



This assessment is worth **20%** of your total assessment of this subject. You are required to write a C++ program to solve all problems. All work is to be completed individually. If parts or all of the source code you submit ***is not your own work***, you will receive **ZERO**.

Task

This assessment consists of 5 tasks. You need to prepare the following for each question

- Programming object list
- Algorithm
- C++ Coding

Scenario 1: Mathematics operation.

Write a C++ program that will display the calculator menu. The program will prompt the user to choose the operation choice (from 1 to 5). Then it asks the user to input two integer values for the calculation.

Example

MENU

1. Add
2. Subtract
3. Multiply
4. Divide
5. Modulus

Enter your choice: **1**

Enter your two numbers: **12 15**

Result: 27

Continue? **y**

Note: user entered values are shown in **bold blue**.

Scenario 2: Sorting Number

Write a C++ program (using function overloaded) to sort 10 integer values, or 10 long values, or 10 double values. Number lists provide below:

valListInt = 23, 2, 34, 23, 43, 22, 32, 32, 43, 34

valListLong = 7000, 15, 34, 2373645, 43, 22, 9392929294, 46, 32, 111143

valListDbl = 23.3847239, 2.3974, 34.183734, 23.0, 43.36381, 22.3, 32.0, 32.1919, 43.938363, 34.38364

Scenario 3: Order number

Create the C++ Function named multiples so that it has two parameters x, and n. The first parameter x will be overloaded with int, double and float. n will always be int. The return type is void. A Function created from multiples will compute.

$$\text{sum} = 1 + x + 2x + 3x + \dots + nx$$

$$\text{e.g } n = 4$$

$$\text{sum} = 1+x+2x+3x+4x$$

and display the result on screen.



Scenario 4: Temperature record

Write a program that takes a maximum and minimum temperature of the city from Monday to Sunday, and three functions that calculate on average temperature, maximum temperature and minimum temperature of that week.

Example

Please enter this week temperature,

```
Monday: 19.0 14.0
Tuesday: 24.5 12.5
Wednesday: 22.0 9.5
Thursday: 17.0 9.0
Friday: 17.0 10.0
Saturday: 23.0 12.0
Sunday: 22.0 15.5
```

This week,

```
minimum temperature is: 9.0
maximum temperature is: 24.5
average temperature is: 16.21
```

Note: user entered values are shown in **bold blue**.

Scenario 5: String and Character Function

Write a program that reads in a string provided the user. Return the following statistics about the string:

- Length
- Number of vowels
- Number of lower case characters
- Number of upper case characters
- Number of numerals

Number of other symbols

When is due

Week 12, late penalty would be applied refer to AIT late submission policy.

Submission

Submit your document and c++ project in Jivi using the following **STRICT** filename convention and in **ZIP** format.

StudentNumber_FirstName_LastName_Assessment1.zip

Example: 1234_John_Doe_Assessment1.zip