Lab 02:
Integrated Development Environment (IDE) and Basics of Programming

Objective(s):
Understanding of Integrated Development Environment (IDE)
CLOs: CL01, CLO4

Tools(s):

- PC with Windows 7 Professional or above
- Visual Studio 2010 or above

HISTORY OF C and C++
C++ was developed by Danish computer scientist Bjarne Stroustrup at Bell Labs since 1979 as an extension of the C language; he wanted an efficient and flexible language similar to C that also provided high-level features for program organization.
INTRODUCTION (IDE):
An integrated development environment (IDE) or interactive development environment is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a source code editor, build automation tools and a debugger. In general, an IDE is a graphical user interface (GUI) - based workbench designed to aid a developer in building software applications with an integrated environment combined with all the required tools at hand.
Examples of IDEs:

1) Microsoft Visual Studio

Microsoft Visual Studio is IDE for Windows application development, look no further than to Microsoft's own developer toolset. Visual Studio products cover languages like C++, C# and VB.NET. In addition, you are also able to develop for the Windows x86, Windows RT, and Windows Phone. The latest version of Visual Studio is also designed to be optimized for touch, just in case you happen to be writing code on a Microsoft Surface.
2) Eclipse

Eclipse contains a base workspace and an extensible plug-in system for customizing the environment. Written mostly in Java, Eclipse can be used to develop applications. By means of various plugins, Eclipse may also be used to develop applications in other programming languages: Ada, ABAP, C, C++, COBOL, FORTRAN, Haskell, JavaScript, Lasso, Lua, Natural, Perl, PHP, Prolog, Python, R, Ruby (including Ruby on Rails framework), Scala, Clojure, Groovy, Scheme, and Erlang.
3) Code Blocks

Code::Blocks is a free, open-source cross-platform IDE that supports multiple compilers including GCC, Clang and Visual C++. It is developed in C++ using wxWidgets as the GUI toolkit. Using plugin architecture, its capabilities and features are defined by the provided plugins. Currently, Code::Blocks is oriented towards C, C++, and FORTRAN. It has a custom build system and optional Make support.
Code::Blocks is being developed for Windows and Linux.

4) Turbo C/C++

Turbo C is an Integrated Development Environment and compiler for the C programming language from Borland. First introduced in 1987, it was noted for its integrated development environment, small size, fast compile speed, comprehensive manuals and low price.

Installation of Visual Studio

STEP 1

Download Setup of Visual Studio 2010 or latest version of Visual Studio 2019

STEP 2

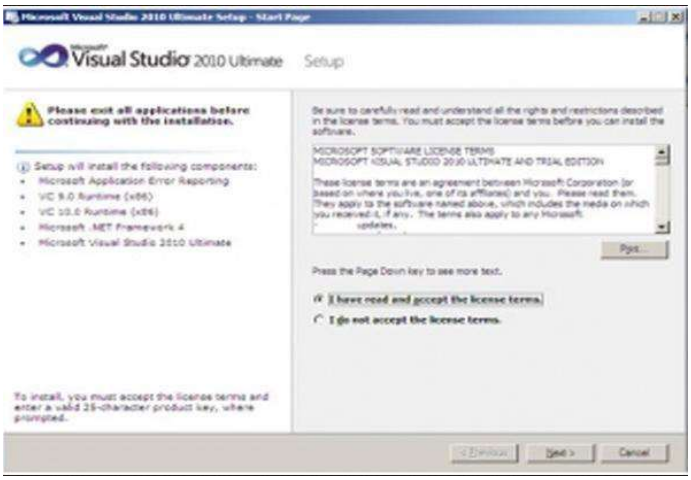
Click “install Microsoft Visual Studio 2010” in order to install Visual Studio.

STEP 3

Click —Next to start installation

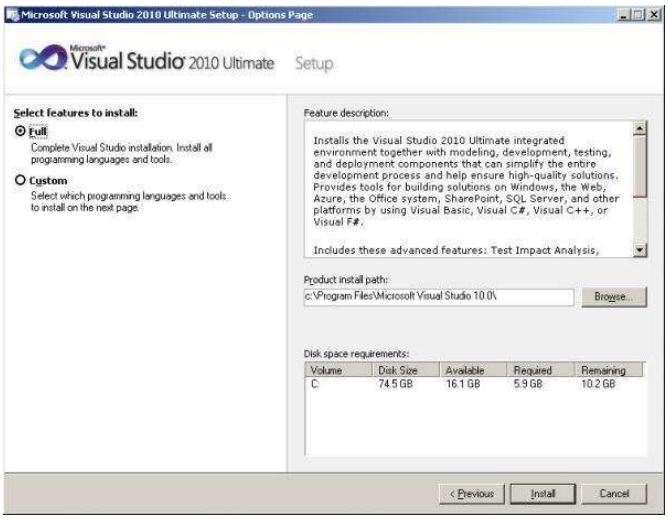
STEP 4

After clicking next you will see the following screen. Click the button “I have read and accept the license agreement”


