

Chapter 1

Introduction to .NET and C#

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The C# language is used to create applications that display on a black window referred to as the DOS prompt or DOS window. As well as windows applications and web sites.

To study the C# language, we will use Microsoft Visual C# 2008 Express Edition or Microsoft Visual C# 2008 Professional. To get Microsoft Visual C# 2008 Express Edition, you can download it free from the **Microsoft** web site. After downloading it, you can install it.

To launch Microsoft Visual C# 2008 Express Edition, you can click Start -> (All) Programs -> Microsoft Visual C# 2008 Expression Edition.

C# (see sharp)

C# is an event-driven, fully object-oriented, visual programming language in which programs are created using an Integrated Development Environment (IDE). With the IDE, a programmer can create, run, test and debug C# programs.

Microsoft .NET

It is a new vision for implementations of the Internet and the Web in the development, engineering and use of software. Developers can create a .NET application in any .NET-compatible language such as C#, Visual C++ .NET, Visual Basic .NET and many others.

.NET Framework

This framework manages and executes applications and Web services, contains a *class library* (FCL), enforces security and provides many programming capabilities.

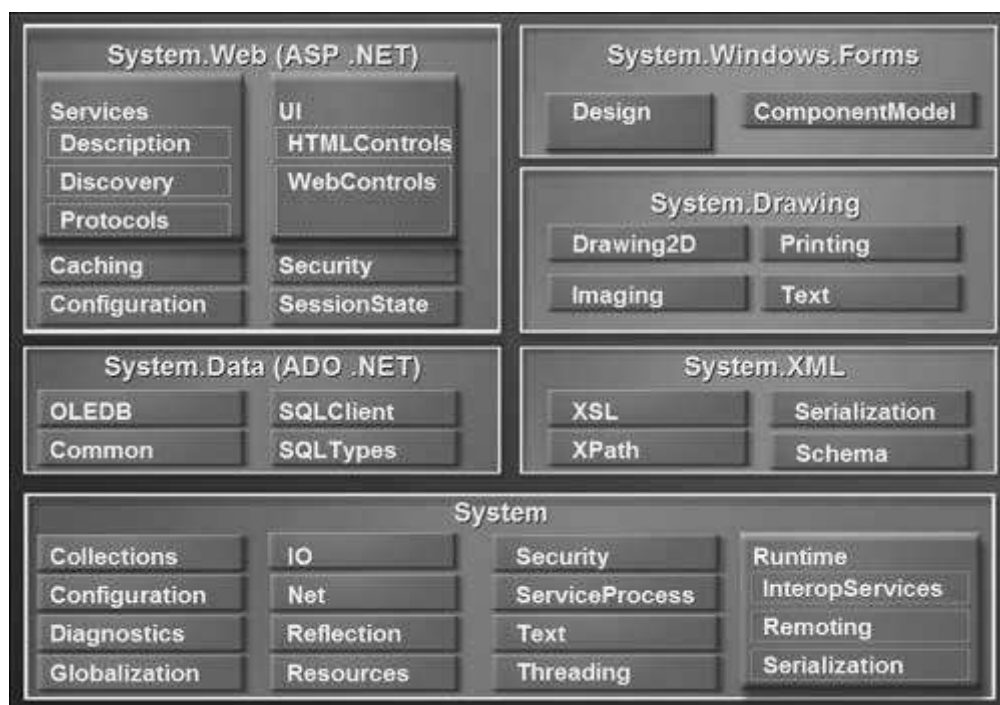
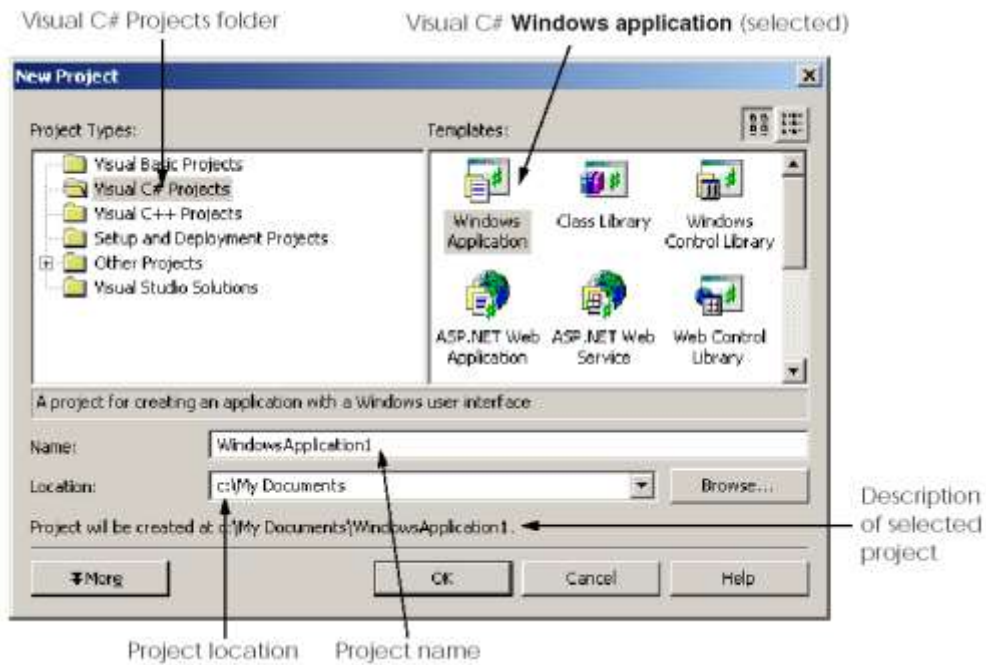


