Lab Manual # 02
Introduction to Programming

Introduction:

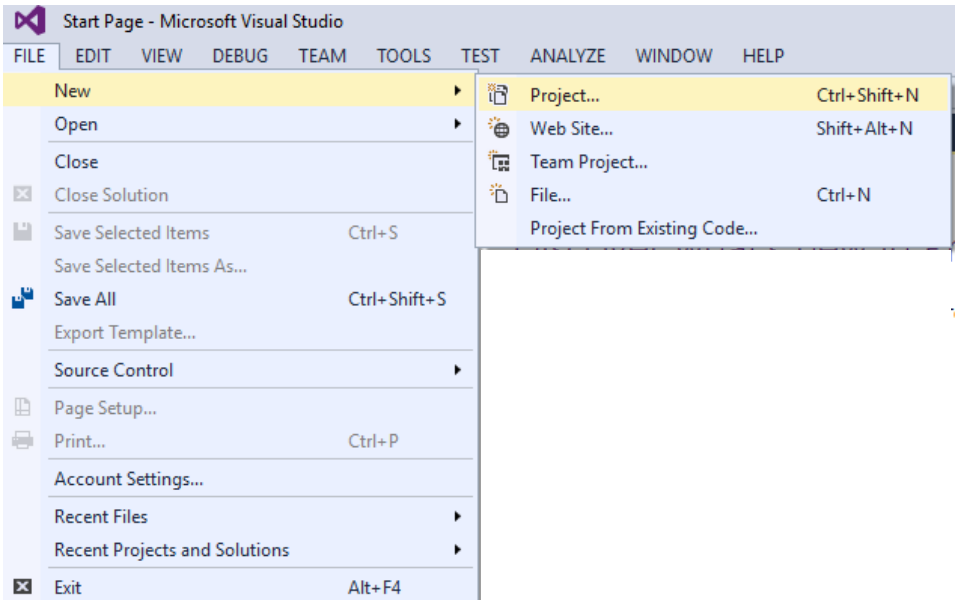
This lab is about familiarization with IDE of Visual Studio and writing simple programs using C++ language.

Objective:

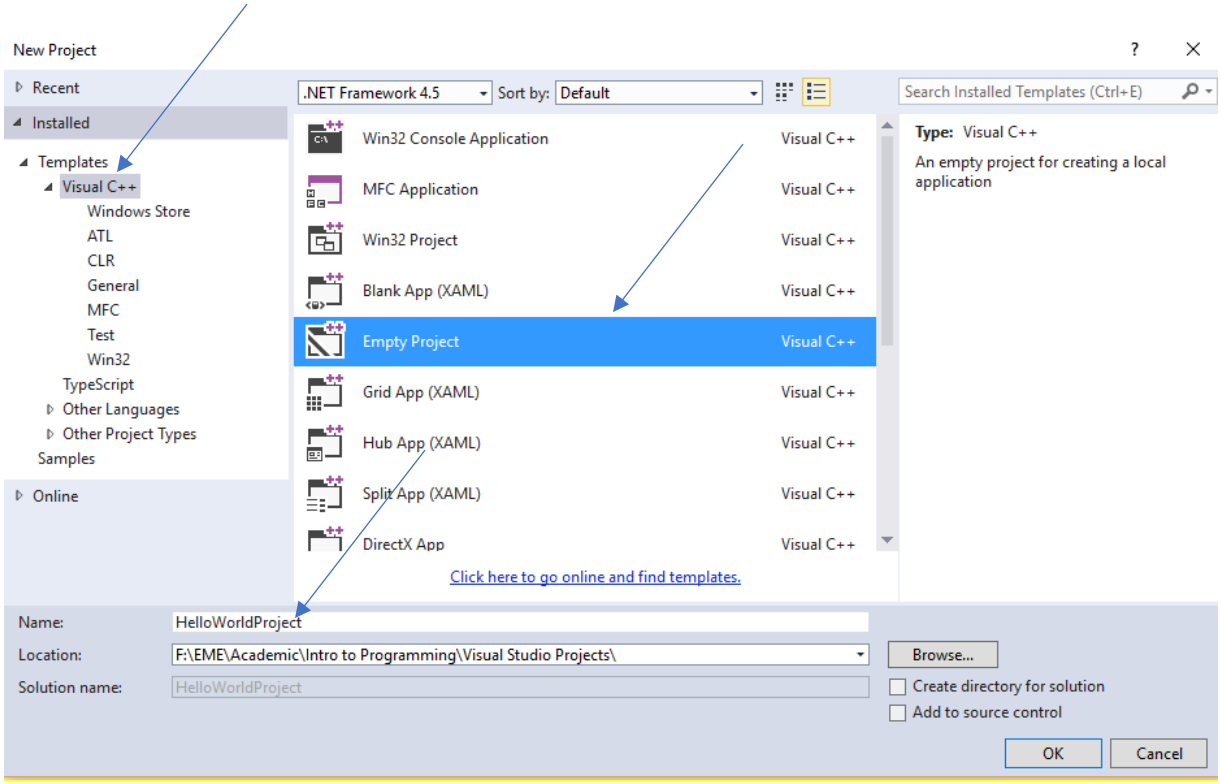
At the end of this lab student will be able to learn how to write their first C++ Project in Microsoft Visual Studio **2013** Integrated Development Environment (IDE).

