These instructions explain how to use the Microsoft Visual Studio .Net 2003 system for freshman programming classes.

Start Microsoft Visual Studio .Net 2003 (Visual Studio) from the Start / All Programs menu. The first time you start Visual Studio you might see the profile setup tab of the Start Page. The following settings are recommended.

You will typically see the Projects page when starting Visual Studio again instead of the profile page. After setting the profile settings, click the Projects tab.
To start writing a new program, press the "New Project" button. If you are returning to finish a program that you started earlier, the project name may appear in the list. Just click on the project to resume working on your program. Note that if your program is stored on removable media, such as a memory stick, thumb drive or floppy disk, the media must be already inserted to continue with an existing project.

Visual Studio organizes all of the files that make up your program into a project. Even if your program only has one source file, you still need to create a project to use Visual Studio. The project provides a name and location for the files of your program. The project also defines the programming language and type of program to be created. Note that the default language and program type will probably not be what you want. Therefore it is important to create the project correctly.
When you press the "New Project" button, the following dialog box will appear.

![New Project dialog box](image)

The purpose of this box is to ask you what type of program you want to create and where the files should be located. Students typically want to create a C++ Win32 Console Project. Click on Visual C++ Projects on the left side under Project Types. Using the scroll bar, scroll down to Win32 Console Project and Click on the icon.

In the Location box you can enter the name of the directory where the files will be held. The default location for your project directory is

C:\Documents and Settings\myuserid\My Documents\Visual Studio Projects\You can click on the Browse button to select another drive. This is particularly useful if you want to save your project files on a thumb drive or memory stick. In the Name box, type the name of your project. The project name will be used to make a directory that will contain the files of the project. The project directory will be a subdirectory in the directory specified in the location box.

When you have selected the Win32 Console Project type, a location and name for the project, press the OK button.
When you click on the OK button on the New Project dialog box, the following box will appear. If this box does not appear, you may have failed to correctly specify that you want to create a Win32 Console Project.

The default settings are not always appropriate for freshmen programming assignments. Click on the Application Settings tab on the left side of the box.
Under Application type select "Console application". Check the "Empty project" box. This creates a project, but does not automatically generate any source code files. The automatically generated source codes are usually more complicated than necessary for simple programs.

After selecting "Console application" and "Empty project" press the Finish button.
Your project has now been created. You now need to create source code files in the project.

On the top menu bar click on Project and select "Add New Item…"
In the **Add New Item** dialog box list of **Templates**, click on "**C++ File (.cpp)**" to create a new file to contain your C++ program.

In the **Name** box, type the name of the file to contain your source code. This is frequently the name of your program. You do not need to specify a file extension. Visual Studio will automatically append ".cpp" to the end of the filename. The default location will be in the project directory you specified earlier. In most cases you will want to accept this default location. Press **Open** after entering the filename and selecting "**C++ File (.cpp)**".
Visual Studio will open a blank source code window that will overlay the initial Start Page. This is where you can enter your program. There will be a tab at the top of the window with the name of your program file. Note that the name of the new file is also listed under Source Files in the window on the upper right side.

Use the mouse to select the blank source code window and type in your program. In the above example a very simple example C++ program has been typed into the source code window. Note that comments appear in green characters, keywords in blue and most other names and punctuation are in black.

After you have typed in your program, click on Build on the top menu and select "Build Solution". This will compile and link your program to create an executable.
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If your does not contain any syntax errors when you build it, an output box will open and you will see the happy message "Build: 1 succeeded, 0 failed, 0 skipped"

You may close the Output window to view more of your program by clicking on the X on the green bar containing the word "Output".
If your program contains any syntax errors when you build it, a Task List box will open overlaying the lower half of the source code box. This will list the errors detect by the C++ compiler.

In the above example program the variable "i" was used but not declared. If you click on an error message in the Task List, a small pointer will appear to the left of the line in the program where the compiler believes the error is located. Note that the compiler may be confused as to the exact location of the error. A single error may generate several error messages. In this example, failing to declare the variable "i" generated four error messages. After correcting the errors, click on Build on the top menu and select "Build Solution" again.
Before running your program, it is helpful to set a breakpoint at the final return statement in the main program. This will cause the execution to halt before the program terminates and the output disappears.

You can set a breakpoint in the program by clicking on the bar to the left of the line where you want execution to halt. A red dot will appear to show that a breakpoint is set. You can clear the breakpoint by clicking on the red dot. You may set many breakpoints in a program to stop execution and examine the variable values. To run a program, click Debug on the top menu and select Start. You can also press function key F5 to run the program.
When the program is running, the program's output will appear in a separate console window. Program input, such as when using `cin`, occurs in this console window.

The console window will close at the end of the program.