Figure 1: .NET Framework

In general we can execute an operation from the *menus*, from the *toolbar*, or from *short cuts*. Tool tips may help you.



New projects can be created by selecting **File > New > Project ...** from the menu bar.



Menus

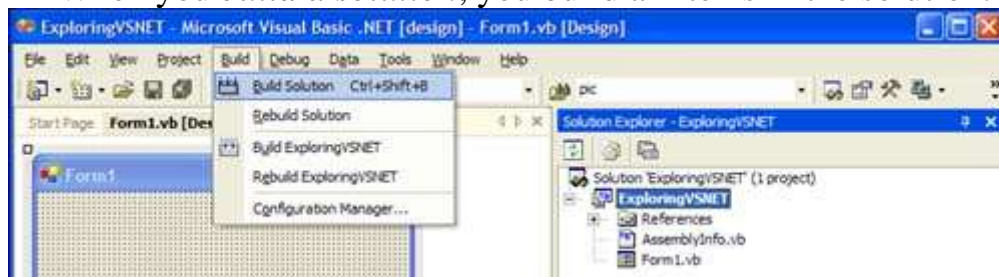
Menu	Contains commands for
File	opening projects, closing projects, printing projects....
Edit	such as cut, paste, find, undo, etc.
View	displaying IDE windows and toolbars.
Project	adding features, such as forms, to the project.
Build	compiling a program.
Debug	debugging and executing a program.
Data	interacting with databases.
Format	arranging a form's controls.
Tools	additional IDE tools and options to customize it.
Windows	arranging and displaying windows.
Help	getting help.

In the next pages we illustrate the *specific .NET menus*.

1. Build Menu

The Build menu gives you options for compiling, or building, your project or group of projects in a solution.

✎ When you *build a solution*, you build all items in the solution.



✎ A *rebuild* only builds items that have changed since the last build or rebuild.

✎ *Configuration Manager* enables you to specify the type of build.

✎ If the build is a *debug* build, a PDB file is created with your output assembly that contains debug information that can be used by the Visual Studio .NET debugger or external debuggers.

