

## CS 324 Intro to Design of Algorithm

### Practice 6 Fall 2017

**Question 1** Write the method `validNQueens` that takes a two dimensional character array `B` with  $n$  rows and  $n$  columns, indexed 1 to  $n$ . The character 'Q' in cell  $i, j$  means there is a Queen in that location. Your method should return `true` if no queen can capture any other queen vertically, horizontally, or diagonally. What is the running time of your algorithm?

```
boolean validNQueens(int n, char[][] B)
```

Example:

```
n = 4
```

```
B = {{ ' ', 'Q', ' ', ' ' },
      { ' ', ' ', ' ', 'Q' },
      { 'Q', ' ', ' ', ' ' },
      { ' ', ' ', 'Q', ' ' }}
```

Your program should print out “This is a valid solution.”

```
n = 5
```

```
B = {{ 'Q', ' ', ' ', ' ', ' ' },
      { ' ', 'Q', ' ', ' ', ' ' },
      { ' ', ' ', ' ', 'Q', ' ' },
      { ' ', ' ', ' ', ' ', 'Q' },
      { ' ', ' ', 'Q', ' ', ' ' }}
```

Your program should print out “This is not a valid solution.”

```
n = 5
```

```
B = {{ 'Q', ' ', ' ', ' ', ' ' },
      { ' ', ' ', ' ', ' ', 'Q' },
      { ' ', ' ', ' ', 'Q', ' ' },
      { ' ', 'Q', ' ', ' ', ' ' },
      { ' ', ' ', 'Q', ' ', ' ' }}
```

Your program should print out “This is not a valid solution.”