Homework 4 – Loops

Learning outcome: assess student's ability to create testing and counting program using loops, *for*, *do-while,* and *while* loops.

Activity description: Open and save a .cpp file as *LastName_Homework5.cpp.* In the cpp file, include an info header as:

```
/* Student's full name
   Homework 4: Loops
   */
```

In this .cpp file, create a C++ code for the following three questions. Before submitting the .cpp file, run the .cpp file and make sure that all three programs run.

Question 1:

Write a C++ program that will ask the user to enter a number greater than or equal to 10. If the user enters a number that is less than 10, the program will display the same message asking the user to enter a number again. For this question, apply **do-while** loop. Once a right number is entered, the program will print the number as:

`____ is a valid number!`

Hint: you might use if statement nested in the do-while loop.

Program output

When runs the program, the program will ask the user to enter a number:

```
--------- Question 1 ---------
Enter a number:
```

If a user enters 6, the program will display a message again asking to enter another number:

```
--------- Question 1 ---------
Enter a number: 6
6 is invalid! Please enter a number greater than 10:
```

If the user enters 12, the program ends and displays a message `12 is a valid number!`

```
--------- Question 1 ---------
Enter a number: 6
6 is invalid! Please enter a number greater than 10: 12
12 is a valid number!
```

Question 2

Ask the user to enter two numbers and then print all numbers from the minimum to the maximum number. You must **while** loop for this program. *Hint: you can use a if-else statement to control the minimum and the maximum number.*

When runs the program, the program asks the user to enter two numbers:

```
--------- Question 2---------
Enter number 1:
```

If the user enters 31 as the first number, the program will ask for the second number:

```
--------- Question 2---------
Enter number 1: 31
Enter number 2:
```

If the user enters 22 as the second number, the program will print from 22 to 31 with a step of 1:

```
--------- Question 2---------
Enter number 1: 31
Enter number 2: 22

RESULT = 22 23 24 25 26 27 28 29 30 31
```

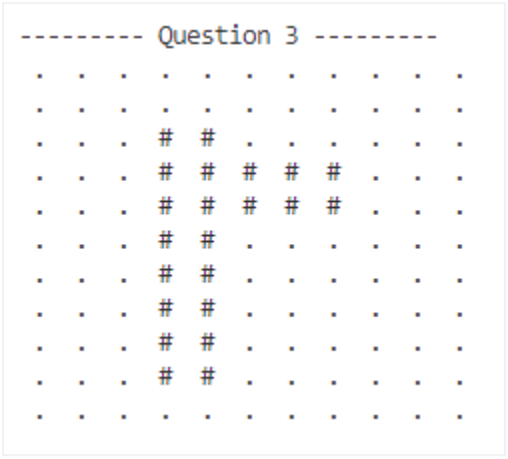
If the program runs again, and the user enters the minimum number first and then the maximum number. For example, if the user enters 10 first and then 18, the program will print the result as:

```
--------- Question 2---------
Enter number 1: 10
Enter number 2: 18

RESULT = 10 11 12 13 14 15 16 17 18
```

Question 3) Graphing a **r** letter in C++

Create a C++ program that will print the letter **r** with **#** sign as shown below:



Set the **`dimension`** as a global variable with value 11. For this program, use nested **for** loop.