 2), (7, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

Step: 3

[(6, 0), (4, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(2, 0), (4, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (3, 1), (2, 2), (1, 3), (5, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (2, 2), (1, 3), (5, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (6, 1), (6, 2), (1, 3), (5, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|*| |
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```



```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(2, 0), (6, 1), (6, 2), (1, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (5, 1), (3, 2), (4, 3), (6, 4), (4, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|Q|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (5, 1), (3, 2), (4, 3), (6, 4), (4, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (5, 1), (3, 2), (1, 3), (6, 4), (4, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|Q|*|*|*|*|*|*|
```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 4

[(0, 0), (5, 1), (3, 2), (1, 3), (6, 4), (4, 5), (2, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (0, 1), (6, 2), (5, 3), (2, 4), (2, 5), (5, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (0, 1), (6, 2), (5, 3), (2, 4), (2, 5), (5, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(6, 0), (0, 1), (3, 2), (5, 3), (2, 4), (2, 5), (5, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

```
[(6, 0), (0, 1), (3, 2), (5, 3), (2, 4), (2, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 5

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (2, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 6

```
[(4, 0), (0, 1), (3, 2), (5, 3), (2, 4), (6, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(7, 0), (7, 1), (2, 2), (5, 3), (5, 4), (2, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|Q|*|
```

Step: 2

```
[(7, 0), (7, 1), (2, 2), (5, 3), (5, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	Q	*

Step: 3

[(7, 0), (6, 1), (2, 2), (5, 3), (5, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 4

[(3, 0), (6, 1), (2, 2), (5, 3), (5, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(3, 0), (6, 1), (2, 2), (5, 3), (2, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(1, 0), (0, 1), (3, 2), (6, 3), (0, 4), (7, 5), (7, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 2

[(6, 0), (0, 1), (3, 2), (6, 3), (0, 4), (7, 5), (7, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*

Step: 3

[(6, 0), (0, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(2, 0), (5, 1), (6, 2), (5, 3), (3, 4), (1, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (6, 2), (5, 3), (3, 4), (1, 5), (3, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (6, 2), (5, 3), (3, 4), (1, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(2, 0), (4, 1), (6, 2), (1, 3), (3, 4), (1, 5), (3, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Initial:

[(7, 0), (4, 1), (2, 2), (5, 3), (5, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (4, 1), (2, 2), (5, 3), (5, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (4, 1), (2, 2), (0, 3), (5, 4), (6, 5), (4, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (4, 1), (1, 2), (0, 3), (1, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(4, 0), (4, 1), (1, 2), (0, 3), (3, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(4, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

```
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Success:

```
[(4, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (2, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (5, 1), (4, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(5, 0), (3, 1), (4, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```


|*|*|*|*|*|*|Q|*|

Step: 4

[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 5

[(5, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 6

[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 7

[(5, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 8

[(5, 0), (3, 1), (0, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|Q|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 9

```
[(5, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 10

```
[(6, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 11

```
[(5, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 12

```
[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 13

[(5, 0), (3, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 14

[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 15

[(5, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 16

[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 17

```

[(5, 0), (3, 1), (0, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 18

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 19

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 20

```

[(5, 0), (3, 1), (0, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 21

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 22

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 23

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 24

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 25

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

|*|*|*|*|*|*|Q|*|

Step: 26

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

Step: 27

[(5, 0), (3, 1), (0, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 28

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 29

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 30

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 31

```

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 32

```

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 33

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 34

```

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 35

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (4, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 36

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 37

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 38

[(5, 0), (3, 1), (0, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 39


```

[(5, 0), (3, 1), (6, 2), (0, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 40

```

[(5, 0), (3, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 41

```

[(5, 0), (4, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 42

```

[(5, 0), (3, 1), (6, 2), (0, 3), (3, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 43

```

[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (7, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Success:

[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (4, 1), (3, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	Q	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	Q	*	*	*	

Step: 2

[(2, 0), (4, 1), (3, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	Q	*	*	*	

Step: 3

[(2, 0), (4, 1), (1, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|*|

Step: 4

[(2, 0), (4, 1), (1, 2), (7, 3), (5, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (4, 1), (3, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*

Step: 2

[(2, 0), (4, 1), (3, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*

Step: 3

[(2, 0), (4, 1), (1, 2), (7, 3), (7, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*

Step: 4

[(2, 0), (4, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(2, 0), (4, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(2, 0), (4, 1), (1, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 7

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 8

[(1, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 9

```

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 10

```

[(1, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 11

```

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 12

```

[(2, 0), (4, 1), (1, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

Step: 13

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 14

[(2, 0), (4, 1), (7, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 15

[(2, 0), (4, 1), (1, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 16

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 17

[(2, 0), (4, 1), (7, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|

```

Step: 18

```

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 19

```

[(1, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(2, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(2, 0), (4, 1), (1, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 22

```
[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(7, 0), (0, 1), (0, 2), (0, 3), (6, 4), (6, 5), (6, 6), (4, 7)]
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (0, 1), (0, 2), (0, 3), (6, 4), (1, 5), (6, 6), (4, 7)]
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```


|Q|*|*|*|*|*|*|

Step: 3

[(7, 0), (0, 1), (0, 2), (5, 3), (6, 4), (1, 5), (6, 6), (4, 7)]

|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|*|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|

Step: 4

[(7, 0), (0, 1), (3, 2), (5, 3), (6, 4), (1, 5), (6, 6), (4, 7)]

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|*|*|*|Q|*|Q|

|Q|*|*|*|*|*|*|

Step: 5

[(7, 0), (0, 1), (3, 2), (5, 3), (2, 4), (1, 5), (6, 6), (4, 7)]

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

Search Failed

Initial:

[(0, 0), (6, 1), (4, 2), (0, 3), (5, 4), (7, 5), (4, 6), (3, 7)]

|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|

Step: 2

[(0, 0), (6, 1), (4, 2), (2, 3), (5, 4), (7, 5), (4, 6), (3, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(0, 0), (6, 1), (1, 2), (2, 3), (5, 4), (7, 5), (4, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Search Failed

Initial:

```

[(5, 0), (0, 1), (1, 2), (4, 3), (3, 4), (0, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 2

```

[(5, 0), (0, 1), (1, 2), (4, 3), (7, 4), (0, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 3

```

[(5, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (4, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```

|*|Q|*|*|*|*|*| |
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 4

```

[(5, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (7, 7)]

```

```

|*|*|*|*|*|Q|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Step: 5

```

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (7, 7)]

```

```

|*|*|*|*|*|Q|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|

```

Success:

```

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (0, 5), (2, 6), (5, 7)]

```

```

|*|*|*|*|*|Q|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(5, 0), (7, 1), (1, 2), (5, 3), (5, 4), (6, 5), (6, 6), (0, 7)]

```

```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|

```

|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|*|

Step: 2

[(5, 0), (7, 1), (1, 2), (5, 3), (2, 4), (6, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*

Step: 3

[(5, 0), (7, 1), (1, 2), (7, 3), (2, 4), (6, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	Q	*	*	*	*

Step: 4

[(5, 0), (7, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*

Step: 5

[(5, 0), (4, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (6, 5), (3, 6), (0, 7)]

```
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 7

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 8

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 9

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(3, 0), (3, 1), (2, 2), (7, 3), (6, 4), (6, 5), (4, 6), (3, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (2, 2), (7, 3), (6, 4), (6, 5), (4, 6), (1, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (2, 2), (7, 3), (5, 4), (6, 5), (4, 6), (1, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(3, 0), (0, 1), (2, 2), (7, 3), (5, 4), (6, 5), (4, 6), (1, 7)]
```

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|Q|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(3, 0), (3, 1), (2, 2), (7, 3), (6, 4), (6, 5), (4, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 2

[(3, 0), (3, 1), (2, 2), (7, 3), (6, 4), (6, 5), (4, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(3, 0), (3, 1), (2, 2), (7, 3), (1, 4), (6, 5), (4, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(3, 0), (0, 1), (2, 2), (7, 3), (1, 4), (6, 5), (4, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 5

```

[(3, 0), (0, 1), (2, 2), (7, 3), (1, 4), (6, 5), (4, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(3, 0), (0, 1), (2, 2), (7, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

```

[(3, 0), (7, 1), (2, 2), (7, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 8

```

[(3, 0), (7, 1), (2, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Success:

```

[(3, 0), (6, 1), (2, 2), (7, 3), (1, 4), (4, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```


Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (4, 1), (4, 2), (0, 3), (6, 4), (6, 5), (6, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (4, 1), (4, 2), (0, 3), (3, 4), (6, 5), (6, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(7, 0), (4, 1), (4, 2), (0, 3), (3, 4), (6, 5), (6, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (4, 1), (6, 2), (1, 3), (0, 4), (2, 5), (2, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (4, 1), (6, 2), (1, 3), (0, 4), (2, 5), (7, 6), (1, 7)]
*	*	*	*	Q	*	*	*	*
*	*	*	Q	*	*	*	Q	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	

Step: 3

[(3, 0), (4, 1), (6, 2), (1, 3), (0, 4), (2, 5), (7, 6), (7, 7)]
*	*	*	*	Q	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q	

Step: 4

[(3, 0), (4, 1), (6, 2), (1, 3), (0, 4), (2, 5), (5, 6), (7, 7)]
*	*	*	*	Q	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	

Search Failed

Initial:

[(0, 0), (2, 1), (2, 2), (6, 3), (7, 4), (2, 5), (5, 6), (7, 7)]
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	Q	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q	

Step: 2

[(0, 0), (2, 1), (4, 2), (6, 3), (7, 4), (2, 5), (5, 6), (7, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 3

[(0, 0), (2, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (7, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 4

[(0, 0), (2, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (1, 7)]

Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (4, 1), (1, 2), (0, 3), (0, 4), (5, 5), (1, 6), (2, 7)]

*	*	*	Q	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (4, 1), (1, 2), (0, 3), (0, 4), (5, 5), (7, 6), (2, 7)]

|*|*|*|Q|Q|*|*|*|

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(6, 0), (4, 1), (1, 2), (0, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(6, 0), (4, 1), (1, 2), (5, 3), (0, 4), (5, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(5, 0), (3, 1), (1, 2), (2, 3), (4, 4), (6, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (3, 1), (1, 2), (2, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(5, 0), (3, 1), (1, 2), (7, 3), (4, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (6, 1), (6, 2), (5, 3), (0, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(6, 0), (2, 1), (6, 2), (5, 3), (0, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
```

|*|*|*|*|*|*|*|Q|

Step: 3

[(6, 0), (2, 1), (6, 2), (5, 3), (0, 4), (4, 5), (1, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 4

[(6, 0), (2, 1), (0, 2), (5, 3), (0, 4), (4, 5), (1, 6), (7, 7)]

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 5

[(6, 0), (2, 1), (0, 2), (5, 3), (1, 4), (4, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 6

[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (7, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

Success:

[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(0, 0), (5, 1), (6, 2), (0, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|Q|*|*|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(0, 0), (5, 1), (6, 2), (4, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|Q|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (5, 1), (6, 2), (4, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(2, 0), (5, 1), (6, 2), (4, 3), (0, 4), (0, 5), (3, 6), (7, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(2, 0), (5, 1), (1, 2), (4, 3), (0, 4), (0, 5), (3, 6), (7, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (5, 1), (6, 2), (0, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
Q	*	*	Q	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (5, 1), (6, 2), (4, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
Q	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (5, 1), (6, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

Step: 4

[(2, 0), (5, 1), (6, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(2, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 6

[(6, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 7

[(2, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 8

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(2, 0), (5, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (7, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q

Step: 14

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 15

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 16

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 17

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 18

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 19

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (3, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(2, 0), (5, 1), (1, 2), (4, 3), (7, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(6, 0), (6, 1), (0, 2), (3, 3), (2, 4), (1, 5), (2, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(6, 0), (6, 1), (0, 2), (3, 3), (7, 4), (1, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```

[(4, 0), (6, 1), (0, 2), (3, 3), (7, 4), (1, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(4, 0), (6, 1), (0, 2), (3, 3), (7, 4), (7, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 5

```

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (7, 1), (0, 2), (3, 3), (7, 4), (3, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (7, 1), (0, 2), (3, 3), (7, 4), (2, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 6

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 7

[(4, 0), (4, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 9

```
[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 10

```
[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 11

```
[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 12

```
[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```


|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 13

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 14

[(1, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 15

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 16

[(4, 0), (7, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 17

[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (2, 5), (5, 6), (1, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 18

```
[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (7, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 19

```
[(4, 0), (2, 1), (0, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (6, 5), (1, 6), (7, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 2

```

[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (6, 5), (1, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (6, 5), (1, 6), (7, 7)]

|Q|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|Q|

Step: 2

[(0, 0), (1, 1), (7, 2), (4, 3), (6, 4), (6, 5), (1, 6), (5, 7)]

|Q|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(0, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (5, 7)]

|Q|*|*|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 4

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (5, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|Q|*|*|*|*|*|

Step: 5

[(0, 0), (5, 1), (7, 2), (2, 3), (6, 4), (6, 5), (1, 6), (3, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 6

```

[(0, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 7

```

[(2, 0), (5, 1), (7, 2), (2, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Random Restart Hill Climbing Search

Initial:

```

[(0, 0), (0, 1), (2, 2), (6, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
|Q|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(3, 0), (0, 1), (2, 2), (6, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (0, 1), (2, 2), (5, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(3, 0), (6, 1), (2, 2), (5, 3), (1, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(5, 0), (6, 1), (7, 2), (6, 3), (4, 4), (0, 5), (7, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|Q|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|

Step: 2

[(5, 0), (3, 1), (7, 2), (6, 3), (4, 4), (0, 5), (7, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	Q	*

Step: 3

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	Q	*

Step: 4

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

```

[(4, 0), (3, 1), (3, 2), (0, 3), (0, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 2

```

[(4, 0), (3, 1), (3, 2), (0, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 3

```

[(4, 0), (1, 1), (3, 2), (0, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(4, 0), (6, 1), (0, 2), (7, 3), (4, 4), (5, 5), (1, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|

```


*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (5, 5), (1, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (5, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Success:

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(5, 0), (7, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q

Step: 2

[(5, 0), (7, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Success:

[(5, 0), (7, 1), (1, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Hill climbing Search with Sideways Analysis

Initial:

[(5, 0), (7, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q

Step: 2

[(5, 0), (7, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Success:

[(5, 0), (7, 1), (1, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(6, 0), (0, 1), (4, 2), (5, 3), (6, 4), (6, 5), (0, 6), (2, 7)]

*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(7, 0), (0, 1), (4, 2), (5, 3), (6, 4), (6, 5), (0, 6), (2, 7)]

*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (0, 1), (4, 2), (5, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (2, 7)]

|*|Q|*|*|*|*|Q|*|

*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(3, 0), (4, 1), (7, 2), (0, 3), (2, 4), (2, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 2

[(3, 0), (4, 1), (7, 2), (0, 3), (2, 4), (5, 5), (7, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 3

[(3, 0), (4, 1), (7, 2), (0, 3), (2, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 4

[(4, 0), (4, 1), (7, 2), (0, 3), (2, 4), (5, 5), (7, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*

Search Failed

Initial:

[(1, 0), (7, 1), (6, 2), (5, 3), (3, 4), (7, 5), (6, 6), (2, 7)]
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (6, 2), (0, 3), (3, 4), (7, 5), (6, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	Q	*	*	*	Q	*	*

