NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

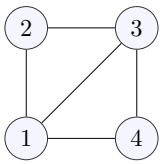
SC1007 Data Structures and Algorithms **2021/22 Semester 2**

Lab 7: Backtracking

School of Computer Science and Engineering *Nanyang Technological University*

Q1 Write a function, nColoring(), to print out one solution of the coloring problem with V regions and m colors.

```
int graphColoring(bool graph[V][V], int m, int i, int color[V]);
```



For example, given 3 colors {1, 2, 3}, one possible solution for the above map is: [1 2 3 2].

Q2 Write a function, nQueens(), to print out one solution of the N-queen problem.

```
int nQueens(int** board, int N, int col);
```

For example, one possible solution for the N-queen problem with n = 4 is:

x	x	Q	x
Q	x	x	x
x	x	x	Q
x	Q	x	x

Q3 Write a function, nQueensAll(), to print out the number of all possible solutions of the N-queen problem.

```
int nQueensAll(int** board, int N, int col);
```

The number of possible solutions to different n are:

n	number of possible solutions
4	2
5	10
6	4
7	40
8	92
10	724
12	14200