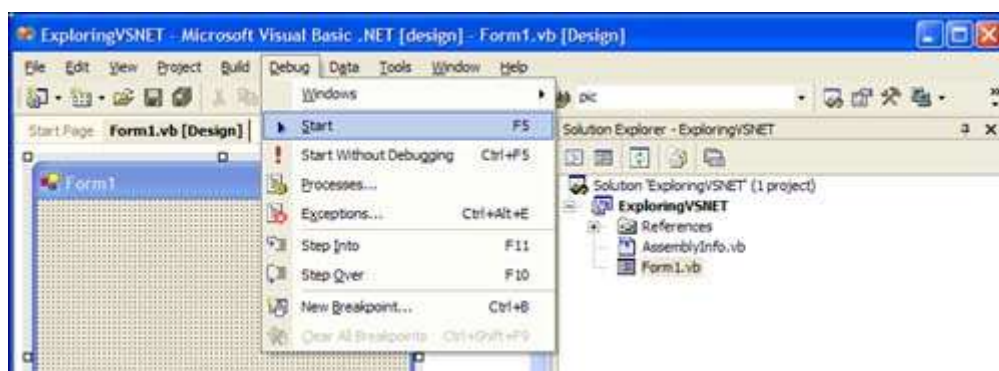
✎ If you select *Release* for the build, no debug information created.

2. Debug Menu

✎ Later, you learn all about the various debugging capabilities in .NET such as breakpoints and stepping into, over, etc.

✎ *F5 key runs your applications.*

✎ *Ctrl+F5 shortcut runs your application without debugging, meaning the syntax checks are skipped.*



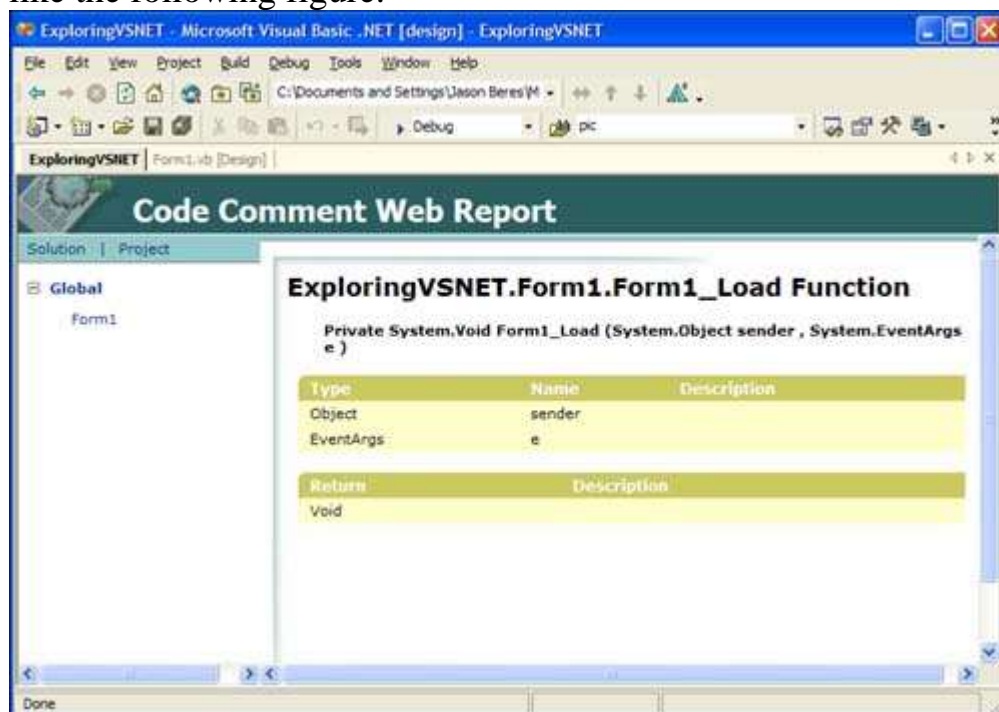
3. Format Menu

You can set sizing, spacing, tab order, and alignment.

4. Tools Menu

you can do everything from debugging processes to running external applications such as Spy++.

Notice(1) in tools menu, *Build Comment Web Pages*. This is a cool feature that generates HTML pages on the structure of classes, methods, properties, and events in your solution. The output looks like the following figure.