Visual Studio 2010 Ultimate
Setup
Please exit all applications before continuing with the installation.
Setup will install the following components:
Microsoft Application Error Reporting
VC 9.0 Runtime (x86)
VC 10.0 Runtime (x86)
Microsoft .NET Framework 4
Microsoft Visual Studio 2010 Ultimate
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT VISUAL STUDIO 2010 ULTIMATE AND TRIAL EDITION
Print...
Press the Page Down key to see more text.
I have read and accept the license terms.
I do not accept the license terms.
To install, you must accept the license terms and enter a valid 25-character product key, where prompted.
Next >
Cancel

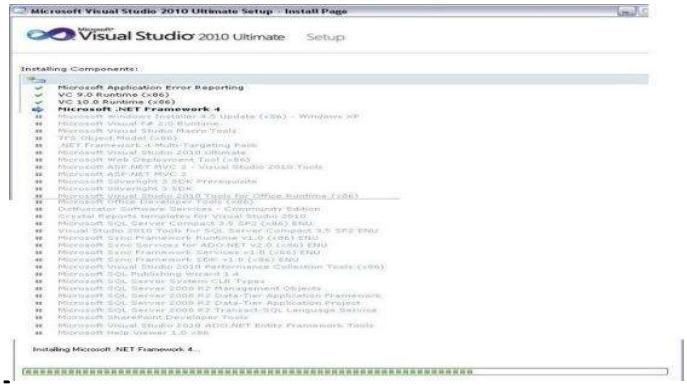
STEP 5

Select the features you want to install in Visual Studio 2010. You may select Full Installation or Custom Installation for selected components to be added. Also select the location where you want to install Visual Studio.



STEP 6

Now the setup will start to install its components.



STEP 7

Now a window appears which shows the components of Visual Studio being installed.

STEP 8

Click Finish. The installation is complete now.

1) Header Files

A header file is a file which contains C++ function declarations and macro definitions and to be shared between several source files. You request the use of a header file in your program by including it, with the C++ preprocessing directive #include like you have seen inclusion of iostream header file, which comes along with your compiler.

2) Using namespace std;

The namespace creates a declarative region in which various program elements are defined. The using statement informs the compiler that you want to use the std namespace. If the following line is not included the cout would not have been executed, as cout is included in the namespace std.

3) Main Function

void main() is the first statement executed whenever the C++ program is run. It is the starting point of the program. If main function is not included in the program, the compiler will show an error. void is a data type of function main, it shows the program is not returning any value

4) cout<<"Hello World";

This line is a statement. Statements in C++ always end with semi-colon. Statements are always executed in the order they appear. The cout corresponds to a standard output stream. It is used to display the output on the screen. The symbol "<<" refers to an *insertion* operator. Its function is to direct the string constants to cout which displays it onto the screen.

Compilation and Running a Program

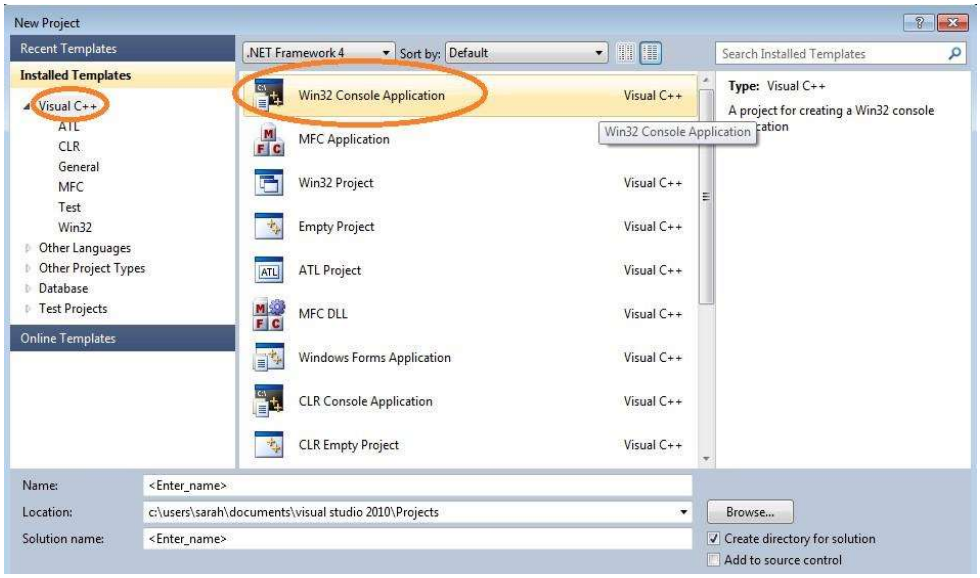
Press Ctrl+ Shift + B to compile. If there is no error the program compiles successfully. Press Ctrl + F5 to run the program.

Creating a Project in Visual Studio

Follow the below mentioned steps to create a new project in VS.