Step: 3

[(1, 0), (7, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

|*|Q|*|*|*|Q|*|*|

Step: 4

[(1, 0), (4, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(3, 0), (2, 1), (7, 2), (4, 3), (2, 4), (7, 5), (7, 6), (1, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|Q|*|

Step: 2

[(3, 0), (0, 1), (7, 2), (4, 3), (2, 4), (7, 5), (7, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|Q|*|

Step: 3

[(3, 0), (0, 1), (7, 2), (4, 3), (2, 4), (7, 5), (6, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|Q|*|*|

Step: 4

[(3, 0), (0, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]

```
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (5, 1), (5, 2), (5, 3), (3, 4), (5, 5), (3, 6), (7, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|
|*|Q|Q|Q|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
```

Step: 2

```
[(3, 0), (5, 1), (0, 2), (5, 3), (3, 4), (5, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (5, 1), (0, 2), (5, 3), (3, 4), (6, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
```

Step: 4

```
[(1, 0), (5, 1), (0, 2), (5, 3), (3, 4), (6, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 5

[(1, 0), (4, 1), (0, 2), (5, 3), (3, 4), (6, 5), (3, 6), (7, 7)]

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (4, 1), (4, 2), (5, 3), (3, 4), (7, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(3, 0), (4, 1), (4, 2), (1, 3), (3, 4), (7, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(3, 0), (4, 1), (4, 2), (1, 3), (5, 4), (7, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 4

[(3, 0), (4, 1), (6, 2), (1, 3), (5, 4), (7, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(2, 0), (3, 1), (1, 2), (7, 3), (0, 4), (0, 5), (7, 6), (2, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 2

[(2, 0), (3, 1), (1, 2), (7, 3), (0, 4), (0, 5), (7, 6), (5, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 3

[(2, 0), (6, 1), (1, 2), (7, 3), (0, 4), (0, 5), (7, 6), (5, 7)]
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 4

```

[(2, 0), (6, 1), (1, 2), (7, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|

```

Success:

```

[(2, 0), (6, 1), (1, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(3, 0), (3, 1), (3, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(3, 0), (3, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(5, 0), (3, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(5, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(5, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 7

```

[(6, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

Step: 8

[(6, 0), (4, 1), (2, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 9

[(6, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 10

[(5, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 11

[(6, 0), (4, 1), (0, 2), (7, 3), (3, 4), (6, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 12

[(6, 0), (4, 1), (0, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]

```

|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 13

```

[(6, 0), (4, 1), (2, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 14

```

[(7, 0), (4, 1), (2, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 15

```

[(7, 0), (4, 1), (2, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 16

```

[(7, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*

Success:

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(0, 0), (2, 1), (2, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 2

[(5, 0), (2, 1), (2, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Step: 3

[(5, 0), (2, 1), (4, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

|*|*|*|*|Q|*|*|*|

Step: 4

[(5, 0), (2, 1), (4, 2), (7, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(0, 0), (2, 1), (2, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 2

[(5, 0), (2, 1), (2, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(5, 0), (2, 1), (2, 2), (7, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|Q|*|*|*|

Step: 4

[(5, 0), (2, 1), (4, 2), (7, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*

Step: 5

[(5, 0), (2, 1), (4, 2), (7, 3), (1, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 6

[(5, 0), (2, 1), (4, 2), (7, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*

Step: 7

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 8

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 9

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 10

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 11

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 12

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	Q	*

|*|*|*|Q|*|*|*|*|

Step: 13

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 14

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 15

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 16

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 17

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 18

```

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 19

```

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 20

```

[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 21

```

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (4, 5), (6, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 22

[(5, 0), (2, 1), (0, 2), (7, 3), (7, 4), (4, 5), (6, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	Q	*	*	*

Step: 23

[(5, 0), (2, 1), (0, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 24

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 25

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 26

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 27

```

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 28

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 29

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 30

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 31

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 32

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 33

[(5, 0), (2, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 34

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

|*|*|*|Q|*|*|*|*|

Step: 35

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 36

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 37

[(1, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 38

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Step: 39

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 40

```
[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 41

```
[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 42

```
[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Step: 43

```
[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```


*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 44

[(1, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*	*

Step: 45

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q	
Q	*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*	*

Step: 46

[(1, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*	*

Step: 47

[(2, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
*	*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	*	
Q	Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*	*

Step: 48

```

[(5, 0), (2, 1), (5, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 49

```

[(5, 0), (2, 1), (1, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 50

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 51

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

Step: 52

```

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 53

[(5, 0), (2, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 54

[(5, 0), (0, 1), (4, 2), (7, 3), (0, 4), (3, 5), (6, 6), (2, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 55

[(5, 0), (0, 1), (4, 2), (7, 3), (1, 4), (3, 5), (6, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 56

[(5, 0), (0, 1), (4, 2), (7, 3), (7, 4), (3, 5), (6, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

|*|*|*|Q|Q|*|*|*|

Step: 57

[(5, 0), (0, 1), (4, 2), (4, 3), (7, 4), (3, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 58

[(5, 0), (0, 1), (4, 2), (0, 3), (7, 4), (3, 5), (6, 6), (2, 7)]

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 59

[(5, 0), (0, 1), (4, 2), (4, 3), (7, 4), (3, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 60

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (3, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Step: 61

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(6, 0), (0, 1), (1, 2), (2, 3), (0, 4), (6, 5), (1, 6), (4, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (0, 1), (7, 2), (2, 3), (0, 4), (6, 5), (1, 6), (4, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (0, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (5, 1), (7, 2), (2, 3), (0, 4), (3, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (4, 1), (0, 2), (1, 3), (2, 4), (3, 5), (0, 6), (0, 7)]
|*|*|Q|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (4, 1), (7, 2), (1, 3), (2, 4), (3, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (4, 1), (7, 2), (1, 3), (6, 4), (3, 5), (0, 6), (0, 7)]
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|Q|*|*|*|*|*|

Step: 4

[(4, 0), (4, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Step: 5

[(4, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (0, 7)]

|*|*|*|*|*|*|Q|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (6, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|Q|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

Step: 2

[(5, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (6, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

Step: 3

[(5, 0), (2, 1), (7, 2), (1, 3), (3, 4), (1, 5), (6, 6), (4, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(4, 0), (4, 1), (7, 2), (0, 3), (3, 4), (7, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|Q|

```

Step: 2

```

[(4, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 3

```

[(2, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (1, 6), (7, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 4

```

[(2, 0), (4, 1), (7, 2), (0, 3), (3, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|

```



```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (6, 1), (7, 2), (6, 3), (5, 4), (5, 5), (1, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
```

Step: 2

```
[(3, 0), (6, 1), (0, 2), (6, 3), (5, 4), (5, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (5, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

Step: 5

[(3, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (1, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (0, 1), (7, 2), (3, 3), (1, 4), (2, 5), (7, 6), (6, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	Q	*

Step: 2

[(3, 0), (0, 1), (7, 2), (3, 3), (1, 4), (2, 5), (4, 6), (6, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (0, 1), (7, 2), (5, 3), (1, 4), (2, 5), (4, 6), (6, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (5, 1), (3, 2), (7, 3), (1, 4), (1, 5), (0, 6), (0, 7)]

*	*	*	*	*	*	Q	Q
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 2

[(4, 0), (5, 1), (3, 2), (7, 3), (1, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(4, 0), (7, 1), (3, 2), (7, 3), (1, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 4

[(4, 0), (7, 1), (3, 2), (5, 3), (1, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (3, 2), (5, 3), (2, 4), (1, 5), (6, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (4, 1), (7, 2), (5, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
```

Step: 2

```
[(5, 0), (4, 1), (7, 2), (3, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
```

Step: 3

```
[(6, 0), (4, 1), (7, 2), (3, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
```

Step: 4

```
[(6, 0), (4, 1), (7, 2), (3, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (6, 1), (5, 2), (4, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
Q	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	

Step: 2

[(0, 0), (6, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
Q	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	

Step: 3

[(0, 0), (2, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (1, 7)]
Q	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	

Step: 4

[(0, 0), (2, 1), (5, 2), (1, 3), (6, 4), (0, 5), (7, 6), (4, 7)]
Q	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	

Search Failed

Initial:

[(3, 0), (3, 1), (3, 2), (7, 3), (4, 4), (2, 5), (2, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (3, 1), (3, 2), (7, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 3

[(3, 0), (3, 1), (7, 2), (7, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*

Step: 4

[(1, 0), (3, 1), (7, 2), (7, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (5, 1), (2, 2), (2, 3), (5, 4), (7, 5), (6, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 2

[(3, 0), (5, 1), (2, 2), (2, 3), (5, 4), (7, 5), (6, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*

Step: 3

[(3, 0), (5, 1), (2, 2), (2, 3), (5, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(3, 0), (6, 1), (2, 2), (2, 3), (5, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (6, 2), (5, 3), (4, 4), (6, 5), (6, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|Q|Q|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (2, 1), (7, 2), (5, 3), (4, 4), (6, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (2, 1), (7, 2), (5, 3), (4, 4), (6, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(3, 0), (5, 1), (7, 2), (5, 3), (4, 4), (6, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(3, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```


|*|*|Q|*|*|*|*|*|

Step: 6

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|Q|

|*|*|Q|*|*|*|*|*|

Success:

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (0, 1), (5, 2), (6, 3), (2, 4), (5, 5), (4, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(4, 0), (0, 1), (5, 2), (6, 3), (2, 4), (5, 5), (7, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 3

[(4, 0), (0, 1), (5, 2), (6, 3), (2, 4), (5, 5), (7, 6), (1, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (5, 5), (7, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|
```

Step: 6

```
[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 7

```
[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 8

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 9

[(0, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 10

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 11

[(2, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Success:

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (1, 5), (7, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 5

[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (4, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	Q
*	Q	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(6, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(2, 0), (5, 1), (5, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 6

```
[(2, 0), (5, 1), (1, 2), (1, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Success:

```
[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|*|*|Q|*|

Random Restart Hill Climbing Search

Initial:

[(2, 0), (6, 1), (5, 2), (3, 3), (7, 4), (3, 5), (4, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

Step: 2

[(2, 0), (6, 1), (1, 2), (3, 3), (7, 4), (3, 5), (4, 6), (7, 7)]

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

Step: 3

[(2, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (4, 6), (7, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

Step: 4

[(2, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (4, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Search Failed

Initial:

```
[(5, 0), (3, 1), (7, 2), (4, 3), (2, 4), (7, 5), (6, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|
```

Step: 2

```
[(5, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (4, 1), (3, 2), (2, 3), (1, 4), (4, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (4, 1), (3, 2), (7, 3), (1, 4), (4, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```


Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*

Step: 3

[(2, 0), (4, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (6, 7)]
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
*	*	*	Q	*	*	*	*	

Step: 4

[(2, 0), (4, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	

Step: 5

[(2, 0), (5, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (0, 1), (4, 2), (6, 3), (1, 4), (3, 5), (1, 6), (0, 7)]
Q	Q	*	*	*	*	*	Q	
*	*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (0, 1), (4, 2), (6, 3), (1, 4), (3, 5), (1, 6), (5, 7)]
Q	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	

Step: 3

[(0, 0), (2, 1), (4, 2), (6, 3), (1, 4), (3, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	

Search Failed

Initial:

[(1, 0), (5, 1), (4, 2), (1, 3), (6, 4), (7, 5), (1, 6), (6, 7)]
*	*	*	*	*	*	*	*	
Q	*	*	Q	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
*	*	*	*	*	Q	*	*	

Step: 2

[(1, 0), (5, 1), (4, 2), (0, 3), (6, 4), (7, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q	
*	*	*	*	*	Q	*	*	

Step: 3

[(1, 0), (5, 1), (2, 2), (0, 3), (6, 4), (7, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	Q	*	*

Step: 4

[(1, 0), (5, 1), (2, 2), (0, 3), (6, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*

Step: 5

[(1, 0), (5, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(4, 0), (0, 1), (3, 2), (6, 3), (5, 4), (7, 5), (1, 6), (0, 7)]

*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(4, 0), (0, 1), (3, 2), (6, 3), (2, 4), (7, 5), (1, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(6, 0), (1, 1), (4, 2), (3, 3), (0, 4), (2, 5), (5, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (1, 1), (4, 2), (7, 3), (0, 4), (2, 5), (5, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (4, 2), (7, 3), (0, 4), (2, 5), (5, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (4, 1), (0, 2), (2, 3), (2, 4), (7, 5), (6, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (0, 2), (2, 3), (2, 4), (7, 5), (6, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (0, 2), (5, 3), (2, 4), (7, 5), (6, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (7, 2), (5, 3), (2, 4), (7, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|*|*|Q|*|*|Q|*|*|

Step: 5

[(1, 0), (4, 1), (7, 2), (5, 3), (2, 4), (3, 5), (6, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(5, 0), (5, 1), (7, 2), (0, 3), (6, 4), (7, 5), (3, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|Q|*|*|

Step: 2

[(5, 0), (5, 1), (7, 2), (0, 3), (6, 4), (7, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|Q|*|*|

Step: 3

[(5, 0), (5, 1), (2, 2), (0, 3), (6, 4), (7, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 4

[(5, 0), (5, 1), (2, 2), (0, 3), (6, 4), (4, 5), (1, 6), (3, 7)]

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 5

```
[(5, 0), (5, 1), (2, 2), (0, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (6, 1), (7, 2), (2, 3), (3, 4), (4, 5), (6, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (6, 1), (7, 2), (2, 3), (3, 4), (1, 5), (6, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (7, 2), (2, 3), (3, 4), (1, 5), (6, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*

Step: 4

[(0, 0), (7, 1), (7, 2), (2, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (3, 1), (7, 2), (6, 3), (0, 4), (5, 5), (1, 6), (3, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (7, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(5, 0), (2, 1), (7, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*

|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|

Step: 4

[(5, 0), (2, 1), (0, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(5, 0), (2, 1), (0, 2), (6, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (3, 2), (4, 3), (7, 4), (0, 5), (5, 6), (1, 7)]
*	Q	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	Q	*	*	*	

Step: 2

[(7, 0), (0, 1), (3, 2), (4, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
*	Q	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
Q	*	*	*	*	*	*	*	

Step: 3

```

[(7, 0), (0, 1), (2, 2), (4, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (5, 1), (2, 2), (4, 3), (6, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (5, 1), (2, 2), (4, 3), (6, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(7, 0), (5, 1), (5, 2), (2, 3), (7, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|Q|*|*|

```

Step: 2

```

[(7, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 3

[(7, 0), (5, 1), (3, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 4

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Search Failed

Initial:

[(5, 0), (2, 1), (7, 2), (4, 3), (3, 4), (4, 5), (5, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(5, 0), (2, 1), (7, 2), (4, 3), (3, 4), (4, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	Q	*	*

Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(5, 0), (2, 1), (6, 2), (4, 3), (3, 4), (4, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(5, 0), (2, 1), (6, 2), (7, 3), (3, 4), (4, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(4, 0), (3, 1), (6, 2), (1, 3), (3, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (3, 1), (6, 2), (1, 3), (3, 4), (0, 5), (5, 6), (2, 7)]
*	*	*	*	*	Q	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (3, 1), (6, 2), (0, 3), (3, 4), (0, 5), (5, 6), (2, 7)]