In C#, you can embed custom comments in your code with an XML-like syntax as :

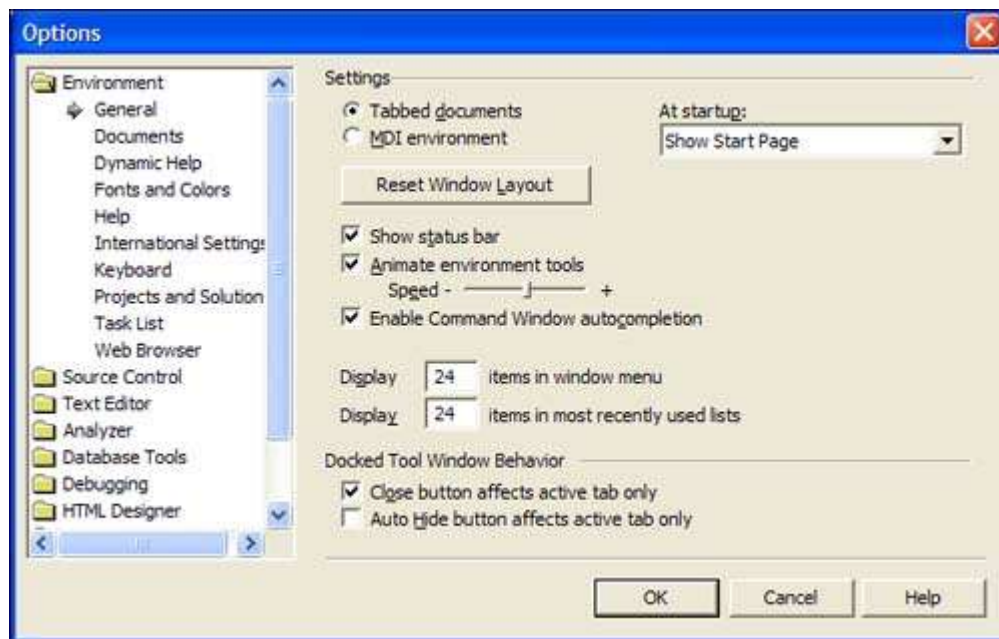
```
////// This item does so and so  
///</summary>  
////// Relevant remarks on an object  
///</remarks>
```

The complete list of tags that C# supports for building comment Web pages are :

- <summary></summary>— Describes a member for a type
- <remarks></remarks>— Specifies overview information for a class or other type
- <param></param>— Used to describe one of the parameters for a method
- <returns></returns>— Used to describe the return value of a method
- <newpara></newpara>— Starts a new paragraph in the comments

Notice(2) Options dialog

- ✎ The Options dialog is broken down by tree nodes displayed on the left .
- ✎ The Environment, *General* node → to modify general IDE settings, e.g. number of items to display on Start Page, tabbed or MDI documents, auto-complete.
- ✎ Depending on your screen resolution make the Most Recently Used List to somewhere between 15 and 24.

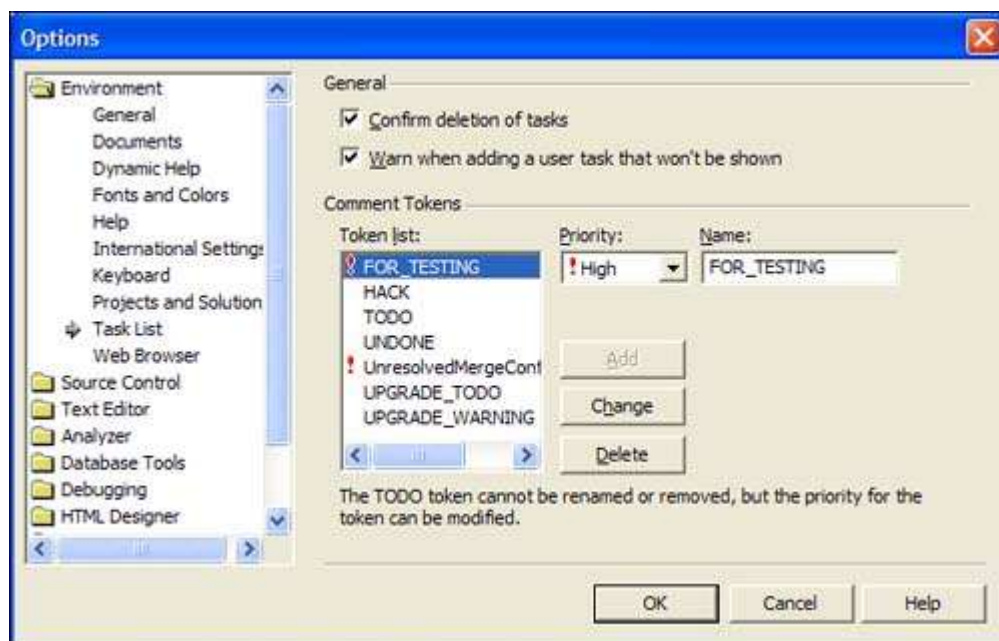


Fonts and Colors :changes the default font of the Code Editors.

