

This assessment is worth **20%** of you 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 is consist 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 vales 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

valListDb1 = 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