*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(1, 0), (3, 1), (6, 2), (0, 3), (3, 4), (5, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 5

[(1, 0), (3, 1), (6, 2), (0, 3), (2, 4), (5, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (1, 1), (5, 2), (5, 3), (5, 4), (2, 5), (7, 6), (5, 7)]

*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(1, 0), (1, 1), (5, 2), (5, 3), (0, 4), (2, 5), (7, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

```
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(1, 0), (1, 1), (4, 2), (5, 3), (0, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(3, 0), (1, 1), (4, 2), (5, 3), (0, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 5

```
[(3, 0), (1, 1), (4, 2), (6, 3), (0, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(3, 0), (4, 1), (1, 2), (2, 3), (4, 4), (0, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
```

```
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (6, 1), (1, 2), (2, 3), (4, 4), (0, 5), (0, 6), (3, 7)]
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (1, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(3, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

[(7, 0), (3, 1), (5, 2), (7, 3), (3, 4), (0, 5), (4, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|*|*|

Step: 2

[(6, 0), (3, 1), (5, 2), (7, 3), (3, 4), (0, 5), (4, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(6, 0), (3, 1), (5, 2), (7, 3), (5, 4), (0, 5), (4, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|Q|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(7, 0), (0, 1), (4, 2), (2, 3), (3, 4), (2, 5), (5, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (0, 1), (4, 2), (2, 3), (6, 4), (2, 5), (5, 6), (0, 7)]

*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (0, 1), (4, 2), (2, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (0, 1), (4, 2), (1, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (0, 1), (3, 2), (1, 3), (6, 4), (2, 5), (5, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (7, 1), (7, 2), (1, 3), (2, 4), (6, 5), (2, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	Q	Q

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (7, 2), (1, 3), (3, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (7, 1), (4, 2), (1, 3), (3, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (7, 1), (7, 2), (6, 3), (7, 4), (3, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|Q|*|Q|*|*|*|
```

Step: 2

```
[(0, 0), (7, 1), (1, 2), (6, 3), (7, 4), (3, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|Q|*|*|*|*|
|*|Q|*|*|Q|*|*|*|

Step: 3

[(0, 0), (5, 1), (1, 2), (6, 3), (7, 4), (3, 5), (2, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(0, 0), (5, 1), (1, 2), (4, 3), (7, 4), (3, 5), (2, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 5

[(0, 0), (5, 1), (1, 2), (4, 3), (7, 4), (3, 5), (6, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (2, 1), (1, 2), (2, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 2

```

[(3, 0), (2, 1), (6, 2), (2, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```

[(5, 0), (2, 1), (6, 2), (2, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Search Failed

Initial:

```

[(5, 0), (5, 1), (1, 2), (4, 3), (0, 4), (4, 5), (7, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|

```

Step: 2

```

[(5, 0), (5, 1), (1, 2), (4, 3), (0, 4), (3, 5), (7, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 3

```
[(2, 0), (5, 1), (1, 2), (4, 3), (0, 4), (3, 5), (7, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
```

Step: 4

```
[(2, 0), (5, 1), (1, 2), (4, 3), (0, 4), (3, 5), (6, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(6, 0), (7, 1), (3, 2), (1, 3), (4, 4), (6, 5), (1, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (0, 1), (3, 2), (1, 3), (4, 4), (6, 5), (1, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(6, 0), (0, 1), (3, 2), (1, 3), (4, 4), (7, 5), (1, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(6, 0), (0, 1), (3, 2), (1, 3), (4, 4), (7, 5), (5, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(7, 0), (2, 1), (0, 2), (2, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
*	*	Q	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (2, 1), (6, 2), (2, 3), (0, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (2, 1), (6, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (1, 1), (4, 2), (2, 3), (5, 4), (0, 5), (3, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (4, 2), (2, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (1, 1), (4, 2), (3, 3), (4, 4), (0, 5), (0, 6), (1, 7)]

Q	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(7, 0), (1, 1), (4, 2), (3, 3), (4, 4), (0, 5), (0, 6), (1, 7)]

```

|*|*|*|*|*|Q|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (1, 1), (4, 2), (3, 3), (4, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (1, 1), (4, 2), (6, 3), (4, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (2, 1), (4, 2), (6, 3), (4, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 6

```

[(7, 0), (2, 1), (4, 2), (6, 3), (0, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```



```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (5, 1), (3, 2), (2, 3), (0, 4), (4, 5), (0, 6), (1, 7)]
```

```
|*|*|*|*|Q|*|Q|*| |
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (5, 1), (3, 2), (2, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|Q|*|*|*| |
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (3, 2), (2, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
```

```
|*|*|*|*|Q|*|*|*| |
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (5, 1), (3, 2), (0, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
```

```
|*|*|*|Q|Q|*|*|*| |
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

|Q|*|*|*|*|*|*|*|

Search Failed

Initial:

[(6, 0), (4, 1), (6, 2), (7, 3), (4, 4), (4, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|Q|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 2

[(6, 0), (4, 1), (0, 2), (7, 3), (4, 4), (4, 5), (0, 6), (3, 7)]

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 3

[(6, 0), (2, 1), (0, 2), (7, 3), (4, 4), (4, 5), (0, 6), (3, 7)]

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Step: 4

[(6, 0), (2, 1), (0, 2), (7, 3), (4, 4), (4, 5), (1, 6), (3, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

```
[(4, 0), (6, 1), (0, 2), (5, 3), (4, 4), (7, 5), (0, 6), (1, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(4, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (1, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(4, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (6, 1), (0, 2), (2, 3), (4, 4), (7, 5), (0, 6), (3, 7)]
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(4, 0), (5, 1), (4, 2), (2, 3), (0, 4), (5, 5), (0, 6), (1, 7)]
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (0, 6), (1, 7)]
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(0, 0), (0, 1), (7, 2), (2, 3), (4, 4), (5, 5), (5, 6), (7, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 2

[(0, 0), (0, 1), (7, 2), (2, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
Q	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 3

[(3, 0), (0, 1), (7, 2), (2, 3), (4, 4), (1, 5), (5, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 4

[(3, 0), (0, 1), (7, 2), (2, 3), (6, 4), (1, 5), (5, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q

Step: 5

[(3, 0), (0, 1), (7, 2), (4, 3), (6, 4), (1, 5), (5, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q

Search Failed

Initial:

[(2, 0), (7, 1), (7, 2), (0, 3), (7, 4), (2, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	Q	*	*	*

Step: 2

[(2, 0), (7, 1), (3, 2), (0, 3), (7, 4), (2, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Step: 3

[(2, 0), (7, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Step: 4

[(4, 0), (7, 1), (3, 2), (0, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*

Search Failed

Initial:

[(5, 0), (6, 1), (4, 2), (5, 3), (6, 4), (3, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (6, 1), (4, 2), (5, 3), (7, 4), (3, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```

[(5, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 4

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 5

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (3, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 6

```
[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (0, 1), (4, 2), (4, 3), (5, 4), (4, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|Q|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (0, 1), (4, 2), (4, 3), (5, 4), (3, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|Q|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (0, 1), (4, 2), (7, 3), (5, 4), (3, 5), (6, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```


Step: 4

[(5, 0), (0, 1), (4, 2), (7, 3), (5, 4), (3, 5), (6, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(4, 0), (4, 1), (7, 2), (0, 3), (7, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 2

[(4, 0), (4, 1), (7, 2), (5, 3), (7, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Step: 3

[(4, 0), (1, 1), (7, 2), (5, 3), (7, 4), (2, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (5, 2), (7, 3), (6, 4), (5, 5), (0, 6), (2, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	Q	*	*	*	*

Step: 2

[(1, 0), (7, 1), (5, 2), (1, 3), (6, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(1, 0), (7, 1), (5, 2), (1, 3), (6, 4), (4, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(2, 0), (3, 1), (4, 2), (6, 3), (1, 4), (3, 5), (0, 6), (1, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (3, 1), (4, 2), (6, 3), (1, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

```
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(2, 0), (3, 1), (1, 2), (6, 3), (1, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(2, 0), (5, 1), (1, 2), (6, 3), (1, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(3, 0), (0, 1), (6, 2), (3, 3), (4, 4), (3, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|Q|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (0, 1), (6, 2), (3, 3), (4, 4), (7, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 3

[(3, 0), (0, 1), (6, 2), (3, 3), (4, 4), (7, 5), (1, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(3, 0), (0, 1), (6, 2), (3, 3), (5, 4), (7, 5), (1, 6), (4, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(1, 0), (7, 1), (4, 2), (5, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (7, 5), (5, 6), (1, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (2, 5), (5, 6), (3, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(5, 0), (2, 1), (4, 2), (6, 3), (6, 4), (4, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (2, 1), (4, 2), (6, 3), (0, 4), (4, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (2, 1), (4, 2), (6, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (1, 1), (4, 2), (6, 3), (0, 4), (2, 5), (4, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (5, 2), (6, 3), (2, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(3, 0), (3, 1), (1, 2), (6, 3), (2, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(5, 0), (3, 1), (1, 2), (6, 3), (2, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (3, 1), (1, 2), (6, 3), (4, 4), (2, 5), (7, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(7, 0), (0, 1), (1, 2), (2, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (3, 1), (1, 2), (2, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (5, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
```

Step: 4

[(7, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (2, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*

Step: 5

[(7, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (2, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 6

[(7, 0), (3, 1), (1, 2), (6, 3), (4, 4), (0, 5), (2, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (1, 1), (0, 2), (5, 3), (4, 4), (4, 5), (6, 6), (4, 7)]

*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (1, 1), (0, 2), (5, 3), (7, 4), (4, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|


```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (6, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(6, 0), (2, 1), (0, 2), (5, 3), (7, 4), (4, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (6, 1), (3, 2), (3, 3), (7, 4), (2, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(5, 0), (6, 1), (3, 2), (3, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (3, 2), (3, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (0, 1), (6, 2), (3, 3), (7, 4), (2, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(5, 0), (0, 1), (6, 2), (3, 3), (7, 4), (2, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 6

[(5, 0), (0, 1), (6, 2), (3, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 7

[(5, 0), (0, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(5, 0), (3, 1), (6, 2), (0, 3), (7, 4), (1, 5), (4, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (6, 1), (2, 2), (6, 3), (6, 4), (5, 5), (1, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	Q	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (6, 1), (2, 2), (6, 3), (0, 4), (5, 5), (1, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(2, 0), (7, 1), (2, 2), (6, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Success:

```

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Hill climbing Search with Sideways Analysis

Initial:

```

[(2, 0), (6, 1), (2, 2), (6, 3), (6, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (2, 2), (6, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(2, 0), (6, 1), (2, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(2, 0), (6, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 6

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 7

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 8

[(5, 0), (5, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 9

[(2, 0), (5, 1), (2, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*

Step: 10

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 11

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (5, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 12

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Step: 13

```

[(2, 0), (5, 1), (7, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|

```

Step: 14

```

[(2, 0), (5, 1), (3, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

Step: 15

[(2, 0), (5, 1), (7, 2), (0, 3), (7, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*

Step: 16

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (3, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 17

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (6, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*

Success:

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:


```
[(5, 0), (3, 1), (0, 2), (0, 3), (2, 4), (6, 5), (7, 6), (0, 7)]
|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 2

```
[(5, 0), (3, 1), (0, 2), (0, 3), (2, 4), (6, 5), (7, 6), (1, 7)]
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (6, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (3, 1), (5, 2), (0, 3), (2, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (7, 2), (1, 3), (7, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (7, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (7, 2), (1, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
```

Step: 4

```
[(1, 0), (3, 1), (7, 2), (2, 3), (7, 4), (5, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (0, 2), (5, 3), (0, 4), (3, 5), (2, 6), (4, 7)]
|*|*|Q|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (1, 1), (7, 2), (5, 3), (0, 4), (3, 5), (2, 6), (4, 7)]
*	*	*	*	Q	*	*	*	*	
Q	Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*	
*	*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*	

Step: 3

[(1, 0), (1, 1), (7, 2), (5, 3), (0, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	Q	*	Q	*	*	
Q	Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*	

Step: 4

[(1, 0), (1, 1), (7, 2), (2, 3), (0, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	Q	*	Q	*	*	
Q	Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*	

Step: 5

[(1, 0), (1, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*	*	
Q	Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*	

Search Failed

Initial:

[(4, 0), (3, 1), (5, 2), (5, 3), (4, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	
*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	Q	*	Q	*	*
*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*

Step: 2

[(4, 0), (3, 1), (5, 2), (2, 3), (4, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*

Step: 3

[(6, 0), (3, 1), (5, 2), (2, 3), (4, 4), (5, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(6, 0), (3, 1), (5, 2), (2, 3), (4, 4), (1, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	Q	
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(7, 0), (1, 1), (4, 2), (4, 3), (0, 4), (0, 5), (2, 6), (1, 7)]

|*|*|*|*|Q|Q|*|*|

```
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (1, 1), (4, 2), (4, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (1, 1), (4, 2), (6, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (1, 1), (4, 2), (6, 3), (0, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (2, 1), (4, 2), (6, 3), (0, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(0, 0), (1, 1), (5, 2), (4, 3), (1, 4), (0, 5), (0, 6), (0, 7)]
Q	*	*	*	*	Q	Q	Q	
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (1, 1), (5, 2), (4, 3), (1, 4), (0, 5), (0, 6), (6, 7)]
Q	*	*	*	*	Q	Q	*	
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (1, 1), (5, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
Q	*	*	*	*	*	Q	*	
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*	*

Step: 4

[(0, 0), (3, 1), (5, 2), (4, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
Q	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*	*

Step: 5

[(0, 0), (3, 1), (5, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Search Failed

Initial:

[(0, 0), (1, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (4, 7)]

Q	*	Q	*	*	*	*	*
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(0, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (4, 7)]

Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(0, 0), (6, 1), (0, 2), (5, 3), (1, 4), (4, 5), (7, 6), (3, 7)]

Q	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(3, 0), (2, 1), (5, 2), (7, 3), (1, 4), (1, 5), (2, 6), (3, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(3, 0), (2, 1), (5, 2), (7, 3), (1, 4), (1, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(0, 0), (2, 1), (5, 2), (7, 3), (1, 4), (1, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(0, 0), (2, 1), (5, 2), (7, 3), (1, 4), (1, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(0, 0), (2, 1), (5, 2), (7, 3), (4, 4), (1, 5), (3, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```


*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(0, 0), (4, 1), (3, 2), (0, 3), (2, 4), (0, 5), (6, 6), (7, 7)]
Q	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 2

[(7, 0), (4, 1), (3, 2), (0, 3), (2, 4), (0, 5), (6, 6), (7, 7)]
*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q

Step: 3

[(7, 0), (4, 1), (3, 2), (0, 3), (2, 4), (4, 5), (6, 6), (7, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	Q

Step: 4

[(7, 0), (4, 1), (3, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

|Q|*|*|*|*|*|*|

Step: 5

[(7, 0), (3, 1), (3, 2), (0, 3), (2, 4), (4, 5), (6, 6), (1, 7)]

|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|

|*|Q|Q|*|*|*|*|

|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|

Search Failed

Initial:

[(0, 0), (1, 1), (6, 2), (1, 3), (1, 4), (7, 5), (3, 6), (6, 7)]

|Q|*|*|*|*|*|*|

|*|Q|*|Q|Q|*|*|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

Step: 2

[(0, 0), (2, 1), (6, 2), (1, 3), (1, 4), (7, 5), (3, 6), (6, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|*|Q|*|

Step: 3

[(0, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (3, 6), (6, 7)]

|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|

Search Failed

Initial:

