COSC1436 – LAB5

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TITLE:

Repetition structure – Handle Menu to re-display - Temperature Converter with user-defined functions (for loop, while loop, do..while loop, user-defined functions)

TIME TO COMPLETE

2 Weeks

LAB5 - PART1 REQUIREMENT

Use the word document to write the answers to the following questions:

QUESTION 1:

DO NOT USE THE ARRAY IN THIS QUESTION: Provide a C++ **for loop** that repeats 6 times to displays the following 6 numbers as below. After the for loop, display: "Sum of these number is:

5, 8, 12, 17, 23, 30,
Sum of these numbers is: 65

The output window is:

```
5, 8, 12, 17, 23,
Sum of these numbers is: 65
```

QUESTION 2:

2A

Suppose we define the following variables:
int count = 0;
int intVar = 1, temp = 1, **product = 1;**

Write the **while loop** that lets the user **enter a number for intVar**. The intVar should be multiplied product and the result is stored back to the variable product. The loop should iterate as long as product contains a value less than or equal 2021 and **count** will be increased by 1 at ever iteration

After the loop stop, display message, for example:

```
 At count       =         3
Last product =      782
intvar          =       45
product         =   35190
```

he output window is:

```
At count      =       3
Last product =     782
intVar        =      45
product       =   35190
```

2B

If product = 3000 instead of product =1 at the beginning. How many time the while loop iterates such that product <= 2021

QUESTION 3:

3A

Suppose we define the following variables:
int count = 0;
int intVar = 1, temp = 1, **product = 1;**

Write the **do ..while loop** that lets the user **enter an integer intVar**. The intVar should be multiplied to product and the result is stored back to the variable product. The loop should iterate as long as product contains a value less than or equal 2021 and **count** will be increased by 1 at ever iteration

After the loop stop, display message, for example:

```
 At count       =         3
Last product =      782
Intvar          =       45
product         =   35190
```

The output window is:

```
At count      =       3
Last product =     782
intVar        =      45
product       =   35190
```

3B

If **product = 3000** instead of product = 1 at the beginning. How many times is the body of do..while loop iterates such that the product <= 2021

QUESTION 4:

4A.

Write the code to do the following:
-Display message to ask then read input from the keyboard about the following information:
* customerID (string)

* customerName (string)
* balance (float)

-open output file customer.txt to write:
-**Write to the output file customer.txt** the following information that have read input from the keyboard in the following format:
customerID – customerName – balance
For example:
1561175753 - James Smith – 1255.25
-**close** file

4B
Suppose in the file customer.txt already have 3 following lines:
1112243433 - Mary Lane – 1250.366
2123312344 – John Smith – 2134.25
1561175753 - James Smith – 1255.25

-provide the C++ code to **open file customer.txt** to read
-**Read** each line of the file then **display on screen**
-continue reading and displaying on the screen all the lines until end of the file
-**Write**: "End of the file data.txt" on the screen
-**close** data.txt file

QUESTION 5:
Display the following menu:
MENU
1.Task1
2.Task2
3.Task3
0. Exit
Type a number 1, 2, 3 to select task:

Read the number those users type in.
Write the switch statement based on the selected number:
If selected number = 1: Display "You select task 1"
If selected number = 2: Display "You select task 2"
If selected number = 3: Display "You select task 3"
If selected number = 0: Display "You select Exit"
For other number: Display "Invalid number"

After finishing to display the message at each case, you must redisplay the menu to allow users to select other task, until users select 0 to exit

HOW TO DO PART 2

Remember to do the lab with the following:
*If you need help about the C++ syntax to write the code, read the instruction in the folder "Skills Required"
*From now and on yourLastName will be changed to your last name
*Your program should change Smith to your last name
*Change James Smith to your full name
*write the file name as the first comment line at the top of program
*After running your program, take the picture of the output window as below from your program with **your name** on and paste the picture at the bottom of the document having pseudo-code to turn in

Step1:

Read the requirement; **write in English the pseudo-code** in a word document by listing the step by step what you suppose to do in main() and then save it with the name as **Lab5_pseudoCode_yourLastName**

Step2:

Start Virtual Studio C++, create the project → write the project name

For Part 2: FA2021_LAB5PART2_yourLastName

Add .cpp file

For Part 2: FA2021_TemparatureConverter _yourLastName.cpp

After adding the cpp file, you have an empty window coming up, type the following template of a C++ program in:

```
//File name should be written here as comment line
#include <iostream>
using namespace std;
int main()
{
      //add the code here below this line
      …..
      system("pause"); //This will pause the output to read
      return 0;
}
```