Description:

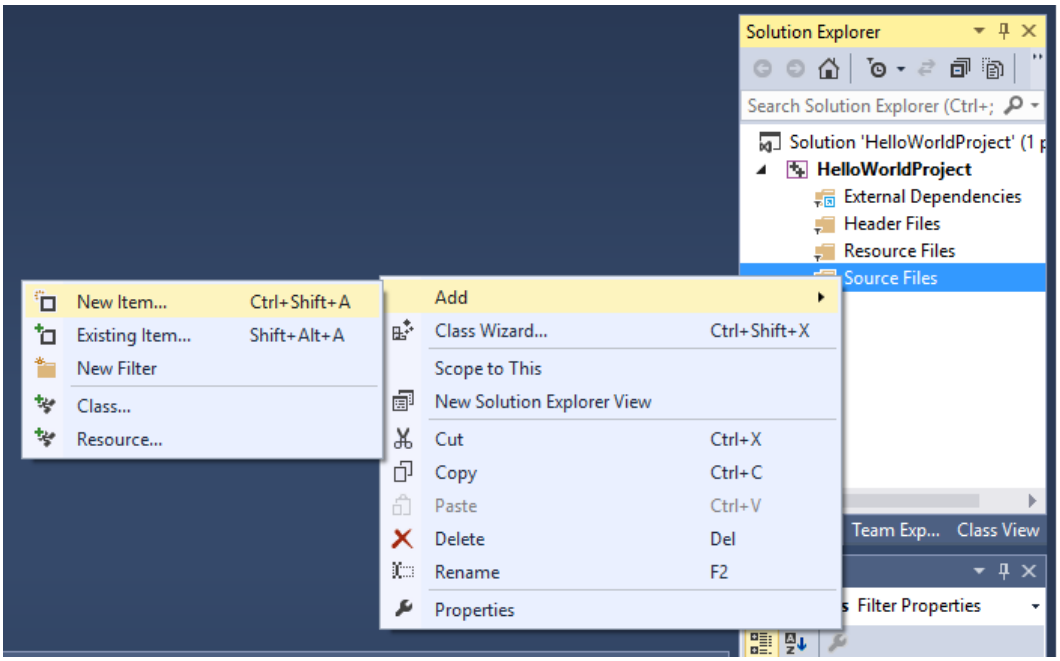
1) Launch the Microsoft Visual Studio software installed in your computer.
2) Click on File → New → Project… in the menu bar.