```

[(4, 0), (3, 1), (5, 2), (6, 3), (4, 4), (6, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 2

```

[(4, 0), (3, 1), (5, 2), (0, 3), (4, 4), (6, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 3

```

[(4, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(2, 0), (3, 1), (5, 2), (0, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(2, 0), (7, 1), (5, 2), (4, 3), (3, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(2, 0), (7, 1), (5, 2), (7, 3), (3, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 3

```

[(2, 0), (2, 1), (5, 2), (7, 3), (3, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(2, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 5

```

[(2, 0), (2, 1), (5, 2), (7, 3), (1, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

Search Failed

Initial:

[(3, 0), (2, 1), (7, 2), (3, 3), (4, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	Q	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 2

[(3, 0), (2, 1), (7, 2), (2, 3), (4, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q

Step: 3

[(3, 0), (2, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q

Step: 4

[(4, 0), (2, 1), (7, 2), (2, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q

Step: 5

```

[(4, 0), (2, 1), (5, 2), (2, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Search Failed

Initial:

```

[(5, 0), (7, 1), (6, 2), (3, 3), (3, 4), (5, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (7, 1), (6, 2), (3, 3), (3, 4), (5, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (7, 1), (6, 2), (3, 3), (3, 4), (1, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (7, 1), (6, 2), (0, 3), (3, 4), (1, 5), (4, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```
|*|*|*|*|*|*|Q| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (4, 1), (3, 2), (5, 3), (3, 4), (5, 5), (6, 6), (2, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (4, 1), (0, 2), (5, 3), (3, 4), (5, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (0, 2), (5, 3), (3, 4), (5, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (0, 2), (5, 3), (3, 4), (1, 5), (6, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (2, 1), (3, 2), (7, 3), (3, 4), (4, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 2

[(4, 0), (2, 1), (0, 2), (7, 3), (3, 4), (4, 5), (6, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (4, 5), (6, 6), (3, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (4, 5), (6, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

```
[(1, 0), (7, 1), (5, 2), (4, 3), (5, 4), (4, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (7, 1), (5, 2), (4, 3), (6, 4), (4, 5), (5, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (7, 1), (5, 2), (0, 3), (6, 4), (4, 5), (5, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (5, 2), (0, 3), (6, 4), (4, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (7, 1), (5, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
```

```

|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (7, 1), (5, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Success:

```

[(4, 0), (7, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (5, 1), (3, 2), (6, 3), (5, 4), (5, 5), (3, 6), (2, 7)]
|*|*|*|*|*|*|*| |
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|
|*|Q|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (5, 5), (3, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|

```

*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (5, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 6

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 7

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 8

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 9

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 11

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 12

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 13

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 14

```

[(7, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|

```

Step: 15

```

[(0, 0), (5, 1), (3, 2), (6, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 16

[(0, 0), (5, 1), (3, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 17

[(0, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 18

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
Q	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 19

[(0, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	

Step: 20

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 21

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 22

```

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 23

```

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 24

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 25

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 26

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 27

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 28

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 29

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 30

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 31

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 32

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 33

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 34

```

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 35

```

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 36

```

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 38

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 39

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 40

[(5, 0), (2, 1), (0, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 41

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 42

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 43

```

[(5, 0), (2, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 44

```

[(5, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 45

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 46

```

[(1, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 47

[(1, 0), (5, 1), (2, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 48

[(1, 0), (5, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 49

[(1, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(5, 0), (1, 1), (6, 2), (0, 3), (3, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(7, 0), (2, 1), (6, 2), (7, 3), (1, 4), (5, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 2

[(7, 0), (2, 1), (6, 2), (7, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Step: 3

[(7, 0), (2, 1), (6, 2), (3, 3), (1, 4), (4, 5), (1, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (5, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(7, 0), (2, 1), (6, 2), (7, 3), (1, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|Q|*|*|*|*|

```

Step: 2

```

[(7, 0), (2, 1), (6, 2), (6, 3), (1, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (2, 1), (6, 2), (6, 3), (1, 4), (5, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (2, 1), (6, 2), (6, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(7, 0), (2, 1), (6, 2), (1, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 6

```
[(7, 0), (2, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 7

```
[(2, 0), (2, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 8

```
[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(5, 0), (2, 1), (6, 2), (1, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```


|*|*|*|*|*|Q|*|*|

Random Restart Hill Climbing Search

Initial:

[(1, 0), (5, 1), (3, 2), (7, 3), (5, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|*|

|*|Q|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

Step: 2

[(1, 0), (5, 1), (3, 2), (7, 3), (4, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

Step: 3

[(2, 0), (5, 1), (3, 2), (7, 3), (4, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|Q|*|

Step: 4

[(2, 0), (5, 1), (3, 2), (1, 3), (4, 4), (4, 5), (7, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Search Failed

Initial:

```

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (6, 5), (4, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (6, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(3, 0), (6, 1), (0, 2), (7, 3), (4, 4), (1, 5), (3, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Initial:

```

[(5, 0), (5, 1), (4, 2), (1, 3), (5, 4), (4, 5), (5, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|Q|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (5, 1), (4, 2), (1, 3), (5, 4), (4, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (5, 1), (4, 2), (1, 3), (7, 4), (4, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(5, 0), (5, 1), (4, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(5, 0), (1, 1), (4, 2), (1, 3), (7, 4), (2, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (1, 2), (3, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|Q|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (1, 2), (3, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*	
Q	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	

Step: 3

[(1, 0), (4, 1), (7, 2), (3, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	

Search Failed

Initial:

[(6, 0), (0, 1), (3, 2), (3, 3), (1, 4), (1, 5), (5, 6), (5, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	

Step: 2

[(6, 0), (0, 1), (3, 2), (7, 3), (1, 4), (1, 5), (5, 6), (5, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	Q	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*

Step: 3

[(6, 0), (0, 1), (3, 2), (7, 3), (4, 4), (1, 5), (5, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (0, 1), (3, 2), (7, 3), (4, 4), (1, 5), (3, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 5

[(2, 0), (0, 1), (3, 2), (7, 3), (4, 4), (1, 5), (3, 6), (5, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (5, 1), (6, 2), (6, 3), (4, 4), (6, 5), (2, 6), (6, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	Q	Q	*	Q	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (6, 5), (2, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 4

```

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(5, 0), (5, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Success:

```

[(5, 0), (2, 1), (0, 2), (6, 3), (4, 4), (7, 5), (1, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(5, 0), (7, 1), (4, 2), (6, 3), (3, 4), (5, 5), (3, 6), (3, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	Q	
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 2

[(5, 0), (7, 1), (4, 2), (6, 3), (3, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	*	
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 3

[(1, 0), (7, 1), (4, 2), (6, 3), (3, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	Q	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 4

[(1, 0), (7, 1), (4, 2), (6, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*	

Step: 5

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 6

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*

Step: 7

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 8

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	Q	*	*	*

Step: 9

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]

|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|


```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 10

```
[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 11

```
[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 12

```
[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|
```

Step: 13

```
[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

Step: 14

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 15

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 16

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 17

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 18

[(1, 0), (7, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]

```

|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|Q|*|*|*|

```

Step: 19

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 20

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 21

```

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 22

```

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 23

[(1, 0), (6, 1), (4, 2), (2, 3), (7, 4), (5, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	

Step: 24

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (5, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 25

[(1, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 26

[(3, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(3, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (7, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Hill Climbing Search Analysis

Initial:

[(3, 0), (1, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (1, 7)]

|*|*|Q|*|*|*|Q|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 2

[(3, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (1, 7)]

|*|*|Q|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

Step: 3

[(3, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (7, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

Step: 4

[(3, 0), (6, 1), (0, 2), (2, 3), (0, 4), (5, 5), (7, 6), (1, 7)]

|*|*|Q|*|Q|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Success:

```
[(3, 0), (6, 1), (4, 2), (2, 3), (0, 4), (5, 5), (7, 6), (1, 7)]
```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Hill climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (1, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (1, 7)]
```

```

|*|*|Q|*|*|*|Q|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 2

```
[(3, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (1, 7)]
```

```

|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 3

```
[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (0, 6), (1, 7)]
```

```

|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Success:

[(4, 0), (6, 1), (0, 2), (2, 3), (7, 4), (5, 5), (3, 6), (1, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(5, 0), (0, 1), (4, 2), (3, 3), (1, 4), (7, 5), (0, 6), (0, 7)]
*	Q	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 2

[(5, 0), (0, 1), (4, 2), (3, 3), (1, 4), (7, 5), (2, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(5, 0), (0, 1), (4, 2), (3, 3), (1, 4), (6, 5), (2, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

|*|*|*|*|*|*|*|*|

Step: 4

[(5, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Step: 5

[(3, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Success:

[(3, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(4, 0), (3, 1), (4, 2), (4, 3), (4, 4), (4, 5), (3, 6), (2, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|Q|*|

|Q|*|Q|Q|Q|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(4, 0), (3, 1), (0, 2), (4, 3), (4, 4), (4, 5), (3, 6), (2, 7)]


```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|Q|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (3, 1), (0, 2), (4, 3), (4, 4), (1, 5), (3, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(5, 0), (3, 1), (0, 2), (4, 3), (4, 4), (1, 5), (3, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (3, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 7

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 8

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 9

[(5, 0), (3, 1), (0, 2), (6, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 10

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 11

[(5, 0), (3, 1), (0, 2), (7, 3), (4, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 12

[(5, 0), (3, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*	
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	

Step: 13

[(5, 0), (4, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 14

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Success:

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
```

Hill Climbing Search Analysis

Initial:

```
[(6, 0), (4, 1), (5, 2), (2, 3), (2, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (5, 2), (2, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (4, 1), (5, 2), (2, 3), (2, 4), (6, 5), (4, 6), (2, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(6, 0), (4, 1), (5, 2), (2, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
```

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|

Step: 5

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 6

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 7

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 8

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 9

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]

|*|*|*|*|Q|*|*|*|

```
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 10

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 11

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 12

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 13

```
[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (7, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*

Success:

[(6, 0), (1, 1), (5, 2), (2, 3), (0, 4), (3, 5), (7, 6), (4, 7)]
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search

Initial:

[(3, 0), (0, 1), (6, 2), (7, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 2

[(3, 0), (0, 1), (4, 2), (7, 3), (5, 4), (3, 5), (6, 6), (0, 7)]
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(5, 0), (6, 1), (3, 2), (6, 3), (2, 4), (4, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (1, 1), (3, 2), (6, 3), (2, 4), (4, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Success:

[(4, 0), (1, 1), (3, 2), (6, 3), (2, 4), (7, 5), (5, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(6, 0), (6, 1), (2, 2), (6, 3), (5, 4), (7, 5), (1, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|Q|Q|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 2

[(6, 0), (0, 1), (2, 2), (6, 3), (5, 4), (7, 5), (1, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(6, 0), (0, 1), (2, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

[(6, 0), (4, 1), (2, 2), (0, 3), (5, 4), (7, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

[(1, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (4, 6), (3, 7)]
*	*	Q	*	*	Q	*	*
Q	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (4, 6), (3, 7)]
*	*	Q	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Hill climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (4, 6), (3, 7)]
|*|*|Q|*|*|Q|*|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (4, 6), (3, 7)]
*	*	Q	*	*	Q	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 3

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (0, 5), (5, 6), (3, 7)]
*	*	Q	*	*	Q	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 4

[(7, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*	*

Success:

[(4, 0), (2, 1), (0, 2), (6, 3), (1, 4), (7, 5), (5, 6), (3, 7)]
*	*	Q	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

```

[(7, 0), (0, 1), (3, 2), (4, 3), (2, 4), (1, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 2

```

[(7, 0), (0, 1), (3, 2), (4, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 3

```

[(7, 0), (0, 1), (3, 2), (6, 3), (2, 4), (5, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(6, 0), (3, 1), (4, 2), (4, 3), (7, 4), (2, 5), (3, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|Q|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 2

```

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (2, 5), (3, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (5, 5), (3, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(6, 0), (3, 1), (1, 2), (4, 3), (7, 4), (5, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (4, 1), (5, 2), (4, 3), (4, 4), (4, 5), (3, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	Q	Q	Q	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (4, 1), (5, 2), (4, 3), (4, 4), (7, 5), (3, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*
*	Q	*	Q	Q	Q	*	Q

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (0, 1), (5, 2), (4, 3), (4, 4), (7, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|Q|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(3, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 5

```
[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (4, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 6

```
[(6, 0), (0, 1), (5, 2), (1, 3), (4, 4), (7, 5), (3, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

[(5, 0), (4, 1), (7, 2), (6, 3), (0, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (7, 2), (6, 3), (0, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (7, 2), (4, 3), (0, 4), (5, 5), (0, 6), (6, 7)]

*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(1, 0), (5, 1), (3, 2), (5, 3), (3, 4), (1, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (4, 1), (3, 2), (5, 3), (3, 4), (1, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|


```

|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (4, 1), (7, 2), (5, 3), (3, 4), (1, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*| |
|Q|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (4, 1), (7, 2), (5, 3), (3, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (4, 1), (7, 2), (5, 3), (0, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(4, 0), (7, 1), (7, 2), (2, 3), (7, 4), (6, 5), (7, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	Q	*	Q	*

Step: 2

[(4, 0), (7, 1), (0, 2), (2, 3), (7, 4), (6, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	Q	*	Q	*

Step: 3

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (6, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	Q	*	*	*	*	Q	*

Step: 4

[(4, 0), (7, 1), (0, 2), (2, 3), (6, 4), (1, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	Q	*

Search Failed

Initial:

[(6, 0), (5, 1), (3, 2), (2, 3), (4, 4), (3, 5), (2, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	Q
*	*	Q	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*

|*|*|*|*|*|*|*|*|

Step: 2

[(6, 0), (5, 1), (3, 2), (0, 3), (4, 4), (3, 5), (2, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|Q|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(6, 0), (5, 1), (3, 2), (0, 3), (4, 4), (7, 5), (2, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 4

[(6, 0), (5, 1), (3, 2), (0, 3), (4, 4), (7, 5), (1, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(6, 0), (0, 1), (5, 2), (4, 3), (4, 4), (5, 5), (1, 6), (6, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|Q|*|*|Q|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

Step: 2

[(6, 0), (0, 1), (7, 2), (4, 3), (4, 4), (5, 5), (1, 6), (6, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(6, 0), (0, 1), (7, 2), (4, 3), (1, 4), (5, 5), (1, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (0, 1), (7, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(3, 0), (0, 1), (7, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (7, 2), (0, 3), (2, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|Q|*|Q|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(1, 0), (1, 1), (7, 2), (0, 3), (6, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	Q	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(1, 0), (1, 1), (7, 2), (0, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	Q	*	Q	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 4

[(4, 0), (1, 1), (7, 2), (0, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	Q	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (5, 1), (1, 2), (3, 3), (2, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

Step: 2

[(4, 0), (5, 1), (1, 2), (3, 3), (2, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 3

[(4, 0), (4, 1), (1, 2), (3, 3), (2, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 4

[(4, 0), (4, 1), (1, 2), (3, 3), (5, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 5

[(4, 0), (4, 1), (1, 2), (3, 3), (5, 4), (7, 5), (2, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 6