Step3:

Then follow the step by step in the pseudo-code, type the C++ code in after the line "//add the code here below this line"

Step4:

Compile and run the program

Step5:

Debug if there are any errors until compile successfully

LAB 5 - PART2 REQUIREMENT

Use C++ to create an application that provide the menu with two following tasks. After finishing one task, the program should **redisplay the menu** to allow users to continue using the program until users select 0 to exit:

FA2021_TemperatureConverter_Smith.cpp
MENU TEMPERATURE CONVERTER – JAMES SMITH

1. Convert Fahrenheit temperature to Celsius
2. Convert Celsius temperature to Fahrenheit
0. Exit

Creating user-defined functions to define the action of each following case:

CASE 1: Convert Fahrenheit temperature to Celsius
-Display the message to ask to enter Fahrenheit degree from the keyboard
-Use the following formula to convert to Celsius degree

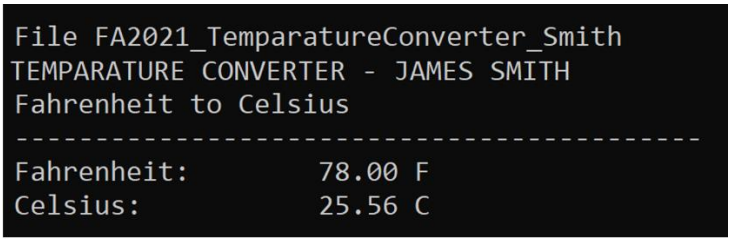
Celsius Temperature = (Fahrenheit Temperature – 32) * 5/9 ;

-Display the output as below:

```
FA2021_TemperatureConverter_Smith.cpp
TEMPERATURE CONVERTER – JAMES SMITH
Fahrenheit to Celsius
----------------------------------------------------------------
```

```
Fahrenheit:                              78.00 F
Celsius:                                   25.56 C
```

Output window is:



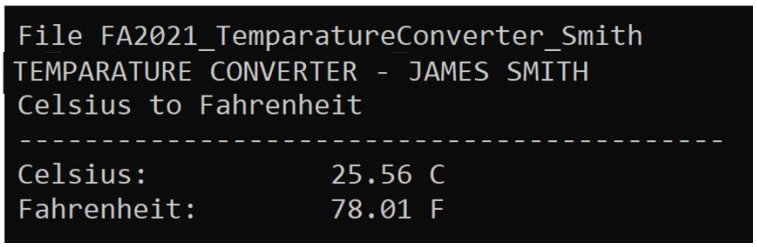
CASE 2: Convert Celsius temperature to Fahrenheit
-Display the message to ask to enter Celsius degree from the keyboard
-Use the following formula to covert to Fahrenheit degree:
Fahrenheit Temperature = 9/5 * Celsius Temperature + 32;

-Display the output as below:

FA2021_TemperatureConverter_Smith.cpp
TEMPERATURE CONVERTER – JAMES SMITH
Celsius to Fahrenheit

Celsius: 25.56 C
Fahrenheit: 78.01 F

Window of the output:



HOW TO TURN IN THE LAB

You turn in the following files:
File: FA2021_AnswerPart1_yourLastName.docx (part1)

File: Pseudo-code and output pictures (part2)
FA2021_TemparatureConverter_yourLastName.cpp (part2)
FA2021_LAB5PART2_yourLastName.exe (part2)

IF YOU GET ANY PROBLEM TO SUBMIT FILE .class, YOU CAN SUBMIT ALL PROJECT INTO ONE FILE .zip or .rar

HOW TO GRADE THE LAB

ITEMS	SCORES
TURN IN LAB ON TIME	3
Part1:	
Question1	2
Question2	1
Question3	2
Question4	4
Question5	2
Part2:	
Name of the files and submit all requested files	1
Pseudo-code	1
Create the menu	1
Handle the loop to allow users continue the calculation until choosing Exit	1
Switch or IF statement to manage the selected tasks	2
User-defined Function to convert C degree to F degree	2
User-defined Function to convert F degree to C degree	2
Call user-define Functions	1
Display the result as required format with clear screen before display	1
Compile success with all requirement	3
Comment – file name as a comment line at the top of file	1
Total	30 points