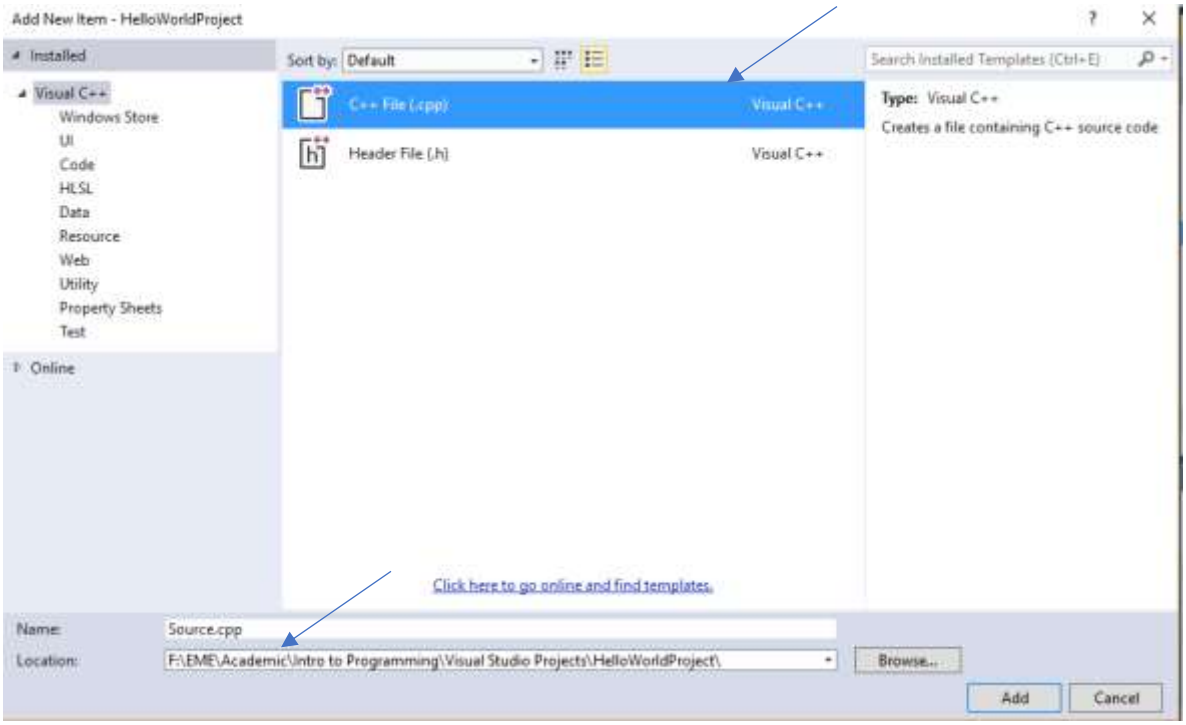
3) Following window will pop up. Choose Visual C++ →Select Empty Project., give an appropriate name and press OK.



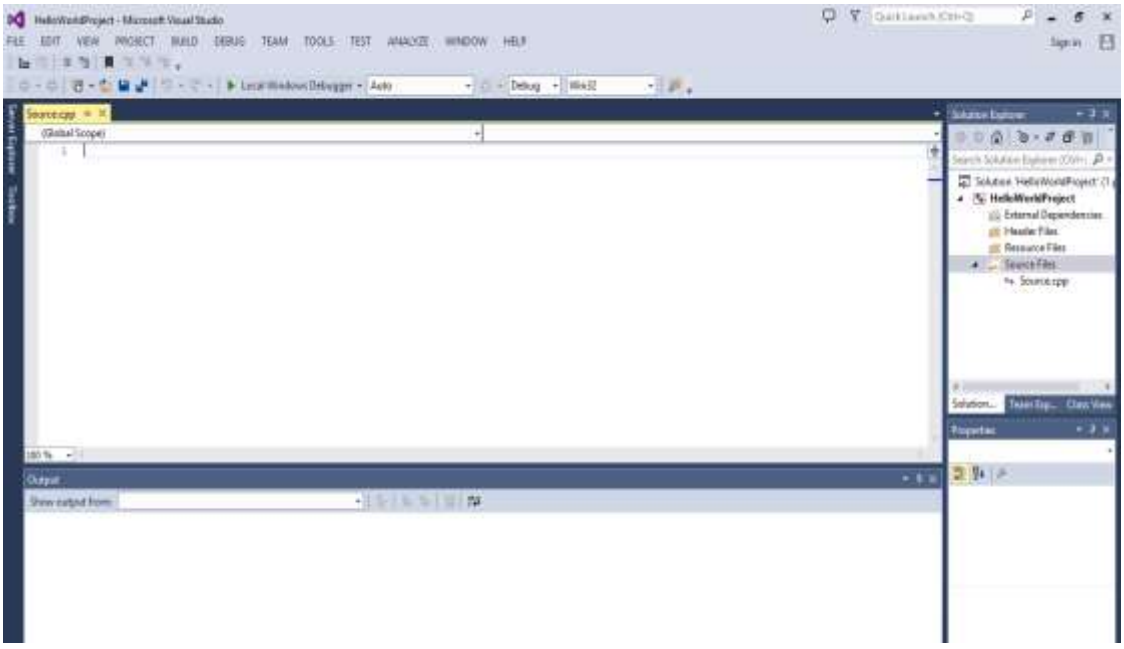
4) From the new window, Right click on the Source Files folder in the Solution Explorer window. Choose Add →New Item …



