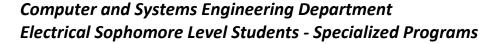
AIN SHAMS UNIVERSITY FACULTY OF ENGINEERING





Spring 2023 – Capstone Project Course Code: CSE 131s

Task 2

Task 2

Aspect	Data
Announcement Date	March 18 th
Due Date	March 31 st
Marks assigned	10
C++ topics practiced	String processing, Input / Output, Loops / Conditions

Task description

- Calculating the total resistance of a circuit is the first step in analyzing any circuit.
- Finding the total resistance enables us to calculate the current flowing through the circuit.
- In the last task (task 1) you wrote a program to calculate the value of the total resistance.
- Previously the user was able to choose the type of connection by typing S for series and P for parallel followed by the values of 3 resistances separated by spaces and we assumed that the user will always describe his circuit correctly.
- Well, let's face it not all users are that smart and we must take into consideration user mistakes.
- In this task we will upgrade our Circuit Analyzer so that the user will choose the type of connection by typing **S** for series and **P** for parallel and if the user inserts another value for the connection the program will show a warning message "Wrong Circuit Description".
- After choosing the type of connection the user will insert the values of as many resistances as he wants separated by one space followed by an **E** at the end. (Refer to test cases for examples).
- We will assume that the user might get the circuit connection wrong, but he will never forget the E at the end
- The resistances could take any value.
- The user will also provide the value of the voltage applied to the circuit and the program will calculate the current flowing through it.
- The user will provide the circuit description in **one string** as he did in task 1.
- Only one type of connection is allowed (all resistances are either connected in series or parallel).
- Hints:
 - Refer to task 1 if you don't remember how to calculate the total resistance in each case.
 - The function substr() returns a string and can't be compared to a char but can be compared to a string (even if this string consists of 1 character).
 - To get the length of a string, use the length() function:
 string txt = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
 int x = txt.length();
 cout << "The length of the txt string is: " << x;</pre>

AIN SHAMS UNIVERSITY FACULTY OF ENGINEERING

Computer and Systems Engineering Department Electrical Sophomore Level Students - Specialized Programs



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Test cases

1. **Circuit description:** S 1.5 12.85 3.6 5 6.6 7 E

Voltage applied: 3.8

2. Circuit description: L 2.5 5.2 E

Voltage applied: 9

3. **Circuit description:** *P 1.4 2.26 3 E*

Voltage applied: 7

4. Circuit description: S 9 E

Voltage applied: 9

5. **Circuit description:** Z 8.2 3.1 1.3 7.8 E

Voltage applied: 5

6. **Circuit description:** *P 8.2 3.1 1.3 7.8 E*

Voltage applied: 5

Data in italic are user input values.

Grading rubric

The circuit description is recorded in one string.	1 Mark
The program can process the connection type and all resistance values.	4 Marks
The program can calculate the total resistance in both cases	
The program shows the error message when connection type is wrong	
The program can calculate the circuit current.	

Submission procedure

• Upload a copy of your code in one pdf file along with screenshots of the previous test cases provided on LMS.

General Instructions

Topic	Rule / Guideline
Assistance of the teaching	- Get access to team from MS Teams – channel of "Capstone
team	 Project", any communication out of this channel will be neglected. TAs will not respond to any question regarding the project out of this channel. TAs will have announced time to be available for live communication – they will also reply offline to questions in their live time
Submission	 No accepted submission after the task due time All submission should be in the portal. Plagiarism is prohibited and a plagiarized submission will result in a zero and a first strike. Two plagiarized submissions will result in failure in the whole project.