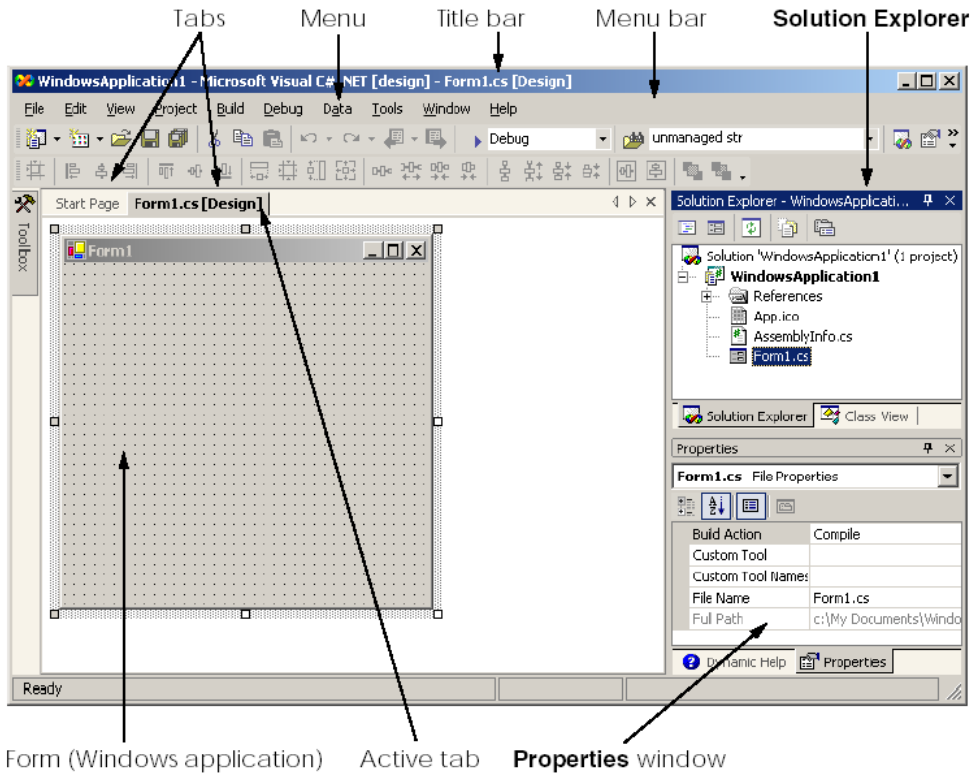
Help Location : internal shows help inside of the IDE or External opens all F1 requests outside the IDE.

Keyboard : modify or add new shortcut keys for mostly used items.

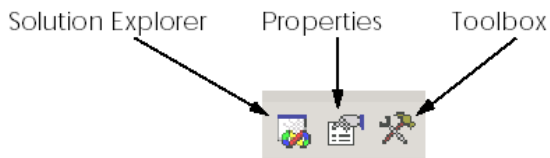
Task List and Comments : Compilation errors shown in *Task List*. You can also add comments throughout your applications with special predefined tokens or custom tokens that you add. In the *Comment Tokens* section, I added FOR_TESTING comment token to my Task List.



