UNIVERSITY OF CALGARY

# CPSC 319
# Data Structures, Algorithms, and Their Applications

## Winter 2024

# Question 17

- Print all the subsets of the set of numbers 1 to n.

- Test case:

  n = 2 -> {}, {1}, {2}, {1, 2}

  n = 3 -> {}, {1}, {2}, {3}, {1, 2}, {1, 3}, {2, 3}, {1, 2, 3}

# Question 18

- Print all the n-digit numbers that their digits are strictly decreasing from left to right (n=3 -> 752, 310, ...).

- Test case:

  n = 1 -> {0}, {1}, {2}, {3}, {4}, {5}, {6}, {7}, {8}, {9}

# Question 19

- Print a valid placement of n queens on a nxn chessboard.

- Test case:

  n = 1 -> Q

  n = 2 -> NA

  n = 4 ->

  ##Q#

  Q###

  ###Q

  #Q##

# Question 20

- Print the diamond pattern with size n (n is odd & **no loop**).

- Test case:

  n = 3 ->

```
 *
***
 *
```