

Program Output

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
1 0 2
3 4 5
6 7 8
Enter Solution Depth (2-20): 2
Select Heuristic:
[1] H1
[2] H2
1
Solution Found:
Step 0:
1 0 2
3 4 5
6 7 8
Step 1:
0 1 2
3 4 5
6 7 8
Search Cost: 7
Time taken: 0 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
1 4 2
3 7 5
6 8 0
Enter Solution Depth (2-20): 4
Select Heuristic:
[1] H1
[2] H2
```

```
2
Solution Found:
Step 0:
1 4 2
3 7 5
6 8 0
Step 1:
1 4 2
3 7 5
6 0 8
Step 2:
1 4 2
3 0 5
6 7 8
Step 3:
1 0 2
3 4 5
6 7 8
Step 4:
0 1 2
3 4 5
6 7 8
Search Cost: 5
Time taken: 1 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
3 1 0
4 5 2
6 7 8
Enter Solution Depth (2-20): 4
Select Heuristic:
[1] H1
[2] H2
1
Solution Found:
Step 0:
3 1 0
4 5 2
6 7 8
Step 1:
```

```
3 1 2
4 5 0
6 7 8
Step 2:
3 1 2
4 0 5
6 7 8
Step 3:
3 1 2
0 4 5
6 7 8
Step 4:
0 1 2
3 4 5
6 7 8
Search Cost: 20
Time taken: 1 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
1 7 4
3 0 2
6 8 5
Enter Solution Depth (2-20): 8
Select Heuristic:
[1] H1
[2] H2
1
Solution Found:
Step 0:
1 7 4
3 0 2
6 8 5
Step 1:
1 0 4
3 7 2
6 8 5
Step 2:
1 4 0
3 7 2
6 8 5
```

```
Step 3:
1 4 2
3 7 0
6 8 5
Step 4:
1 4 2
3 7 5
6 8 0
Step 5:
1 4 2
3 7 5
6 0 8
Step 6:
1 4 2
3 0 5
6 7 8
Step 7:
1 0 2
3 4 5
6 7 8
Step 8:
0 1 2
3 4 5
6 7 8
Search Cost: 43
Time taken: 2 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
3 5 8
4 0 2
6 1 7
Enter Solution Depth (2-20): 12
Select Heuristic:
[1] H1
[2] H2
2
Solution Found:
Step 0:
3 5 8
4 0 2
```