[(4, 0), (4, 1), (0, 2), (3, 3), (5, 4), (7, 5), (2, 6), (6, 7)]

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (5, 2), (2, 3), (5, 4), (4, 5), (4, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|Q|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (5, 1), (5, 2), (2, 3), (5, 4), (4, 5), (4, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (5, 2), (2, 3), (0, 4), (4, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (5, 1), (5, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
```

Success:

```
[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(1, 0), (0, 1), (0, 2), (6, 3), (6, 4), (5, 5), (2, 6), (3, 7)]
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (0, 1), (0, 2), (6, 3), (6, 4), (5, 5), (2, 6), (4, 7)]
|*|Q|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```


|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 3

[(1, 0), (7, 1), (0, 2), (6, 3), (6, 4), (5, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	Q	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Success:

[(1, 0), (5, 1), (0, 2), (6, 3), (3, 4), (7, 5), (2, 6), (4, 7)]
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Hill Climbing Search Analysis

Initial:

```
[(7, 0), (2, 1), (5, 2), (6, 3), (0, 4), (4, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

Step: 2

```
[(7, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

Step: 3

```
[(7, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (2, 1), (5, 2), (6, 3), (0, 4), (4, 5), (7, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
```

```

|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 2

```

[(7, 0), (2, 1), (5, 2), (6, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 3

```

[(7, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|

```

Step: 4

```

[(6, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(5, 0), (2, 1), (5, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 6

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 7

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 8

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(5, 0), (2, 1), (6, 2), (3, 3), (0, 4), (7, 5), (1, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

[(6, 0), (7, 1), (4, 2), (5, 3), (3, 4), (7, 5), (2, 6), (1, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 2

[(6, 0), (7, 1), (4, 2), (0, 3), (3, 4), (7, 5), (2, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 3

[(6, 0), (1, 1), (4, 2), (0, 3), (3, 4), (7, 5), (2, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(6, 0), (1, 1), (7, 2), (0, 3), (3, 4), (7, 5), (2, 6), (1, 7)]

*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	Q	*	*

Step: 5

[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (7, 5), (2, 6), (1, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 6

```

[(6, 0), (4, 1), (7, 2), (0, 3), (3, 4), (5, 5), (2, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(7, 0), (7, 1), (0, 2), (2, 3), (2, 4), (7, 5), (2, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|Q|*|*|

```

Step: 2

```

[(7, 0), (7, 1), (0, 2), (2, 3), (2, 4), (7, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|Q|*|*|

```

Step: 3

```

[(7, 0), (5, 1), (0, 2), (2, 3), (2, 4), (7, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 4

[(7, 0), (5, 1), (0, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Step: 5

[(7, 0), (5, 1), (0, 2), (2, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (4, 1), (1, 2), (4, 3), (6, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (4, 1), (1, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 3

[(5, 0), (4, 1), (1, 2), (4, 3), (6, 4), (3, 5), (0, 6), (7, 7)]

*	*	*	*	*	*	Q	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	Q	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	

Search Failed

Initial:

[(3, 0), (2, 1), (6, 2), (7, 3), (7, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	Q	Q	Q	*	*	*

Step: 2

[(5, 0), (2, 1), (6, 2), (7, 3), (7, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	Q	Q	Q	*	*	*

Step: 3

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (1, 6), (3, 7)]

*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	Q	*	
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*	*

Step: 4

[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (7, 5), (0, 6), (3, 7)]

|*|*|*|*|*|*|Q|*|


```
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Success:

```
[(5, 0), (2, 1), (6, 2), (1, 3), (7, 4), (4, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (3, 1), (3, 2), (3, 3), (6, 4), (6, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 2

```
[(7, 0), (3, 1), (3, 2), (3, 3), (6, 4), (6, 5), (5, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (0, 2), (3, 3), (6, 4), (6, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|Q|*|*|*|*|
```

*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (4, 1), (0, 2), (3, 3), (6, 4), (6, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	Q	*	*
Q	*	*	*	*	*	*	*

Step: 5

[(7, 0), (4, 1), (0, 2), (3, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 6

[(7, 0), (4, 1), (0, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 7

[(7, 0), (4, 1), (0, 2), (3, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 8

[(7, 0), (4, 1), (0, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]

*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 9

[(7, 0), (4, 1), (2, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 10

[(7, 0), (4, 1), (6, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 11

[(7, 0), (4, 1), (0, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]

*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 12

[(7, 0), (4, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*

Step: 13

[(7, 0), (7, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*

Success:

[(4, 0), (7, 1), (3, 2), (0, 3), (6, 4), (1, 5), (5, 6), (2, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(7, 0), (7, 1), (0, 2), (7, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (0, 2), (7, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	Q	*	Q	*	*

Step: 3

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 4

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(7, 0), (7, 1), (0, 2), (7, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	Q	*	Q	*	*

Step: 2

[(1, 0), (7, 1), (0, 2), (7, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|Q|*|Q|*|Q|*|*|

Step: 3

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]

|*|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|Q|*|*|

Step: 4

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 5

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 6

[(1, 0), (7, 1), (0, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|Q|*|*|*|Q|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 7

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (5, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 9

```

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 10

```

[(1, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 11

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 12

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 13

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 14

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 15

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 16

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 17

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 18

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 19

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 20

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 21

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 22

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 23

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 24

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|Q|*|*|*|*|Q|*|

Step: 25

[(5, 0), (0, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 26

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|Q|*|

Step: 27

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 28

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|Q|*|*|*|*|*|*|

Step: 29

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]

|*|*|*|*|*|*|*|*|

```

|*|*|*|*|*|Q|*|*| |
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 30

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 31

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 32

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 33

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|

```

Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 34

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	Q	*

Step: 35

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 36

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*

Step: 37

[(5, 0), (1, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 38

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|Q|*|*|

```

Step: 39

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 40

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 41

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 42

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 43

```

[(5, 0), (7, 1), (2, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 44

```

[(5, 0), (7, 1), (0, 2), (6, 3), (3, 4), (1, 5), (7, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

Step: 45

```

[(5, 0), (7, 1), (0, 2), (6, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 46

```

[(5, 0), (7, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

|*|Q|*|Q|*|*|*|*|

Success:

[(5, 0), (2, 1), (0, 2), (7, 3), (3, 4), (1, 5), (6, 6), (4, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

Random Restart Hill Climbing Search

Initial:

[(3, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (7, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

Step: 2

[(3, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (1, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(3, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 4

[(2, 0), (6, 1), (6, 2), (3, 3), (0, 4), (4, 5), (7, 6), (5, 7)]


```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (2, 2), (0, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (1, 1), (2, 2), (7, 3), (3, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (2, 1), (5, 2), (3, 3), (7, 4), (3, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (2, 1), (5, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(4, 0), (2, 1), (5, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	

Step: 4

[(4, 0), (2, 1), (5, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	

Step: 5

[(4, 0), (2, 1), (7, 2), (3, 3), (6, 4), (0, 5), (2, 6), (5, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	

Search Failed

Initial:

[(2, 0), (3, 1), (5, 2), (4, 3), (4, 4), (5, 5), (5, 6), (5, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*	*

```
|*|*|Q|*|*|Q|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(2, 0), (3, 1), (7, 2), (4, 3), (4, 4), (5, 5), (5, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(2, 0), (3, 1), (7, 2), (4, 3), (4, 4), (0, 5), (5, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(6, 0), (3, 1), (7, 2), (4, 3), (4, 4), (0, 5), (5, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (5, 1), (2, 2), (2, 3), (3, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
```

Step: 2

[(7, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (2, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(1, 0), (5, 1), (2, 2), (6, 3), (3, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (3, 1), (6, 2), (4, 3), (0, 4), (5, 5), (4, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	Q	*	*	Q	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (3, 1), (6, 2), (4, 3), (0, 4), (5, 5), (4, 6), (4, 7)]

|*|*|*|*|Q|*|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(1, 0), (3, 1), (6, 2), (2, 3), (0, 4), (5, 5), (4, 6), (4, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 4

```

[(1, 0), (3, 1), (6, 2), (2, 3), (0, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|Q|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 5

```

[(1, 0), (3, 1), (6, 2), (2, 3), (7, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Search Failed

Initial:

```

[(2, 0), (4, 1), (3, 2), (5, 3), (7, 4), (7, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

```
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 2

```
[(2, 0), (6, 1), (3, 2), (5, 3), (7, 4), (7, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 3

```
[(2, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (3, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(2, 0), (6, 1), (3, 2), (5, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 5

```
[(2, 0), (6, 1), (3, 2), (7, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
```

Step: 6

[(2, 0), (6, 1), (3, 2), (7, 3), (4, 4), (1, 5), (3, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(7, 0), (0, 1), (1, 2), (3, 3), (2, 4), (2, 5), (7, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*

Step: 2

[(5, 0), (0, 1), (1, 2), (3, 3), (2, 4), (2, 5), (7, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(5, 0), (0, 1), (1, 2), (3, 3), (6, 4), (2, 5), (7, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(5, 0), (3, 1), (3, 2), (3, 3), (0, 4), (4, 5), (6, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (3, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(5, 0), (3, 1), (3, 2), (7, 3), (2, 4), (4, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(5, 0), (3, 1), (1, 2), (7, 3), (2, 4), (4, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Search Failed

Initial:

[(2, 0), (3, 1), (6, 2), (0, 3), (0, 4), (7, 5), (2, 6), (7, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	Q	*


```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
```

Step: 2

```
[(2, 0), (3, 1), (6, 2), (0, 3), (0, 4), (7, 5), (5, 6), (7, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
```

Step: 3

```
[(2, 0), (4, 1), (6, 2), (0, 3), (0, 4), (7, 5), (5, 6), (7, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
```

Step: 4

```
[(2, 0), (4, 1), (6, 2), (0, 3), (0, 4), (3, 5), (5, 6), (7, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(5, 0), (5, 1), (3, 2), (4, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|Q|
|Q|Q|*|*|*|*|*|*|
```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 2

[(5, 0), (5, 1), (3, 2), (6, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(2, 0), (5, 1), (3, 2), (6, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Success:

[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(3, 0), (5, 1), (2, 2), (2, 3), (0, 4), (1, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (1, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|*|*|Q|*|*|*|*|*|

```

Success:

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (1, 5), (1, 6), (4, 7)]
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (1, 5), (1, 6), (6, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (7, 1), (3, 2), (0, 3), (0, 4), (5, 5), (1, 6), (6, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (1, 5), (1, 6), (4, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (1, 5), (1, 6), (5, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(2, 0), (4, 1), (3, 2), (0, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 4

[(2, 0), (4, 1), (7, 2), (0, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Success:

[(2, 0), (4, 1), (7, 2), (3, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(0, 0), (2, 1), (3, 2), (3, 3), (5, 4), (4, 5), (7, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 2

[(0, 0), (2, 1), (3, 2), (3, 3), (6, 4), (4, 5), (7, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(0, 0), (2, 1), (5, 2), (3, 3), (6, 4), (4, 5), (7, 6), (2, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(0, 0), (2, 1), (5, 2), (3, 3), (6, 4), (4, 5), (7, 6), (1, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(5, 0), (0, 1), (2, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

```
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (1, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Success:

```
[(5, 0), (7, 1), (1, 2), (3, 3), (0, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(2, 0), (4, 1), (0, 2), (5, 3), (7, 4), (7, 5), (7, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|Q|Q|*|
```

Step: 2

```
[(2, 0), (4, 1), (0, 2), (5, 3), (7, 4), (1, 5), (7, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|Q|*|
```

Step: 3

```
[(2, 0), (4, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(7, 0), (4, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
```

Step: 5

```
[(7, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```


|*|*|*|*|Q|*|*|*|

Hill Climbing Search Analysis

Initial:

[(6, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (0, 6), (0, 7)]

|*|Q|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (0, 6), (0, 7)]

|*|Q|*|*|*|*|Q|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (7, 6), (0, 7)]

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 4

[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (7, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 5

[(5, 0), (0, 1), (4, 2), (6, 3), (0, 4), (2, 5), (7, 6), (1, 7)]

```
|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (0, 6), (0, 7)]
|*|Q|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (0, 6), (0, 7)]
|*|Q|*|*|*|*|Q|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (6, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(5, 0), (0, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(4, 0), (0, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(4, 0), (0, 1), (3, 2), (1, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 7

```

[(4, 0), (0, 1), (3, 2), (6, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 8

```

[(4, 0), (0, 1), (3, 2), (5, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

Step: 9

[(4, 0), (1, 1), (3, 2), (5, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 10

[(4, 0), (0, 1), (3, 2), (5, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 11

[(4, 0), (0, 1), (3, 2), (1, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 12

[(3, 0), (0, 1), (3, 2), (1, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q

Step: 13

[(3, 0), (5, 1), (3, 2), (1, 3), (6, 4), (2, 5), (0, 6), (7, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 14

```

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (2, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|

```

Step: 15

```

[(3, 0), (5, 1), (7, 2), (1, 3), (6, 4), (2, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 16

```

[(3, 0), (1, 1), (7, 2), (1, 3), (6, 4), (2, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 17

```

[(3, 0), (1, 1), (7, 2), (5, 3), (6, 4), (2, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 18

[(3, 0), (1, 1), (7, 2), (5, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 19

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 20

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (6, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	Q	*	*
*	*	Q	*	*	*	*	*

Step: 21

[(3, 0), (1, 1), (7, 2), (2, 3), (6, 4), (2, 5), (0, 6), (5, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 22

[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (2, 5), (0, 6), (5, 7)]

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 23

[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (0, 6), (5, 7)]

*	*	*	*	*	Q	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Success:

[(3, 0), (1, 1), (7, 2), (4, 3), (6, 4), (0, 5), (2, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(7, 0), (3, 1), (6, 2), (5, 3), (4, 4), (7, 5), (6, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	Q	*	*	*	Q
*	*	Q	*	*	*	Q	*
Q	*	*	*	*	Q	*	*

Step: 2

[(7, 0), (3, 1), (6, 2), (5, 3), (4, 4), (1, 5), (6, 6), (5, 7)]

|*|*|*|*|*|*|*|*|

```
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (6, 2), (2, 3), (4, 4), (1, 5), (6, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (3, 1), (6, 2), (2, 3), (4, 4), (1, 5), (7, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(7, 0), (1, 1), (1, 2), (7, 3), (4, 4), (5, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|Q|*|*|*|*|
```

Step: 2

```
[(7, 0), (1, 1), (1, 2), (7, 3), (4, 4), (0, 5), (4, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```


*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*

Step: 3

[(7, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (4, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*

Step: 4

[(7, 0), (3, 1), (1, 2), (7, 3), (4, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*

Step: 5

[(7, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	Q	*	*	*	*

Step: 6

[(7, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	*

Success:

[(6, 0), (3, 1), (1, 2), (7, 3), (5, 4), (0, 5), (2, 6), (4, 7)]

*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (7, 1), (1, 2), (3, 3), (4, 4), (0, 5), (5, 6), (6, 7)]

*	*	*	*	*	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	Q	
Q	Q	*	*	*	*	*	*	

Step: 2

[(7, 0), (7, 1), (1, 2), (3, 3), (0, 4), (0, 5), (5, 6), (6, 7)]

*	*	*	*	Q	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	Q	
Q	Q	*	*	*	*	*	*	

Step: 3

[(7, 0), (7, 1), (1, 2), (3, 3), (0, 4), (0, 5), (4, 6), (6, 7)]

