

Final project report

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題目簡介：

數獨解題&產生器

實作方式：

解題器：

使用回溯法解題

產生器：

能根據使用者指定的空白格子數，產生隨機的棋盤，但無法保證單一解

成果展示：

題目 1：

```
3,0,0,8,0,1,0,0,2
2,0,1,0,3,0,6,0,4
0,0,0,2,0,4,0,0,0
8,0,9,0,0,0,1,0,6
0,6,0,0,0,0,0,5,0
7,0,2,0,0,0,4,0,9
0,0,0,5,0,9,0,0,0
9,0,4,0,8,0,7,0,5
6,0,0,1,0,7,0,0,3
```

```
3 4 6 8 9 1 5 7 2
2 9 1 7 3 5 6 8 4
5 7 8 2 6 4 3 9 1
8 5 9 4 7 3 1 2 6
4 6 3 9 1 2 8 5 7
7 1 2 6 5 8 4 3 9
1 3 7 5 4 9 2 6 8
9 2 4 3 8 6 7 1 5
6 8 5 1 2 7 9 4 3
```

```
solve take 0.000739 seconds
liyancen@liyancendeMacBook-Air bin %
```

題目 2：

```
8,0,0,0,0,0,0,0,0
0,0,3,6,0,0,0,0,0
0,7,0,0,9,0,2,0,0
0,5,0,0,0,7,0,0,0
0,0,0,0,4,5,7,0,0
0,0,0,1,0,0,0,3,0
0,0,1,0,0,0,0,6,8
0,0,8,5,0,0,0,1,0
0,9,0,0,0,0,4,0,0
```

```
8 1 2 7 5 3 6 4 9
9 4 3 6 8 2 1 7 5
6 7 5 4 9 1 2 8 3
1 5 4 2 3 7 8 9 6
3 6 9 8 4 5 7 2 1
2 8 7 1 6 9 5 3 4
5 2 1 9 7 4 3 6 8
4 3 8 5 2 6 9 1 7
7 9 6 3 1 8 4 5 2
```

```
solve take 0.024049 seconds
liyancen@liyancendeMacBook-Air bin %
```

產生器：

```
[liyancen@liyancendeMacBook-Air bin % ./main.out -g
enter max space of a col
4
enter min space of a col
1
1 0 4 5 3 6 7 0 0
3 6 7 0 8 9 1 2 5
0 8 9 7 1 2 4 3 6
2 0 0 3 4 7 0 0 9
0 3 0 6 9 1 0 5 7
7 0 0 8 2 5 0 1 0
8 1 0 2 6 4 0 7 3
9 0 3 1 0 0 6 4 2
6 4 2 0 7 0 5 8 1
[liyancen@liyancendeMacBook-Air bin % ./main.out -g
enter max space of a col
7
enter min space of a col
1
0 0 3 6 7 0 0 5 9
5 6 7 0 0 9 0 0 0
0 0 0 0 1 5 2 6 0
0 0 4 5 0 0 0 0 0
7 9 6 1 8 3 5 0 4
3 5 0 4 9 2 0 7 0
0 0 0 0 3 0 9 0 5
0 3 1 8 0 6 7 4 2
8 0 5 9 0 0 0 1 0
liyancen@liyancendeMacBook-Air bin %
```