```
6 1 7
Step 1:
3 5 8
4 2 0
6 1 7
Step 2:
3 5 0
4 2 8
6 1 7
Step 3:
3 0 5
4 2 8
6 1 7
Step 4:
3 2 5
4 0 8
6 1 7
Step 5:
3 2 5
4 1 8
6 0 7
Step 6:
3 2 5
4 1 8
6 7 0
Step 7:
3 2 5
4 1 0
6 7 8
Step 8:
3 2 0
4 1 5
6 7 8
Step 9:
3 0 2
4 1 5
6 7 8
Step 10:
3 1 2
4 0 5
6 7 8
Step 11:
3 1 2
0 4 5
6 7 8
Step 12:
0 1 2
3 4 5
6 7 8
```

Search Cost: 279
Time taken: 3 milliseconds

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
0 3 5
2 7 4
1 6 8
Enter Solution Depth (2-20): 12
Select Heuristic:
[1] H1
[2] H2
1
Solution Found:
Step 0:
0 3 5
2 7 4
1 6 8
Step 1:
2 3 5
0 7 4
1 6 8
Step 2:
2 3 5
1 7 4
0 6 8
Step 3:
2 3 5
1 7 4
6 0 8
Step 4:
2 3 5
1 0 4
6 7 8
Step 5:
2 0 5
1 3 4
6 7 8
Step 6:
0 2 5
1 3 4
```

```
6 7 8
Step 7:
1 2 5
0 3 4
6 7 8
Step 8:
1 2 5
3 0 4
6 7 8
Step 9:
1 2 5
3 4 0
6 7 8
Step 10:
1 2 0
3 4 5
6 7 8
Step 11:
1 0 2
3 4 5
6 7 8
Step 12:
0 1 2
3 4 5
6 7 8
Search Cost: 422
Time taken: 3 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
3 5 8
6 0 2
1 4 7
Enter Solution Depth (2-20): 16
Select Heuristic:
[1] H1
[2] H2
2
Solution Found:
Step 0:
3 5 8
```

```
6 0 2
1 4 7
Step 1:
3 5 8
6 4 2
1 0 7
Step 2:
3 5 8
6 4 2
0 1 7
Step 3:
3 5 8
0 4 2
6 1 7
Step 4:
3 5 8
4 0 2
6 1 7
Step 5:
3 5 8
4 2 0
6 1 7
Step 6:
3 5 0
4 2 8
6 1 7
Step 7:
3 0 5
4 2 8
6 1 7
Step 8:
3 2 5
4 0 8
6 1 7
Step 9:
3 2 5
4 1 8
6 0 7
Step 10:
3 2 5
4 1 8
6 7 0
Step 11:
3 2 5
4 1 0
6 7 8
Step 12:
3 2 0
4 1 5
```



```
6 7 8
Step 13:
3 0 2
4 1 5
6 7 8
Step 14:
3 1 2
4 0 5
6 7 8
Step 15:
3 1 2
0 4 5
6 7 8
Step 16:
0 1 2
3 4 5
6 7 8
Search Cost: 806
Time taken: 3 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
5 4 1
7 6 3
8 2 0
Enter Solution Depth (2-20): 20
Select Heuristic:
[1] H1
[2] H2
1
Solution Found:
Step 0:
5 4 1
7 6 3
8 2 0
Step 1:
5 4 1
7 6 3
8 0 2
Step 2:
5 4 1
```

```
7 6 3
0 8 2
Step 3:
5 4 1
0 6 3
7 8 2
Step 4:
5 4 1
6 0 3
7 8 2
Step 5:
5 4 1
6 3 0
7 8 2
Step 6:
5 4 1
6 3 2
7 8 0
Step 7:
5 4 1
6 3 2
7 0 8
Step 8:
5 4 1
6 3 2
0 7 8
Step 9:
5 4 1
0 3 2
6 7 8
Step 10:
0 4 1
5 3 2
6 7 8
Step 11:
4 0 1
5 3 2
6 7 8
Step 12:
4 3 1
5 0 2
6 7 8
Step 13:
4 3 1
0 5 2
6 7 8
Step 14:
0 3 1
4 5 2
```

```
6 7 8
Step 15:
3 0 1
4 5 2
6 7 8
Step 16:
3 1 0
4 5 2
6 7 8
Step 17:
3 1 2
4 5 0
6 7 8
Step 18:
3 1 2
4 0 5
6 7 8
Step 19:
3 1 2
0 4 5
6 7 8
Step 20:
0 1 2
3 4 5
6 7 8
Search Cost: 9055
Time taken: 14 milliseconds
```

```
[1] Single Test Puzzle
[2] Multi-Test Puzzle
[3] Exit
Choose an option: 1
Select Input Method:
[1] Random
[2] File
2
Enter the 8-puzzle configuration (3 rows, space-separated integers in each
row):
1 3 4
6 0 8
7 5 2
Enter Solution Depth (2-20): 20
Select Heuristic:
[1] H1
[2] H2
2
Solution Found:
Step 0:
1 3 4
```

```
6 0 8
7 5 2
Step 1:
1 3 4
6 8 0
7 5 2
Step 2:
1 3 4
6 8 2
7 5 0
Step 3:
1 3 4
6 8 2
7 0 5
Step 4:
1 3 4
6 0 2
7 8 5
Step 5:
1 0 4
6 3 2
7 8 5
Step 6:
1 4 0
6 3 2
7 8 5
Step 7:
1 4 2
6 3 0
7 8 5
Step 8:
1 4 2
6 3 5
7 8 0
Step 9:
1 4 2
6 3 5
7 0 8
Step 10:
1 4 2
6 3 5
0 7 8
Step 11:
1 4 2
0 3 5
6 7 8
Step 12:
1 4 2
3 0 5
```

```
6 7 8
Step 13:
1 0 2
3 4 5
6 7 8
Step 14:
0 1 2
3 4 5
6 7 8
Search Cost: 4616
Time taken: 4 milliseconds
```