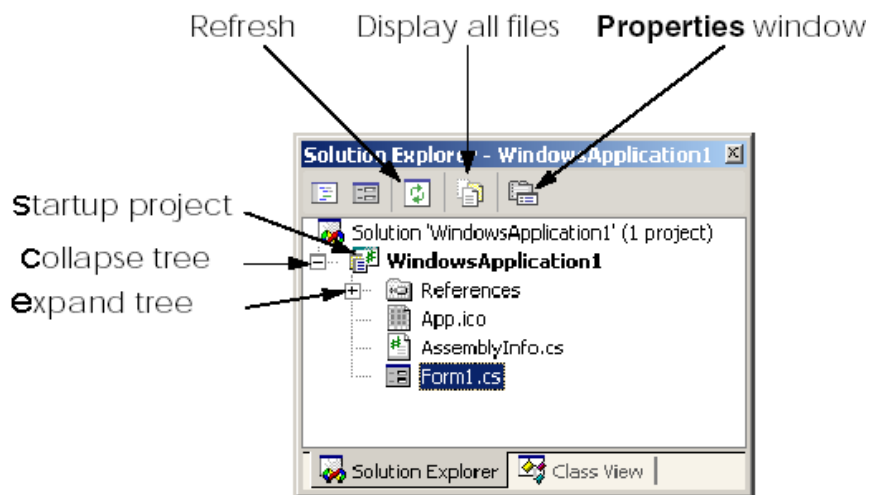
- ✎ Now, any time I add a comment prefixed with FOR_TESTING, it shows up in my Task List.
- ✎ Double-clicking on task items, get to the line of code where comment was placed.
- ✎ By default, the Task List displays only errors. To see everything, you must right-click on the Task List and select *Show Tasks, All*.



