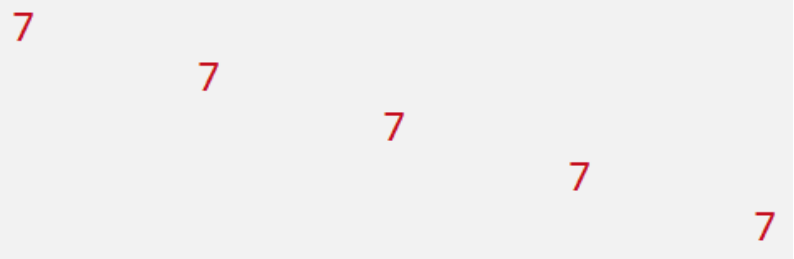
COMP1602: Computer Programming II
Lab #8

1. Write a program to perform the following, in the order given:
   a. Declare a 2-D character array with 10 rows and 10 columns.
   b. Initialize all the elements of the array with a space.
   c. Populate the borders of the array with the character '%'.
      - Do not hard code the values.
      - Each location must be visited only once.
      - Only two for loops must be used in your solution.
   d. Display the contents of the array on the monitor.
      - The output should appear as shown below.

2. Write a program which creates a 2-D array with 5 rows and 5 columns. Initialize the array with spaces. Populate the leading diagonal of the array with the character '7'. Display the contents of the array on the monitor. The figure below shows what the output of the program should look like.



3. Modify the 2-D array from Question 2 by inserting the character '@' in the locations **above** the leading diagonal. Display the contents of the modified array on the monitor. The figure below shows what the output of the program should look like.

4. Modify the 2-D array from Question 3 by inserting the character '^' in the locations **below** the leading diagonal. Display the contents of the modified array on the monitor. The figure below shows what the output of the program should look like.

```
7 @ @ @ @
^ 7 @ @ @
^ ^ 7 @ @
^ ^ ^ 7 @
^ ^ ^ ^ 7
```

5. Modify the 2-D array from Question 4 by flipping its contents across the leading diagonal. The elements in the leading diagonal should stay the same. If an element was in location (i, j) before flipping, where $i \neq j$, it should be in location (j, i) after flipping. Display the contents of the modified array on the monitor. The figure below shows what the output of the program should look like.

```
7 ^ ^ ^ ^
@ 7 ^ ^ ^
@ @ 7 ^ ^
@ @ @ 7 ^
@ @ @ @ 7
```

6. Modify the 2-D array from Question 5 by flipping its contents across the middle row of the array. The elements in the middle row (i.e., row 2) should stay the same. The elements in row 0 should be interchanged with corresponding elements in row 4. Similarly, the elements in row 1 should be interchanged with corresponding elements in row 3. Display the contents of the modified array on the monitor. The figure below shows what the output of the program should look like.

```
@ @ @ @ 7
@ @ @ 7 ^
@ @ 7 ^ ^
@ 7 ^ ^ ^
7 ^ ^ ^ ^
```

7. Question 2 from Coursework Exam 1.

8. Question 3 from Coursework Exam 1.

End of Lab #8