*	*	*	*	Q	Q	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
Q	Q	*	*	*	*	*	*	

Step: 4

[(7, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|Q|*|*|*|*|*|*|

```

Step: 5

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (6, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (4, 6), (4, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(2, 0), (7, 1), (1, 2), (3, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 9

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 10

[(2, 0), (7, 1), (1, 2), (7, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*

Step: 11

[(2, 0), (7, 1), (1, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 12

[(2, 0), (7, 1), (5, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 13

```

[(2, 0), (7, 1), (5, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(2, 0), (7, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|

```

Success:

```

[(2, 0), (5, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(4, 0), (6, 1), (6, 2), (4, 3), (6, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (6, 1), (6, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(4, 0), (6, 1), (1, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(4, 0), (7, 1), (1, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (5, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 6

```
[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (5, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

|*|*|*|Q|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

Step: 7

[(4, 0), (7, 1), (1, 2), (6, 3), (2, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (6, 1), (6, 2), (4, 3), (6, 4), (5, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	Q	*	Q	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (6, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (0, 1), (6, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 4

[(3, 0), (0, 1), (6, 2), (4, 3), (2, 4), (5, 5), (6, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 5

[(3, 0), (0, 1), (6, 2), (4, 3), (2, 4), (5, 5), (7, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 6

[(3, 0), (0, 1), (6, 2), (1, 3), (2, 4), (5, 5), (7, 6), (4, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Random Restart Hill Climbing Search

Initial:

[(5, 0), (6, 1), (2, 2), (1, 3), (5, 4), (2, 5), (4, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	Q
Q	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (6, 1), (2, 2), (1, 3), (5, 4), (7, 5), (4, 6), (4, 7)]


```
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (6, 1), (2, 2), (1, 3), (5, 4), (7, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 4

```
[(3, 0), (6, 1), (2, 2), (1, 3), (5, 4), (7, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Search Failed

Initial:

```
[(2, 0), (5, 1), (2, 2), (7, 3), (6, 4), (6, 5), (3, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 2

```
[(2, 0), (5, 1), (2, 2), (7, 3), (6, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
```

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(2, 0), (5, 1), (2, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 4

```
[(2, 0), (5, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(2, 0), (4, 1), (5, 2), (7, 3), (0, 4), (6, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (0, 1), (6, 2), (6, 3), (2, 4), (7, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

Step: 2

[(2, 0), (0, 1), (6, 2), (6, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 3

[(2, 0), (0, 1), (6, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 4

[(7, 0), (0, 1), (6, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	Q	*	*

Search Failed

Initial:

[(4, 0), (6, 1), (7, 2), (4, 3), (5, 4), (7, 5), (3, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	Q	*	Q

Step: 2

```

[(4, 0), (6, 1), (0, 2), (4, 3), (5, 4), (7, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 3

```

[(4, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (3, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 4

```

[(4, 0), (6, 1), (0, 2), (2, 3), (5, 4), (7, 5), (3, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Search Failed

Initial:

```

[(2, 0), (4, 1), (1, 2), (7, 3), (6, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (5, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|

```

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(2, 0), (4, 1), (1, 2), (7, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (4, 1), (3, 2), (0, 3), (7, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
```

Step: 2

```
[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (2, 5), (7, 6), (5, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Step: 3

[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (4, 5), (7, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*

Success:

[(6, 0), (1, 1), (3, 2), (0, 3), (7, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (4, 1), (4, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(2, 0), (4, 1), (1, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

[(7, 0), (4, 1), (1, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*	
*	*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 4

[(7, 0), (4, 1), (1, 2), (5, 3), (0, 4), (6, 5), (4, 6), (2, 7)]

*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (4, 1), (4, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

*	*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	*	
*	Q	Q	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*	

Step: 2

[(2, 0), (0, 1), (4, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

*	Q	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*	*	

Step: 3

[(7, 0), (0, 1), (4, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 4

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 5

```

[(3, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|

```

Step: 6

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

Step: 7

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|

```


*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 8

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 9

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 10

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 11

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 12

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 13

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	*

Step: 14

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	*

Step: 15

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 16

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 17

```

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 18

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 19

```

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 20

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

Step: 21

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 22

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 23

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 24

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 25

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

```

|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

Step: 26

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

Step: 27

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

Step: 28

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*| |
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|

```

Step: 29

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|

```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 30

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 31

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 32

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 33

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 34

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 35

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 36

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 37

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 38

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

|*|Q|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|*|

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 39

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 40

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 41

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 42

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

Step: 43

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 44

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 45

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 46

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 47

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

```

|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 48

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 49

```

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 50

```

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```

Step: 51

```

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 52

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 53

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 54

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 55

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 56

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 57

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 58

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 59

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 60

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 61

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 62

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 63

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 64

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

Step: 65

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	

Step: 66

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 67

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 68

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 69

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 70

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 71

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 72

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 73

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q

*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 74

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 75

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 76

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 77

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	Q	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	

Step: 78

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 79

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

*	Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 80

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	Q	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 81

[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

*	*	*	*	*	*	Q	*	
*	*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*

Step: 82

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]

|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|*|

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 83

```
[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 84

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 85

```
[(7, 0), (4, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 86

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

Step: 87

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	Q	*	*	
Q	*	*	*	*	*	*	*	

Step: 88

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 89

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 90

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 91

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]

```
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 92

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 93

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 94

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 95

```
[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 96

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 97

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 98

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 99

[(3, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	

Step: 100

[(3, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q

Step: 101

[(3, 0), (0, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q

Step: 102

[(3, 0), (0, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 103

[(3, 0), (5, 1), (7, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 104

[(3, 0), (5, 1), (2, 2), (5, 3), (1, 4), (6, 5), (4, 6), (0, 7)]

|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|
```

Search Failed

Random Restart Hill Climbing Search

Initial:

```
[(1, 0), (0, 1), (5, 2), (3, 3), (4, 4), (0, 5), (5, 6), (0, 7)]
|*|Q|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (3, 1), (5, 2), (3, 3), (4, 4), (0, 5), (5, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (3, 1), (7, 2), (3, 3), (4, 4), (0, 5), (5, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (3, 1), (7, 2), (7, 3), (4, 4), (0, 5), (5, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

```
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (1, 1), (2, 2), (0, 3), (3, 4), (6, 5), (5, 6), (4, 7)]
```

```
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (1, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (4, 7)]
```

```
|*|*|*|Q|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(1, 0), (7, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (4, 7)]
```

```
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
```

Step: 4

```
[(1, 0), (7, 1), (2, 2), (0, 3), (3, 4), (7, 5), (5, 6), (3, 7)]
```

```
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```


|*|Q|*|*|*|Q|*|*|

Step: 5

[(1, 0), (7, 1), (2, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|Q|*|*|

Step: 6

[(1, 0), (6, 1), (2, 2), (0, 3), (2, 4), (7, 5), (5, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|Q|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Search Failed

Initial:

[(2, 0), (3, 1), (7, 2), (6, 3), (7, 4), (1, 5), (7, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|Q|*|Q|*|

Step: 2

[(2, 0), (3, 1), (7, 2), (6, 3), (4, 4), (1, 5), (7, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|Q|*|*|*|Q|*|

Step: 3

[(2, 0), (3, 1), (7, 2), (6, 3), (4, 4), (1, 5), (7, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	Q	*

Step: 4

[(2, 0), (3, 1), (7, 2), (6, 3), (4, 4), (1, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (2, 1), (4, 2), (5, 3), (5, 4), (3, 5), (6, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 2

[(6, 0), (2, 1), (4, 2), (5, 3), (1, 4), (3, 5), (6, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 3

[(4, 0), (2, 1), (4, 2), (5, 3), (1, 4), (3, 5), (6, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*

*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 4

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (6, 6), (7, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	Q

Step: 5

[(4, 0), (2, 1), (7, 2), (5, 3), (1, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (7, 1), (4, 2), (0, 3), (3, 4), (1, 5), (6, 6), (0, 7)]

*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	Q	*	*	*	*	*	*

Step: 2

[(7, 0), (7, 1), (4, 2), (0, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|

Step: 3

[(5, 0), (7, 1), (4, 2), (0, 3), (3, 4), (1, 5), (6, 6), (2, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (5, 1), (7, 2), (3, 3), (7, 4), (7, 5), (6, 6), (7, 7)]

*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	Q	Q	*	Q	

Step: 2

[(4, 0), (5, 1), (7, 2), (3, 3), (7, 4), (7, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	Q	Q	*	*	

Step: 3

[(4, 0), (5, 1), (7, 2), (3, 3), (7, 4), (3, 5), (6, 6), (0, 7)]

*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	Q	*	Q	*	*	*
Q	*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	*	Q	*	Q	*	*	*	

Step: 4

```
[(4, 0), (5, 1), (7, 2), (2, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 5

```
[(1, 0), (5, 1), (7, 2), (2, 3), (7, 4), (3, 5), (6, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(3, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|Q|
```

Step: 2

```
[(3, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
```

Step: 3

```
[(3, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

*	*	*	*	*	*	*	Q
Q	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 4

[(7, 0), (1, 1), (3, 2), (5, 3), (7, 4), (4, 5), (0, 6), (2, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (1, 1), (3, 2), (1, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (1, 1), (7, 2), (1, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	*	*	*	*	*
*	Q	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(4, 0), (1, 1), (7, 2), (0, 3), (3, 4), (6, 5), (4, 6), (1, 7)]
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(7, 0), (6, 1), (7, 2), (2, 3), (0, 4), (2, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (6, 1), (7, 2), (2, 3), (0, 4), (2, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (2, 5), (4, 6), (0, 7)]
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

[(3, 0), (1, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (0, 7)]

*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (6, 1), (5, 2), (1, 3), (5, 4), (2, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (1, 2), (1, 3), (5, 4), (2, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (2, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 4

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|


```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```
[(4, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(6, 0), (7, 1), (5, 2), (7, 3), (6, 4), (6, 5), (4, 6), (5, 7)]
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|Q|Q|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 2

```
[(6, 0), (7, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (5, 7)]
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|

```

Step: 3

```
[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (4, 6), (5, 7)]
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 4

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
Q	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	

Step: 5

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 6

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 7

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 8

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 9

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 10

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 11

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 12

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 13

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 14

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 15

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 16

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Step: 17

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 18

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	*

Step: 19

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	Q

Step: 20

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*	Q

Step: 21

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 22

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 23

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 24

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 25

```

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 26

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 27

```
[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
```

Step: 28

```
[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 29

```
[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 30

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 31

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 32

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 33

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 34

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|


```

|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 35

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 36

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 37

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 38

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

Step: 39

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 40

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 41

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (5, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 42

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (7, 6), (2, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 43

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (2, 7)]

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 44

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (5, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 45

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 46

```

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|

```

Step: 47

```

[(6, 0), (3, 1), (0, 2), (4, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

*	*	*	Q	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q

Step: 48

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 49

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 50

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 51

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 52

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (7, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q

Step: 53

[(6, 0), (3, 1), (0, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 54

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 55

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (0, 7)]

*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 56

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]

|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 57

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 58

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 59

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 60

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

Step: 61

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 62

[(6, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 63

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 64

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 65

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]

```

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 66

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (4, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 67

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|

```

Step: 68

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 69

```

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (2, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```



```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 70

```
[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*| |
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 71

```
[(0, 0), (3, 1), (1, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 72

```
[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 73

```
[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
```

Step: 74

[(0, 0), (3, 1), (7, 2), (4, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 75

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 76

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 77

[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	Q	*	*	*	*

Step: 78

[(0, 0), (3, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 79

[(0, 0), (6, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Step: 80

[(0, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
Q	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Success:

[(3, 0), (0, 1), (4, 2), (7, 3), (1, 4), (6, 5), (2, 6), (5, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(5, 0), (0, 1), (7, 2), (7, 3), (7, 4), (7, 5), (2, 6), (3, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

```
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|Q|Q|*|*|
```

Step: 2

```
[(5, 0), (0, 1), (7, 2), (1, 3), (7, 4), (7, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|Q|Q|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (7, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Step: 4

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (6, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(5, 0), (0, 1), (7, 2), (7, 3), (7, 4), (7, 5), (2, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

|*|*|Q|Q|Q|Q|*|*|

Step: 2

[(5, 0), (0, 1), (7, 2), (4, 3), (7, 4), (7, 5), (2, 6), (3, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|Q|Q|*|*|

Step: 3

[(5, 0), (0, 1), (0, 2), (4, 3), (7, 4), (7, 5), (2, 6), (3, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

Step: 4

[(5, 0), (0, 1), (0, 2), (4, 3), (7, 4), (7, 5), (2, 6), (1, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

Step: 5

[(5, 0), (0, 1), (0, 2), (4, 3), (7, 4), (7, 5), (3, 6), (1, 7)]

|*|Q|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|Q|*|*|

Step: 6

[(5, 0), (0, 1), (2, 2), (4, 3), (7, 4), (7, 5), (3, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|

```

Step: 7

```

[(5, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 8

```

[(5, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 9

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 10

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

```

*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 11

[(6, 0), (1, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 12

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 13

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 14

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (7, 5), (3, 6), (1, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*

Step: 15

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (1, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 16

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (0, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 17

```

[(6, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Step: 18

```

[(2, 0), (0, 1), (2, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Success:

```

[(2, 0), (0, 1), (6, 2), (4, 3), (7, 4), (1, 5), (3, 6), (5, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|

```


*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Random Restart Hill Climbing Search

Initial:

[(2, 0), (6, 1), (5, 2), (6, 3), (0, 4), (2, 5), (6, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	Q	*	Q	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 2

[(2, 0), (5, 1), (5, 2), (6, 3), (0, 4), (2, 5), (6, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 3

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (6, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	Q

Step: 4

[(2, 0), (5, 1), (3, 2), (6, 3), (0, 4), (2, 5), (4, 6), (7, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

Search Failed

Initial:

[(1, 0), (0, 1), (5, 2), (4, 3), (0, 4), (4, 5), (6, 6), (6, 7)]
*	Q	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (7, 1), (5, 2), (4, 3), (0, 4), (4, 5), (6, 6), (6, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 3

[(1, 0), (7, 1), (5, 2), (0, 3), (0, 4), (4, 5), (6, 6), (6, 7)]
*	*	*	Q	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (6, 7)]
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Success:

```

[(1, 0), (7, 1), (5, 2), (0, 3), (2, 4), (4, 5), (6, 6), (3, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```

[(5, 0), (3, 1), (6, 2), (1, 3), (2, 4), (1, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (1, 5), (5, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 3

```

[(5, 0), (3, 1), (6, 2), (4, 3), (2, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 4

```

[(3, 0), (3, 1), (6, 2), (4, 3), (2, 4), (1, 5), (5, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

```

|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 5

```

[(3, 0), (3, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 6

```

[(3, 0), (1, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (7, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

Step: 7

```

[(3, 0), (1, 1), (6, 2), (4, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 8

```

[(3, 0), (1, 1), (7, 2), (4, 3), (2, 4), (0, 5), (5, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|

Step: 9

[(3, 0), (1, 1), (7, 2), (4, 3), (2, 4), (0, 5), (5, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 10

[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (5, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*

Step: 11

[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 12

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 13

[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]

```

|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 14

```

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 15

```

[(3, 0), (5, 1), (7, 2), (4, 3), (6, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 16

