CSE 278 Lab 3

C++ programming basic

Goal:

1. Practice with the following topics:
    - Function
    - Reference
    - Pointer
    - String

Note!!!:

- Write C++ code to implement the answer.
- Each question should be implemented/test in one main function. Design one function per one sub-question (you can also design functions to be called by this function if necessary). So, intotal, there should be 3 main functions (for Q1, Q2, Q3).
- Code (80%)+Comments & documentation(20%)
- You can use the Linux server to edit and run your code or use any IDE in the Virtual Machine to edit and run your code.
- Package all your code files with the readme file into one file. (Compress it with the format of .zip). Upload to Canvas (Check the “assignment port").
- Create a “Lab 3” repo to back up your code. (This is not the submission)

Question 1: Advanced string operation.

The user should input a string. Write your own function to achieve the following function:
Eg. “feng17@miamiOh.edu_^&*-----2055”

a) Write a function to return how many letters are in the input string.
   Eg. 14
b) Write a function to return how many digits are in the input string.
   Eg. 6 (1,7,2,0,5,5)

c) Write a function to return how many numbers are in the input string
   Eg. 2 (17, 2055)

d) Write a function to check if the input string contains “miami”. Return true or false
   Eg. true

e) Rewrite the function for a) to enable it to make all the letters uppercase or lowercase controlled by the main function.

f) Write ONE function to implement a), b), c). You can reuse the code in a,b,c but you need to think about how the main function get the results.

NOTE!!!!
Write your own code. Do not use existing functions (such as ”comp(), toupper()”). Exception: string.size().

Question 2: Swap the value.

Assume the main function contains two variables “a” and “b”, write a function to swap the value. Bonus(10% to this lab): implement two versions of the functions, one using reference and one using pointer.

Eg. int a=10;
    int b=2;
    cout<<a<<”,”<<b<<”/n”; //-> 10,2
    YourFunction(*******);
     cout<<a<<”,”<<b<<”/n”; //-> 2,10

Write your own code. Do not use existing functions

Question 3: Array Operation B:

Input an array of integers (max: 20 numbers), write a function to return the index of local maximum and local minimum. Return and display it in the main function. When you display the index, please start with 1. Ignore the boundary

Eg. input : 12 11 122 112 222 222 222 221 76 36 31 234 256 76 73

Display: 2,3,4, 11, 13