Lab 10   Pointers (I)

Please test the correctness of your program in **Q2** and **Q3** on **PASS**.

Q1. [For Practice]

Write a program that asks the user to enter integers as inputs to be stored in the variables **A** and **B** respectively. There are also two integer pointers named **ptrA** and **ptrB**. Assign the addresses of **A** and **B** to **ptrA** and **ptrB** respectively and display the values in **A** and **B** using **ptrA** and **ptrB**.

Note:
1) Outputs may be different in different runs as we print addresses in program, the same hereinafter.
2) To manipulate the stream to print **foo** in hexadecimal use the hex manipulator:

```
cout << hex << foo;
```

Expected Outputs:
```
Enter value of A: 10
Enter value of B: 20
Value of ptrA is 10 stored in address 002EF83C
Value of ptrB is 20 stored in address 002EF830
```

Q2. [For Practice]

Design a function **stringCompare()** to implement the comparison among strings. The rules for string comparison between string **s1** and **s2** are the followings:
1. Compare **s1** and **s2** character by character (based on their ascii codes) from the beginning of both strings.
2. If the i-1 characters of the two strings are identical, then:
   a. If ith character of **s1** is larger than **s2**, **s1** is larger than **s2** regardless the remaining part;
   b. If ith character of **s1** is smaller than **s2**, **s1** is smaller than **s2** regardless the remaining part;
   c. If ith character of **s1** is equal to **s2**, continue the operation on i+1th character until one string ends;
3. When one string ends, and there is still no result for comparison, the string with longer length is larger. If the lengths of the two string are identical, the two strings are equal.

The function returns 1 if **s1** is larger than **s2**, -1 if **s1** is smaller than **s2** and 0 if they are identical. Use the function you designed to compare the two input strings. Assume that the size of each string is not larger than 20.

Note: You are NOT allowed to use *strcmp()* function.

Expected output:

Example 1
Enter the first string:
qwert
Enter the second string:
qwer
The first string is larger.
Example 2
Enter the first string:
Qwer
Enter the second string:
awer
The second string is larger.

Example 3

```
Enter the first string:
Qwer
Enter the second string:
Qwer
The two strings are equal.
```

Q3. [will be marked]

You must click <u>submit</u> to submit your solution. Deadline is 11:59pm, Mar 28, 2023.

Given any two non-zero values from user, both can represent voltage (**V**) or current (**I**) and if one is **V**, the other will be **I**. Download the **resistance.cpp**, and modify this program to compute the possible values of resistance(**R**) from the user input, where **R=V/I**. For example, when the two inputted values are 5.1 and 2, **R** can be 5.1/2 = 2.55 or 2/5.1 = 0.39.

The program should be made up of the following four functions:
1) **getInput()**: get two values from user using **call by reference**, where the first one is **V** and the second is **I**. The return type of this function is void.
2) **toResistance()**: calculate the resistance **R** given **V** and **I**. The function should return a real number for the value of **R**.
3) **swap()**: swap the values of **V** and **I** to obtain the other possible pair of voltage and current using **call by reference.**
4) **main()**: call **getInput()** to obtain **V** and **I** using **call by reference**. After that, the program should pass **V** and **I** to the function **toResistance()** to obtain **R**. Then, swap the values of **V** and **I** using **call by reference** and pass them to **toResistance()** to obtain the other **R.** Finally, the possible values of **R** are printed (to 2 decimal places, with **cout << fixed << setprecision(2) << I << endl;**).

Expected output:

Example

```
Please enter two values: 5.1 2
The value of one resistance is 2.55
The value of the other resistance is 0.39
```