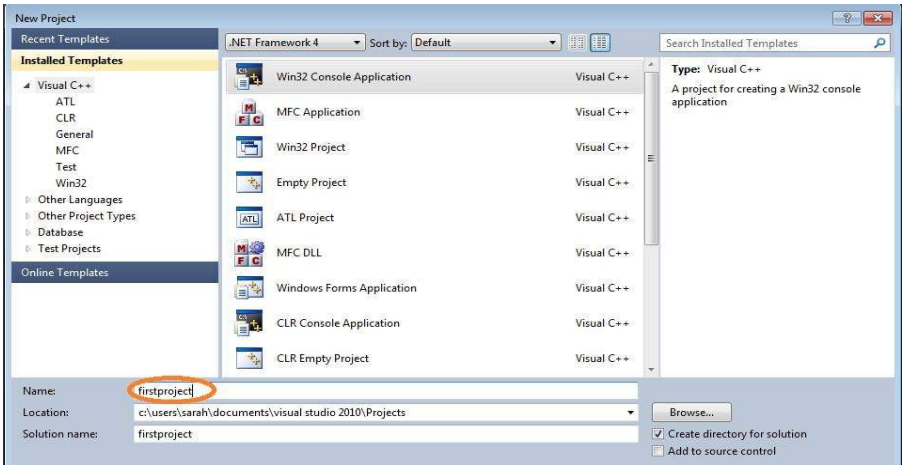
STEP 1

Click File New Project. From the Installed Templates Select Visual C++, and select Empty Project.



STEP 2

Name you Project as “firstproject” and click OK.

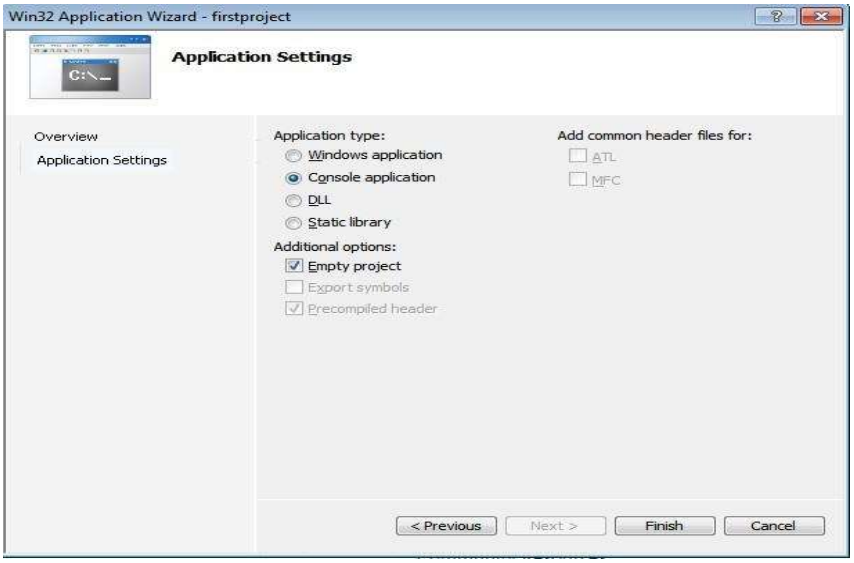


STEP 3

This will open an Application Wizard. Click Next to continue.

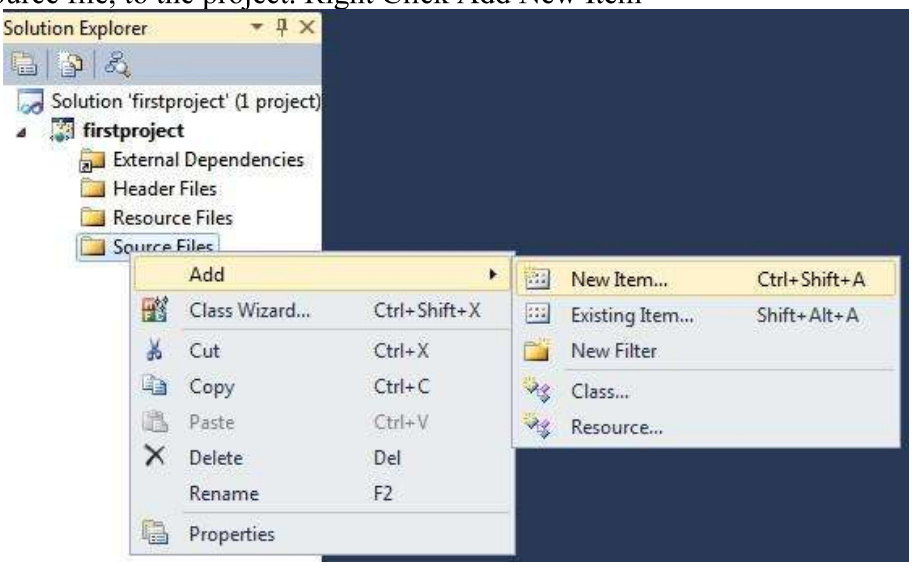
STEP 4

Now leave ―Console Application‖ selected, and in additional options select ―Empty Project. Click ―Finish.



STEP 5

Add a source file, to the project. Right Click Add New Item



STEP 6

Select Visual C++ from the —Installed Templates. Select .cpp extension file from the list. Name the source file first project.