5) Select C++ File, keep the name as Source.cpp and click Add.



6) Following window will open up. The code will be written here.



Computer is organized in different units in which the basic units are input, output, memory and CPU. Input unit provide data and instructions to the CPU. Memory stores the data and instructions; CPU executes the instructions and pass the results of the execution to the output.
Algorithm is a well-define and ordered set of instructions which lead to a solution within finite number of steps.

Compiler is a program that translates high-level language to machine language and creates an executable file. C++ program has one function main () by default without which the program will not execute as the execution starts from the first instruction of the main function.
In C++ taking input from user and printing output on display of computer is done by including a header file in the C++ code called iostream.h which notifies the preprocessor to include the input/output stream contents.

Example:

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

// main() is where program execution begins.
int main() {
   cout << "Hello World"; // prints Hello World
   return 0;
}
```

Let us look at the various parts of the above program

- The C++ language defines several headers, which contain information that is either necessary or useful to your program. For this program, the header <iostream> is needed. This contains pre-defined input/output functions that we can use in our program.
- The line using namespace std; tells the compiler to use the std namespace. Namespaces are a relatively recent addition to C++.
- The next line '// main() is where program execution begins.' is a single-line comment available in C++. Single-line comments begin with // and stop at the end of the line.
- The line int main() is the main function where program execution begins.
- return 0 ends the main function.
- The next line cout << "Hello World"; causes the message "Hello World" to be displayed on the screen.

- The next line return 0; terminates main( )function and causes it to return the value 0 to the calling process.

Arithmetic Operations:

Description	Operator	Answer
Addition	cout<<5+2<<endl	7
Subtraction	cout<<5-2<<endl	3
Multiplication	cout<<5*2<<endl	10
Integer Division	cout<<5/2<<endl	2
Modulus (remainder)	cout<<5%2;<<endl	1
Division including float	cout<<5.0/2<<endl	2.5

Lab Task:

1. Write a C++ code that displays your name, department and degree on the console. Make sure the three things are in three different lines.
2. Write a C++ code that displays the name and quote of your favorite personality. Make sure to put the quote in inverted commas.

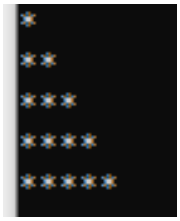
Example of output:

Steve Jobs once said, "The doers are the major thinkers. The people that really create the things that change this industry are both the thinker and doer in one person."

3. Write a C++ code that takes two numbers and displays the addition, subtraction, division, multiplication and square of given numbers, on the console window. Make sure to comment your code.

Home Task:

1. Write a C++ code to print following output on console without using endl.



2. Write a C++ code to print the above pattern in one line without giving space manually between asterisks.

3. From LAB TASK 3 print all the results in the same line.

Note: Google search the syntax for the printing tricks.