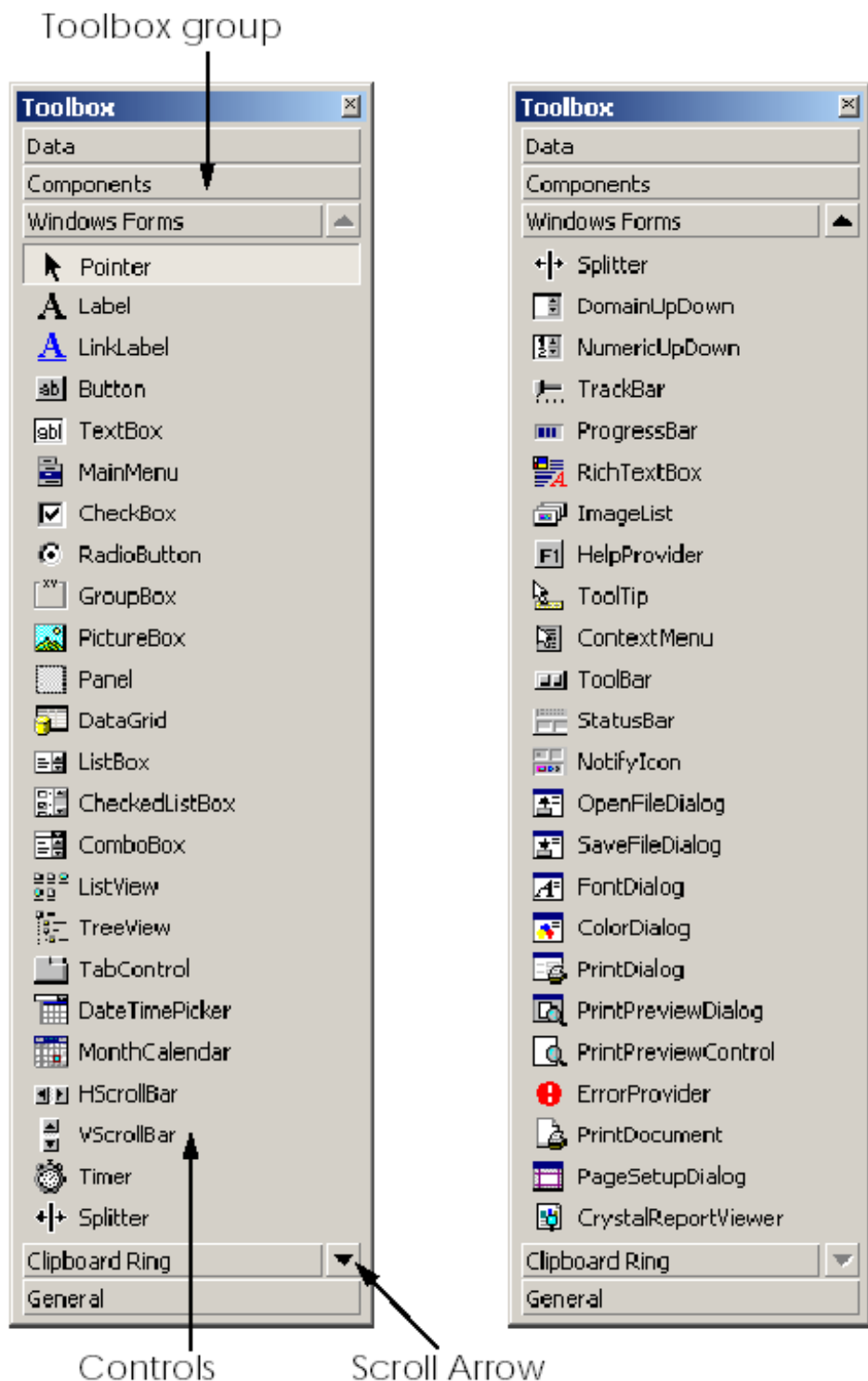
b. Visual Studio .NET Windows



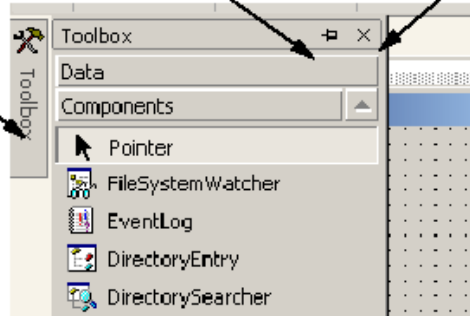
1. Solution Explorer window lists all the files in the solution.
Shortcut = F4 key



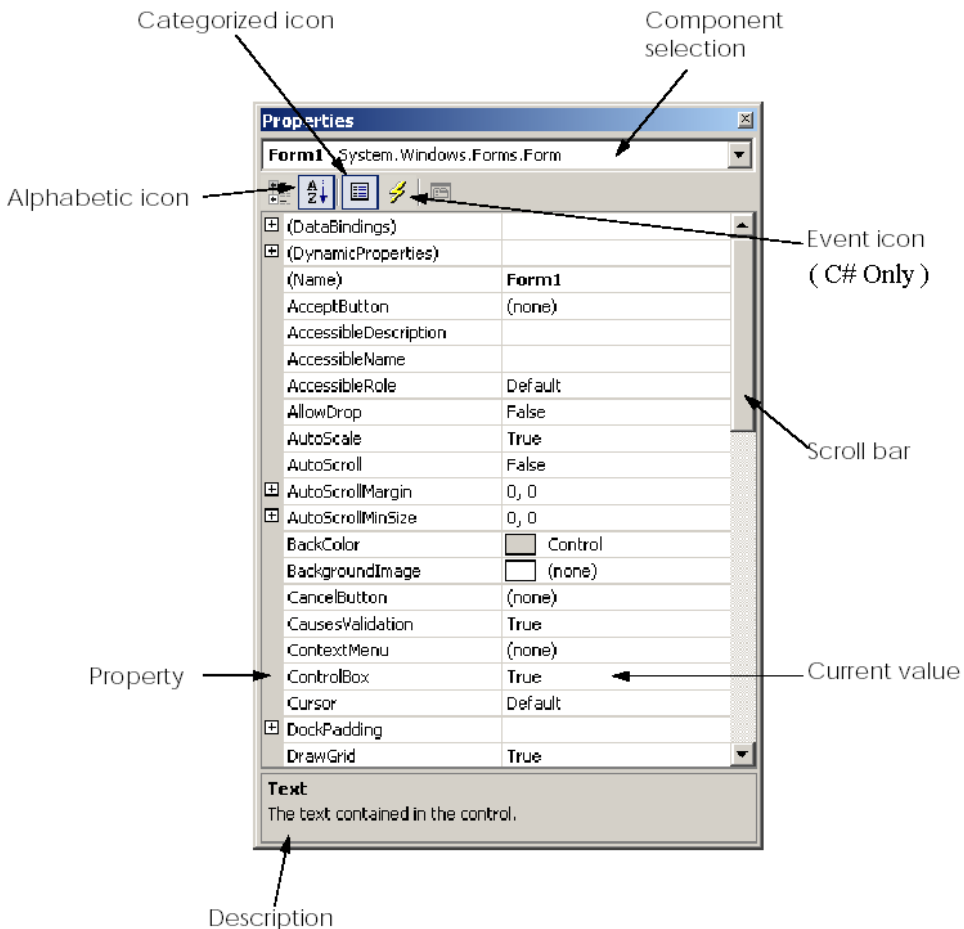
2 . Toolbox contains reusable software components (or controls) that can be used to customize applications. Using visual programming, programmers can “drag and drop” controls onto a form instead of writing code themselves. **Ctrl+Alt+X shortcut.**