```

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 17

```

[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|

```

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 18

```
[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (5, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 19

```
[(3, 0), (3, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 20

```
[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 21

```
[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
```

Step: 22

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 23

[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 24

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*

Step: 25

[(3, 0), (5, 1), (7, 2), (4, 3), (6, 4), (0, 5), (6, 6), (1, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	Q	*	*	*	*	*

Step: 26

[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]

|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|


```

|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 27

```

[(3, 0), (5, 1), (7, 2), (4, 3), (2, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 28

```

[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (0, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 29

```

[(3, 0), (5, 1), (7, 2), (4, 3), (0, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 30

```

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (2, 5), (6, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

Step: 31

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (6, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
*	*	Q	*	*	*	*	*

Success:

[(3, 0), (5, 1), (7, 2), (2, 3), (0, 4), (6, 5), (4, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(4, 0), (6, 1), (3, 2), (3, 3), (1, 4), (6, 5), (0, 6), (1, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (6, 5), (0, 6), (1, 7)]

*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

Step: 3

```

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (6, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 4

```

[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (4, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(4, 0), (6, 1), (3, 2), (3, 3), (1, 4), (6, 5), (0, 6), (1, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (6, 1), (7, 2), (3, 3), (1, 4), (6, 5), (0, 6), (1, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (6, 1), (7, 2), (3, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|

```

```

|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (7, 1), (7, 2), (3, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|Q|*|*|*|*|*|

```

Step: 5

```

[(4, 0), (7, 1), (1, 2), (3, 3), (1, 4), (6, 5), (0, 6), (5, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(4, 0), (7, 1), (1, 2), (3, 3), (1, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(4, 0), (7, 1), (5, 2), (3, 3), (1, 4), (6, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 8

```
[(4, 0), (7, 1), (5, 2), (3, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 9

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (6, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 10

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 11

```
[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Step: 12

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 13

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 14

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (3, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|

```

Step: 15

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|

```

Step: 16

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (3, 5), (7, 6), (2, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|

```

*	*	*	Q	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 17

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (7, 6), (2, 7)]
*	Q	*	*	*	*	*	*	
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	Q	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	Q	*

Step: 18

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 19

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 20

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (2, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

|*|*|*|*|*|Q|*|*|

Step: 21

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 22

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|Q|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 23

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (0, 6), (6, 7)]

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 24

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|Q|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 25

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

|*|*|*|*|*|*|*|*|


```

|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 26

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 27

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 28

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 29

```

[(0, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 30

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 31

[(0, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 32

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 33

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Step: 34

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 35

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 36

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 37

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 38

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|

```

```

|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 39

```

[(4, 0), (0, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 40

```

[(4, 0), (2, 1), (5, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 41

```

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 42

```

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (1, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|

Step: 43

[(4, 0), (2, 1), (0, 2), (3, 3), (7, 4), (7, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|Q|Q|*|*|

Step: 44

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (1, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|Q|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 45

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (6, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|Q|

|*|*|*|*|*|Q|*|*|

Step: 46

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (1, 7)]

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|Q|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

Step: 47

[(4, 0), (2, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]

|*|*|Q|*|*|*|*|*|

```
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Success:

```
[(4, 0), (6, 1), (0, 2), (3, 3), (1, 4), (7, 5), (5, 6), (2, 7)]
```

```
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(1, 0), (3, 1), (1, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
```

```
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(1, 0), (5, 1), (1, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
```

```
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(1, 0), (5, 1), (0, 2), (5, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
```

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (2, 1), (7, 2), (6, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|Q|*|
```

Step: 2

```
[(6, 0), (2, 1), (0, 2), (6, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(4, 0), (2, 1), (0, 2), (6, 3), (3, 4), (5, 5), (7, 6), (1, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(4, 0), (6, 1), (5, 2), (3, 3), (6, 4), (2, 5), (7, 6), (7, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

|*|Q|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|

Step: 2

[(4, 0), (0, 1), (5, 2), (3, 3), (6, 4), (2, 5), (7, 6), (7, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q

Step: 3

[(4, 0), (0, 1), (5, 2), (3, 3), (6, 4), (2, 5), (7, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

Search Failed

Initial:

[(4, 0), (4, 1), (7, 2), (1, 3), (4, 4), (7, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	Q	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*

Step: 2

[(4, 0), (4, 1), (7, 2), (1, 3), (3, 4), (7, 5), (6, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	Q	*	*

Step: 3


```

[(4, 0), (2, 1), (7, 2), (1, 3), (3, 4), (7, 5), (6, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|Q|*|*|

```

Step: 4

```

[(4, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Step: 5

```

[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|

```

Search Failed

Initial:

```

[(7, 0), (1, 1), (2, 2), (4, 3), (1, 4), (6, 5), (0, 6), (7, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|

```

Step: 2

```

[(7, 0), (1, 1), (2, 2), (4, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|Q|*|*|*|

```

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 3

[(7, 0), (1, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (0, 1), (2, 2), (5, 3), (1, 4), (6, 5), (0, 6), (3, 7)]
*	Q	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*

Search Failed

Initial:

[(7, 0), (3, 1), (6, 2), (6, 3), (6, 4), (7, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	Q	
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	Q	Q	*	*	*
Q	*	*	*	*	Q	*	*

Step: 2

[(7, 0), (3, 1), (6, 2), (6, 3), (1, 4), (7, 5), (2, 6), (0, 7)]
*	*	*	*	*	*	Q	
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

Step: 3

```
[(7, 0), (3, 1), (6, 2), (6, 3), (1, 4), (5, 5), (2, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (2, 6), (0, 7)]
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(7, 0), (3, 1), (0, 2), (6, 3), (1, 4), (5, 5), (2, 6), (4, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Search Failed

Initial:

```
[(2, 0), (5, 1), (4, 2), (3, 3), (4, 4), (2, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

[(2, 0), (5, 1), (7, 2), (3, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 3

[(2, 0), (5, 1), (7, 2), (1, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Step: 4

[(3, 0), (5, 1), (7, 2), (1, 3), (4, 4), (2, 5), (0, 6), (6, 7)]

*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(5, 0), (0, 1), (3, 2), (1, 3), (1, 4), (2, 5), (6, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	Q
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Step: 2

[(5, 0), (0, 1), (3, 2), (1, 3), (7, 4), (2, 5), (6, 6), (1, 7)]

|*|Q|*|*|*|*|*|*|

```
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (1, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (7, 1), (4, 2), (7, 3), (5, 4), (3, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|*|*|*|
```

Step: 2

```
[(3, 0), (7, 1), (4, 2), (7, 3), (5, 4), (3, 5), (0, 6), (6, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
```

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*

Step: 3

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (3, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 4

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (2, 5), (0, 6), (6, 7)]
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Step: 5

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Success:

[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(4, 0), (3, 1), (0, 2), (5, 3), (5, 4), (6, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	Q
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (3, 1), (0, 2), (5, 3), (5, 4), (2, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (4, 1), (0, 2), (5, 3), (5, 4), (2, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
Q	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 4

[(4, 0), (4, 1), (0, 2), (5, 3), (5, 4), (2, 5), (6, 6), (3, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(4, 0), (3, 1), (0, 2), (5, 3), (5, 4), (6, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	Q	Q	Q
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (3, 1), (0, 2), (5, 3), (5, 4), (2, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (3, 1), (0, 2), (5, 3), (7, 4), (2, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	Q
*	*	*	*	Q	*	*	*

Step: 4

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (2, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	Q	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	Q	Q	
*	*	*	*	Q	*	*	*	

Step: 5

[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (6, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*


```
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(1, 0), (4, 1), (4, 2), (4, 3), (2, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (6, 2), (4, 3), (2, 4), (1, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(0, 0), (4, 1), (6, 2), (4, 3), (2, 4), (1, 5), (3, 6), (5, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

Step: 4

[(0, 0), (4, 1), (6, 2), (4, 3), (6, 4), (1, 5), (3, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	Q	*	*	*
*	*	*	*	*	*	*	*

Search Failed

Initial:

[(6, 0), (4, 1), (6, 2), (6, 3), (2, 4), (2, 5), (2, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (4, 1), (6, 2), (6, 3), (2, 4), (2, 5), (7, 6), (4, 7)]

*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 3

[(0, 0), (4, 1), (6, 2), (6, 3), (2, 4), (2, 5), (7, 6), (4, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

```

[(0, 0), (4, 1), (6, 2), (6, 3), (2, 4), (2, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```

[(0, 0), (4, 1), (6, 2), (5, 3), (2, 4), (2, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 6

```

[(0, 0), (4, 1), (1, 2), (5, 3), (2, 4), (2, 5), (7, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Search Failed

Initial:

```

[(3, 0), (7, 1), (3, 2), (6, 3), (5, 4), (5, 5), (4, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|Q|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 2

```

[(3, 0), (7, 1), (3, 2), (6, 3), (5, 4), (5, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|

```

*	*	*	*	*	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(3, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (4, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(3, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(4, 0), (7, 1), (3, 2), (6, 3), (2, 4), (5, 5), (1, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (2, 1), (4, 2), (5, 3), (7, 4), (4, 5), (3, 6), (2, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	Q	*	*	Q	*	*

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

```
[(4, 0), (2, 1), (4, 2), (5, 3), (7, 4), (5, 5), (3, 6), (2, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 3

```
[(4, 0), (2, 1), (4, 2), (5, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|Q|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (5, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Success:

```
[(4, 0), (2, 1), (0, 2), (5, 3), (7, 4), (1, 5), (3, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(1, 0), (7, 1), (5, 2), (4, 3), (4, 4), (5, 5), (1, 6), (0, 7)]

*	*	*	*	*	*	Q	
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	Q	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 2

[(1, 0), (7, 1), (5, 2), (2, 3), (4, 4), (5, 5), (1, 6), (0, 7)]

*	*	*	*	*	*	Q	
Q	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 3

[(1, 0), (7, 1), (5, 2), (2, 3), (4, 4), (5, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(1, 0), (7, 1), (5, 2), (2, 3), (4, 4), (6, 5), (3, 6), (0, 7)]

*	*	*	*	*	*	Q	
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	*	*	*	*	*	*

Step: 5

[(1, 0), (7, 1), (5, 2), (2, 3), (4, 4), (6, 5), (3, 6), (5, 7)]

|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|

```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 6

```

[(1, 0), (7, 1), (5, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*| |
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 7

```

[(1, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 8

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (3, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

```

Success:

```

[(3, 0), (7, 1), (4, 2), (2, 3), (0, 4), (6, 5), (1, 6), (5, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|

```

|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|

Hill Climbing Search Analysis

Initial:

[(4, 0), (5, 1), (2, 2), (6, 3), (4, 4), (5, 5), (3, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	Q	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (5, 1), (2, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(7, 0), (5, 1), (2, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Step: 4

[(7, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(4, 0), (5, 1), (2, 2), (6, 3), (4, 4), (5, 5), (3, 6), (5, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(4, 0), (5, 1), (2, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(7, 0), (5, 1), (2, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 4

```
[(7, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
```

Step: 5

```
[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
```

```
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 6

```
[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (5, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Success:

```
[(2, 0), (5, 1), (1, 2), (6, 3), (4, 4), (0, 5), (7, 6), (3, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|Q|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Random Restart Hill Climbing Search

Initial:

```
[(4, 0), (5, 1), (5, 2), (2, 3), (1, 4), (4, 5), (4, 6), (7, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|Q|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 2

```
[(4, 0), (5, 1), (5, 2), (2, 3), (1, 4), (6, 5), (4, 6), (7, 7)]
```

```
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

```
|Q|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 3

```
[(4, 0), (0, 1), (5, 2), (2, 3), (1, 4), (6, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Step: 4

```
[(4, 0), (0, 1), (5, 2), (5, 3), (1, 4), (6, 5), (4, 6), (7, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|Q|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Initial:

```
[(0, 0), (0, 1), (3, 2), (5, 3), (0, 4), (1, 5), (6, 6), (5, 7)]
|Q|Q|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(0, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (5, 7)]
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|Q|*|
```

|*|*|*|*|Q|*|*|*|

Step: 3

[(0, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

|Q|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Success:

[(4, 0), (0, 1), (3, 2), (5, 3), (7, 4), (1, 5), (6, 6), (2, 7)]

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(7, 0), (5, 1), (3, 2), (3, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|Q|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 2

[(7, 0), (5, 1), (3, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|Q|*|*|

|Q|*|*|*|*|*|*|*|

Step: 3

[(7, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]

*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	Q	*	*	*	*	*

Success:

[(2, 0), (5, 1), (7, 2), (0, 3), (4, 4), (6, 5), (1, 6), (3, 7)]
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Hill Climbing Search Analysis

Initial:

[(3, 0), (0, 1), (4, 2), (4, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	Q	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (2, 6), (7, 7)]
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	Q	*

```
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```
[(3, 0), (0, 1), (4, 2), (4, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Step: 2

```
[(3, 0), (0, 1), (4, 2), (7, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Step: 3

```
[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (2, 5), (2, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|Q|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(5, 0), (7, 1), (7, 2), (5, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*

Step: 2

[(0, 0), (7, 1), (7, 2), (5, 3), (1, 4), (6, 5), (1, 6), (5, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (7, 2), (5, 3), (1, 4), (6, 5), (1, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*

Step: 4

[(0, 0), (7, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	Q	Q	*	*	*	*	*

Success:

[(0, 0), (4, 1), (7, 2), (5, 3), (2, 4), (6, 5), (1, 6), (3, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(3, 0), (3, 1), (5, 2), (2, 3), (0, 4), (3, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 2

[(1, 0), (3, 1), (5, 2), (2, 3), (0, 4), (3, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 3

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (3, 5), (4, 6), (6, 7)]

*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*

Step: 4

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (6, 7)]

|*|*|*|*|Q|*|*|*|


```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|

```

Step: 5

```

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 6

```

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Step: 7

```

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (7, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|Q|

```

Step: 8

```

[(1, 0), (5, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
|*|*|*|*|Q|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(1, 0), (5, 1), (6, 2), (2, 3), (0, 4), (7, 5), (4, 6), (2, 7)]
*	*	*	*	Q	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	Q
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(1, 0), (5, 1), (6, 2), (2, 3), (0, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 11

[(1, 0), (1, 1), (6, 2), (2, 3), (0, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(3, 0), (1, 1), (6, 2), (2, 3), (0, 4), (7, 5), (4, 6), (0, 7)]
*	*	*	*	Q	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*

Success:

```

[(3, 0), (1, 1), (6, 2), (2, 3), (5, 4), (7, 5), (4, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

Hill Climbing Search Analysis

Initial:

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (0, 6), (1, 7)]
|*|*|*|*|Q|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (0, 6), (1, 7)]
|*|*|*|*|Q|Q|Q|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 2

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]

```

```

|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 3

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 4

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|Q|*|*|

```

Step: 5

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

```

Step: 6

```

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 7

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 8

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (4, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 9

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 10

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (7, 5), (3, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 11

[(6, 0), (2, 1), (5, 2), (2, 3), (0, 4), (7, 5), (3, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*

Step: 12

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (7, 5), (3, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	Q	*	*

Step: 13

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (4, 5), (3, 6), (1, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 14

[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]

*	*	*	*	Q	Q	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 15

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (1, 7)]

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|

```
|*|Q|*|*|*|*|*| |
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 16

```
[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 17

```
[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 18

