CSC 1101- Programming Language 1

1st Semester 2018/2019

Lab Assignment (1)

Objective

This assignment will help you understand how to:

- Define variables of basic C++ data types.
- Initialize and/or update variables with values.
- Use the **cout** command to display information on the screen.
- Perform simple mathematical calculations using the basic math operators +, -, *, /, and %.
- Include comments in the source code which provide adequate knowledge of what the program is doing.

Task 1

1. Open Visual Studio and create a new C++ project, call it "CSC1101_Prog1".
2. Add a .CPP source code file to the project. You can name the source file something like Prog1Main.cpp.
3. Write the following code in the source file.

```
#include <iostream>
using namespace std;

int main() {
      int gVar1, gVar2 = 2; // variables with and without initialization
      char ch='A';          // a variable being initialized
      cout << "Value of gVar1: " << gVar1 << endl;
      cout << "Value of gVar2: " << gVar2 << "\n";
      cout << "Character in ch: " << ch << endl;
      return 0;
}
```

4. Compile the program.
5. When your program compiles run it and trace the program and test it the output.

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Task 2

1. Replace your written code in the previous task with the following:

```
Const int number! = 3;
sum = number! + 5;
number!= number!-1;
cout << "Value of sum:       " << sum << endl;
```

2. Compile the program. If the program does not compile look carefully at the errors listed by the compiler and fix those errors. Also pay attention to the warnings the compiler gives you.
3. When your program compiles run it.

Task 3

1. Declare a constant variable for PI as 3.14159 using **#define** .
2. Multiply PI with sum and save it in variable M.
3. Compile the program. If the program does not compile look carefully at the errors listed by the compiler and fix those errors. Also pay attention to the warnings the compiler gives you.
4. When your program compiles run it.

Task 4

Write a program which calculate the area and circumference of a circle with radius r.

To write the program you need first to do the following:

- **Analysis the question.** In this step you must **study the problem carefully** to understand the problem and define a solution to the problem. This is perhaps the most important step in the software development process. Make a list of the program requirements (e.g. your inputs, outputs and the processing steps).
- **Find solution** (***algorithm***). This will require making a list of necessary steps to follow to solve the problem. To organize yourself, you can use either flowchart or pseudocode.
- **Verify** – Go through your solution step by step to see if it really does solve your problem. You may need to assign some values to your input to test if your algorithm will produce the expected output.
- **Convert your algorithm to** .CPP source code, following the syntax of C++ programming language.
- **Compile and test your code.**