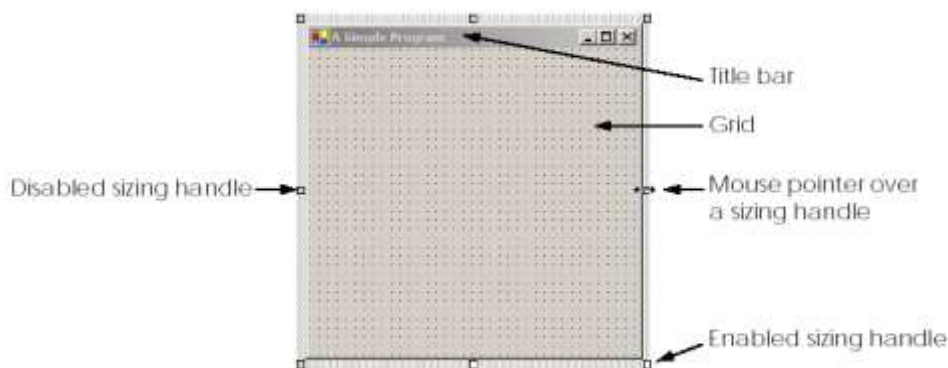
Mouse over window name Toggle auto hide Close button



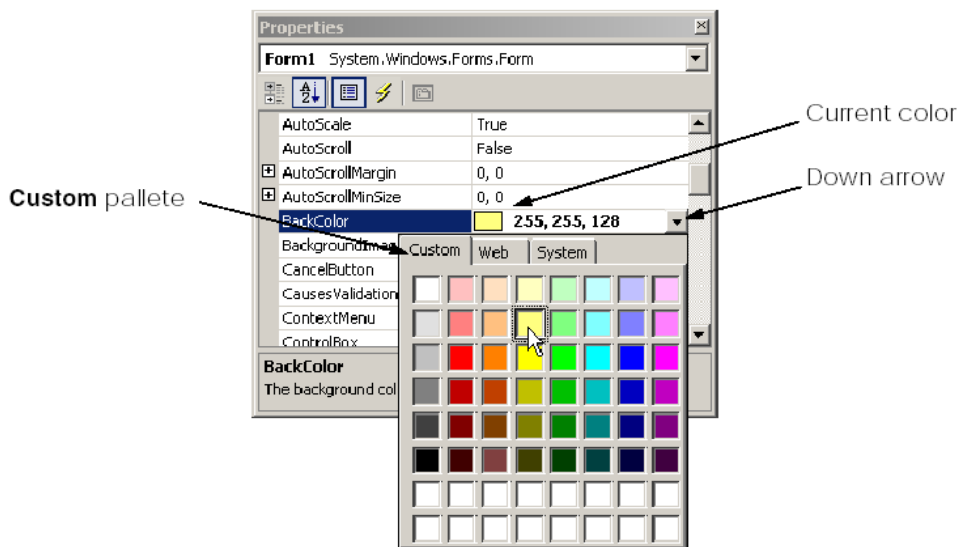
3. Properties window allows manipulation of properties of a form or control. Specify information about a control, such as size, color and position. The bottom contains a description of the selected property. **Ctrl+Alt+L shortcut.**



When programming windows, we use the form builder.



It is easy to change properties, here we change the form *back color* to yellow.



c. Toolbars

To view a list of available toolbars, you can right-click the main toolbar on the top of the IDE and a checked list of toolbars pops up. To view a toolbar, simply select it from the list.

