**1 – Compiling your first C++ program**

* Make a new file.
* save it as **task1.cpp**
* write the following program / code in it.

#include <iostream>

using namespace std;

int main()

{

cout << "Hello world!\n" << endl;

return 0;

}

* Build your program, and correct your errors (if any!)
* Run the program

**2 – Understanding cout**

* Remove **“\n”** in the **cout** statement of the code created in Exercise 1. Write down what happens?
* Modify the **cout** statement to have the program print out your name.
* Modify the program by adding **cout** statements to *print out your name, address and phone number*. Make a proper output format to your printout (e.g., for address tag). You may use the following escape *sequences*.

|  |  |
| --- | --- |
| **Escape sequence** | **Meaning** |
| \n | make a new line |
| \t | make a tabulator |
| \" | output “ |
| \’ | output ‘ |
| \\ | output \ |
| \b | make a backspace |

* Work with the above escape sequences and notice the output.
* Write down the output of the following **cout** statement:

**cout<<"The n\na\bme o\tf our course is \"CS\n115\"\b"<<endl;**

Test your answer by typing the above statement to your code and run the code.

**3 – Understanding the program structure**

To examine the importance of the code segments in **Exercise 1**, we will thoroughly go through each one of them. For the purpose of this exercise we will produce some errors.

Please note the warning and error statements. This will allow you to recognize them in future labs and correct your own errors!

Instead of deleting code statements, you can comment the lines by adding **//** at the beginning of the line that should be skipped from the compilation process.

* **#include <iostream>**  
  this statement tells the compiler that you wish to use some of the many input output functions (IO) that C does provide. The function that will be used is "cout".  
  Now remove the #include statement, and note what will be the output when you run the program?
* Now add the #include statement again to your program.
* int main()  
  {

}

This is the **main function** of our program. **C++ starts to execute the code by executing the very first statement of the** main() **function**.

* Remove the ; at the end of the cout statement. Write down the error message?

Compare the line number that is denoted in the error message with the line number where you have removed the ; Can you explain the difference?

* Add the ; again and remove the f in cout. Write down the error message?
* Add the f again in cout and remove return 0; Write down the warning message?
* Add return 0; again and change the 0 to a 1. Run the program. What will be the message of your IDE at the end of the run?

**4- Write a Full C++ program:**

Write a C++ program that outputs the course names and their instructors you have registered for this semester. Present the output of your program to your instructor before you leave the lab.

**Part 2**

1. **Defining, inputting and printing variables:**

Write a new program with the following code:

#include <iostream>

using namespace std;

int main()

{

int myVar = 3;

cout<<"myVar = "<<myVar<<"\n"<<endl;

myVar = 15;

cout<<"myVar = "<<myVar<<"\n"<<endl;

cout<<"Please enter a new value for myVar: "<<endl;

cin>>myVar;

cout<<"myVar = "<<myVar<<"\n"<<endl;

return 0;

}

Compile the above program and run it.

As reminder, some types and their placeholders (format specifications)

|  |  |
| --- | --- |
| **Type** | **C++ type** |
| Character | char |
| integer value | int |
| floating point number | float |
| floating point number with double precision | double |

* Write a new program.
  + define **two different variables ( x, y)** of the type **integer** with an **initial value** of 1 ( x=1; y=1).
  + print both variables.
  + ask the user to enter new values for both variables.
  + print the new values.

1. **Making some calculations**

As reminder, mathematical operators:

|  |  |
| --- | --- |
| **Operation** | **operator** |
| Addition | + |
| Difference | - |
| Multiplication | \* |
| Division | / |

If we have an integer variable **a**, we can set **a** to the product of 5 and 10:

a = 5 \* 10;

We can also set a variable **c** to the addition of two other variables **a** and **b**:

c = a + b;

1. **Write a full C++ program that:**
   * defines three integer variables a, b and c
   * reads values for a and b
   * assigns the sum of a and b to c
   * prints c
   * assigns the difference from a and b to c
   * prints c
   * assigns the multiplication from a and b to c
   * prints c
   * assigns the division from a by b to c
   * prints c