```
[(6, 0), (2, 1), (5, 2), (7, 3), (0, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 19

```
[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (1, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|

Step: 20

[(6, 0), (2, 1), (5, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 21

[(6, 0), (2, 1), (1, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Step: 22

[(6, 0), (6, 1), (1, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Success:

[(2, 0), (6, 1), (1, 2), (7, 3), (4, 4), (0, 5), (3, 6), (5, 7)]
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*

Random Restart Hill Climbing Search

Initial:


```

[(4, 0), (4, 1), (1, 2), (6, 3), (1, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Step: 2

```

[(4, 0), (7, 1), (1, 2), (6, 3), (1, 4), (1, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 3

```

[(4, 0), (7, 1), (1, 2), (6, 3), (1, 4), (5, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Step: 4

```

[(4, 0), (7, 1), (1, 2), (6, 3), (1, 4), (5, 5), (0, 6), (3, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|Q|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|

```

Search Failed

Initial:

```

[(6, 0), (2, 1), (5, 2), (4, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|

```

*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	Q	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(6, 0), (2, 1), (7, 2), (4, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(6, 0), (1, 1), (7, 2), (4, 3), (6, 4), (3, 5), (5, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	Q	*	*	*	*	*

Search Failed

Initial:

[(4, 0), (2, 1), (2, 2), (5, 3), (3, 4), (4, 5), (2, 6), (4, 7)]
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (2, 1), (2, 2), (5, 3), (3, 4), (4, 5), (0, 6), (4, 7)]
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
Q	*	*	*	*	Q	*	Q

```
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 3

```
[(5, 0), (2, 1), (2, 2), (5, 3), (3, 4), (4, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
```

Step: 4

```
[(5, 0), (2, 1), (2, 2), (7, 3), (3, 4), (4, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|Q|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Step: 5

```
[(5, 0), (2, 1), (2, 2), (7, 3), (3, 4), (3, 5), (0, 6), (4, 7)]
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
|*|*|*|*|*|*|*|Q|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
```

Search Failed

Initial:

```
[(4, 0), (5, 1), (2, 2), (6, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 2

[(1, 0), (5, 1), (2, 2), (6, 3), (7, 4), (0, 5), (3, 6), (0, 7)]

*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(1, 0), (5, 1), (2, 2), (6, 3), (7, 4), (0, 5), (4, 6), (0, 7)]

*	*	*	*	*	Q	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	Q	*	*	*

Search Failed

Initial:

[(3, 0), (0, 1), (7, 2), (5, 3), (3, 4), (6, 5), (2, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	Q	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 2

[(3, 0), (0, 1), (7, 2), (5, 3), (3, 4), (6, 5), (4, 6), (1, 7)]

*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	Q	*	*	*	*	*

Step: 3

[(3, 0), (0, 1), (7, 2), (5, 3), (0, 4), (6, 5), (4, 6), (1, 7)]

|*|Q|*|*|Q|*|*|*|

```
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(6, 0), (2, 1), (7, 2), (1, 3), (7, 4), (5, 5), (4, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 2

```
[(6, 0), (2, 1), (7, 2), (1, 3), (7, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|Q|*|*|*|
```

Step: 3

```
[(6, 0), (2, 1), (7, 2), (1, 3), (3, 4), (5, 5), (2, 6), (4, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Search Failed

Initial:

```
[(1, 0), (4, 1), (7, 2), (4, 3), (5, 4), (4, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
```

```
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|Q|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 2

```
[(1, 0), (4, 1), (7, 2), (4, 3), (6, 4), (4, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|Q|*|Q|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 3

```
[(1, 0), (4, 1), (7, 2), (4, 3), (6, 4), (3, 5), (0, 6), (2, 7)]
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 4

```
[(1, 0), (4, 1), (7, 2), (0, 3), (6, 4), (3, 5), (0, 6), (2, 7)]
|*|*|*|Q|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|Q|*|*|*|*|*|
```

Step: 5

```
[(1, 0), (4, 1), (7, 2), (0, 3), (6, 4), (3, 5), (5, 6), (2, 7)]
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|Q|*|*|*|
```

|*|*|Q|*|*|*|*|*

Search Failed

Initial:

[(0, 0), (4, 1), (0, 2), (1, 3), (0, 4), (1, 5), (5, 6), (0, 7)]

|Q|*|Q|*|Q|*|*|Q|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 2

[(0, 0), (4, 1), (0, 2), (1, 3), (6, 4), (1, 5), (5, 6), (0, 7)]

|Q|*|Q|*|*|*|*|Q|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|*|*|

Step: 3

[(0, 0), (4, 1), (7, 2), (1, 3), (6, 4), (1, 5), (5, 6), (0, 7)]

|Q|*|*|*|*|*|*|Q|

|*|*|*|Q|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|*|*|*|Q|*|*|*|

|*|*|Q|*|*|*|*|*|

Search Failed

Initial:

[(0, 0), (3, 1), (0, 2), (4, 3), (0, 4), (1, 5), (7, 6), (0, 7)]

|Q|*|Q|*|Q|*|*|Q|

|*|*|*|*|*|Q|*|*|

|*|*|*|*|*|*|*|*|

|*|Q|*|*|*|*|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|*|*|

|*|*|*|*|*|*|Q|*|

Step: 2

```
[(0, 0), (3, 1), (0, 2), (4, 3), (0, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|Q|*|Q|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 3

```
[(0, 0), (3, 1), (0, 2), (4, 3), (6, 4), (1, 5), (7, 6), (2, 7)]
|Q|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Step: 4

```
[(5, 0), (3, 1), (0, 2), (4, 3), (6, 4), (1, 5), (7, 6), (2, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
```

Search Failed

Initial:

```
[(0, 0), (3, 1), (7, 2), (7, 3), (1, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|Q|*|
```

Step: 2

```
[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (3, 5), (7, 6), (4, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```


*	*	*	*	*	*	*	*
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Step: 3

[(0, 0), (3, 1), (5, 2), (7, 3), (1, 4), (3, 5), (7, 6), (2, 7)]
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	Q	*

Search Failed

Initial:

[(3, 0), (1, 1), (6, 2), (2, 3), (3, 4), (0, 5), (3, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	Q	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(3, 0), (1, 1), (6, 2), (2, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*

Step: 3

[(4, 0), (1, 1), (6, 2), (2, 3), (7, 4), (0, 5), (3, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	Q	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*

```
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
```

Step: 4

```
[(4, 0), (1, 1), (6, 2), (2, 3), (7, 4), (7, 5), (3, 6), (0, 7)]
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|Q|*|*|
```

Search Failed

Initial:

```
[(3, 0), (3, 1), (0, 2), (1, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|Q|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 2

```
[(3, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (4, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Step: 3

```
[(3, 0), (3, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|Q|*|*|
```

Success:

[(3, 0), (5, 1), (0, 2), (4, 3), (1, 4), (7, 5), (2, 6), (6, 7)]

*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

[(0, 0), (4, 1), (4, 2), (6, 3), (5, 4), (4, 5), (4, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	Q	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(0, 0), (4, 1), (4, 2), (6, 3), (5, 4), (2, 5), (4, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	Q	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(0, 0), (7, 1), (4, 2), (6, 3), (5, 4), (2, 5), (4, 6), (5, 7)]

Q	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	Q	*	*	*	Q	*
*	*	*	*	Q	*	*	Q
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Step: 4

[(0, 0), (7, 1), (4, 2), (6, 3), (5, 4), (2, 5), (1, 6), (5, 7)]

|Q|*|*|*|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(0, 0), (7, 1), (4, 2), (6, 3), (5, 4), (2, 5), (1, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 6

```
[(0, 0), (7, 1), (4, 2), (6, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|Q|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 7

```
[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (5, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|Q|*|
|*|*|*|*|*|*|*|*|
|*|Q|*|*|*|*|*|*|
```

Step: 8

```
[(0, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|Q|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 9

[(5, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 10

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 11

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 12

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 13

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 14

```

[(5, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 15

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 16

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 17

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 18

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*	
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	Q
*	*	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
*	Q	*	*	*	*	*	*	

Step: 19

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 20

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 21

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*

|*|Q|*|*|*|*|*|

Step: 22

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]

|*|*|*|*|*|Q|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 23

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|Q|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 24

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]

|*|*|*|*|*|Q|*|Q|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|*|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 25

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]

|*|*|*|*|*|Q|*|*|

|*|*|*|Q|*|*|*|*|

|*|*|*|*|*|*|*|*|

|Q|*|*|*|*|*|*|*|

|*|*|Q|*|*|*|*|Q|

|*|*|*|*|Q|*|*|*|

|*|*|*|*|*|*|Q|*|

|*|Q|*|*|*|*|*|*|

Step: 26

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|


```

|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 27

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 28

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 29

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 30

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|Q|

```

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 31

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 32

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (4, 7)]
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	Q
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 33

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
*	*	*	*	*	Q	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 34

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (0, 7)]
*	*	*	*	*	*	*	Q
*	*	*	Q	*	*	*	*
*	*	*	*	*	Q	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
*	Q	*	*	*	*	*	*

Step: 35

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (6, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|Q|
|*|Q|*|*|*|*|*|*|

```

Step: 36

```

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|

```

Step: 37

```

[(3, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Step: 38

```

[(5, 0), (0, 1), (4, 2), (1, 3), (5, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|Q|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|*|*|*|*|*|

```

Success:

```

[(5, 0), (0, 1), (4, 2), (1, 3), (7, 4), (2, 5), (6, 6), (3, 7)]
|*|Q|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|Q|*|*|

```

*	*	*	*	*	*	*	Q
*	*	Q	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	Q	*	*	*

Hill Climbing Search Analysis

Initial:

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (5, 5), (6, 6), (7, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	Q

Step: 2

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (5, 5), (6, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 3

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	Q	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	Q	*
*	*	*	Q	*	*	*	*

Step: 4

[(2, 0), (6, 1), (3, 2), (7, 3), (0, 4), (4, 5), (6, 6), (1, 7)]
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*

|*|Q|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|

Search Failed

Hill climbing Search with Sideways Analysis

Initial:

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (5, 5), (6, 6), (7, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	*	
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	Q	

Step: 2

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (5, 5), (6, 6), (4, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	*	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*	
*	*	*	Q	*	*	*	*	

Step: 3

[(2, 0), (0, 1), (3, 2), (7, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*	
*	*	*	Q	*	*	*	*	

Step: 4

[(2, 0), (0, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]
*	Q	*	*	Q	*	*	*	
*	*	*	*	*	*	Q	*	
Q	*	*	*	*	*	*	*	
*	*	Q	*	*	*	*	*	
*	*	*	*	*	*	*	Q	
*	*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*	
*	*	*	*	*	*	*	*	

Success:

[(2, 0), (7, 1), (3, 2), (6, 3), (0, 4), (5, 5), (1, 6), (4, 7)]

*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	*	*	*	Q
*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	Q	*	*	*	*	*	*

Random Restart Hill Climbing Search

Initial:

[(4, 0), (6, 1), (6, 2), (1, 3), (5, 4), (0, 5), (1, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 2

[(4, 0), (6, 1), (6, 2), (3, 3), (5, 4), (0, 5), (1, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	Q	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	*	*

Step: 3

[(4, 0), (6, 1), (6, 2), (3, 3), (5, 4), (0, 5), (7, 6), (5, 7)]

*	*	*	*	*	Q	*	*
*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*
*	*	*	Q	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	*	*	Q	*	*	Q
*	Q	Q	*	*	*	*	*
*	*	*	*	*	*	Q	*

Step: 4

[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (7, 6), (5, 7)]

|*|*|*|*|*|Q|*|*|

```

|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|

```

Step: 5

```
[(4, 0), (6, 1), (1, 2), (3, 3), (5, 4), (0, 5), (2, 6), (5, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

Success:

```
[(4, 0), (6, 1), (1, 2), (3, 3), (7, 4), (0, 5), (2, 6), (5, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|*|*|Q|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|

```

Random Restart Hill Climbing Search with Sideways Analysis

Initial:

```
[(7, 0), (7, 1), (4, 2), (4, 3), (5, 4), (7, 5), (6, 6), (5, 7)]
```

```

|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|Q|*|*|

```

Step: 2

```
[(7, 0), (7, 1), (4, 2), (4, 3), (5, 4), (0, 5), (6, 6), (5, 7)]
```

```

|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|

```

```
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|Q|Q|*|*|*|*|*|*|
```

Step: 3

```
[(3, 0), (7, 1), (4, 2), (4, 3), (5, 4), (0, 5), (6, 6), (5, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|Q|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 4

```
[(3, 0), (7, 1), (4, 2), (4, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|*|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|Q|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 5

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (3, 7)]
|*|*|*|*|*|Q|*|*|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|Q|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```

Step: 6

```
[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (0, 7)]
|*|*|*|*|*|Q|*|Q|
|*|*|*|Q|*|*|*|*|
|*|*|*|*|*|*|*|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|Q|*|
|*|Q|*|*|*|*|*|*|
```


Step: 7

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 8

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 9

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (6, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	*	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	Q	Q
*	Q	*	*	*	*	*	*

Step: 10

[(3, 0), (7, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]

*	*	*	*	*	Q	*	*
*	*	*	Q	*	*	*	*
*	*	*	*	*	*	Q	*
Q	*	*	*	*	*	*	*
*	*	Q	*	*	*	*	*
*	*	*	*	Q	*	*	*
*	*	*	*	*	*	*	Q
*	Q	*	*	*	*	*	*

Step: 11

[(3, 0), (1, 1), (4, 2), (1, 3), (5, 4), (0, 5), (2, 6), (6, 7)]

|*|*|*|*|*|Q|*|*|
|*|Q|*|Q|*|*|*|*|

```
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|*|*|*|*|*|
```

Success:

```
[(3, 0), (1, 1), (4, 2), (7, 3), (5, 4), (0, 5), (2, 6), (6, 7)]
```

```
|*|*|*|*|*|Q|*|*|
|*|Q|*|*|*|*|*|*|
|*|*|*|*|*|*|Q|*|
|Q|*|*|*|*|*|*|*|
|*|*|Q|*|*|*|*|*|
|*|*|*|*|Q|*|*|*|
|*|*|*|*|*|*|*|Q|
|*|*|*|Q|*|*|*|*|
```

Hill climbing Search Analysis

=====

N value: 8 (i.e 8 x 8)

Total Runs: 100

Success, Runs: 15

Success, Rate: 15.0 %

Success, Average Steps: 4.8

Failure, Runs: 85

Failure, Rate: 85.0 %

Failure, Average Steps: 4.13

Flat local maxima / Shoulder: 84

Hill climbing Search with sideways Analysis

=====

N value: 8 (i.e 8 x 8)

Total Runs: 100

Success, Runs: 93

Success, Rate: 93.0 %

Success, Average Steps: 19.54

Failure, Runs: 7

Failure, Rate: 7.0 %

Failure, Average Steps: 47.71

Flat local maxima / Shoulder: 3

Random Restart Hill Climbing Search

=====

N value: 8 (i.e 8 x 8)

Total Runs: 100

Average Restarts: 6.65

Average Steps (last restart): 5.24

Average steps (all restarts): 28.42

Random Restart Hill Climbing Search with Sideways Analysis

=====

N value: 8 (i.e 8 x 8)

Total Runs: 100

Average Restarts: 1.24

Average Steps (last restart): 17.68

Average steps (all restarts): 24.72