ComponentOne

TimeEditor for WPF

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This manual was produced using ComponentOne Doc-To-Help™.

Table of Contents

TimeEditor for WPF

Exchange date and time information using **ComponentOne TimeEditor™ for WPF**. It provides a simple and intuitive UI for selecting date and time or just time values. The date and time can be selected by using the spin buttons, keyboard arrows, or by typing in fields.

Getting Started

- Working with C1TimeEditor (page 16)

- Quick Start (page 14)

- Task-Based Help (page 19)

Installing TimeEditor for WPF

The following sections provide helpful information on installing **ComponentOne TimeEditor for WPF**.

TimeEditor for WPF Setup Files

The installation program will create the directory **C:\Program Files\ComponentOne\Studio for WPF**, which contains the following subdirectories:

Bin

Contains copies of all ComponentOne binaries (DLLs, EXEs). For **Component TimeEditor for WPF**, the following DLLs are installed:

- C1.WPF.dll
- C1.WPF.DateTimeEditors.dll
- C1.WPF. DateTimeEditors.Design.dll
- C1.WPF. DateTimeEditors.Expression.Design.dll
- C1.WPF.DateTimeEditors.VisualStudio.Design.4.0.dll

In addition, the following files from the Microsoft WPF Toolkit are also installed:

- WPFToolkit.dll
- WPFToolkit.Design.dll
- WPFToolkit.VisualStudio.Design.dll

For more information about the Microsoft WPF Toolkit, see CodePlex. The C1.WPF.dll and WPFToolkit.dll assemblies are required for deployment.

H2Help

Contains online documentation for all Studio components.

C1WPF\XAML

Contains the full XAML definitions of C1TimeEditor styles and templates which can be used for creating your own custom styles and

templates.

Samples

Samples for the product are installed in the **ComponentOne Samples** folder by default. The path of the **ComponentOne Samples** directory is slightly different on Windows XP and Windows 7/Vista machines:

Windows XP path: C:\Documents and Settings\<username>\My Documents\ComponentOne Samples

Windows 7/Vista path: C:\Users\<username>\Documents\ComponentOne Samples

The **ComponentOne Samples** folder contains the following subdirectories:

Common	Contains support and data files that are used by many of the demo programs.
C1WPF	Contains samples for **TimeEditor for WPF**.

System Requirements

System requirements include the following:

Operating Systems:	Microsoft Windows® XP with Service Pack 2 (SP2) Windows Vista™ Windows 2007 Windows 2008 Server
Environments:	.NET Framework 3.5 or later Visual Studio® 2005 extensions for .NET Framework 2.0 November 2006 CTP Visual Studio® 2008
Microsoft® Expression® Blend Compatibility:	**TimeEditor for WPF** includes design-time support for Expression Blend.

Note: The **C1.WPF.VisualStudio.Design.dll** assembly is required by Visual Studio 2008 and the **C1.WPF.Expression.Design.dll** assembly is required by Expression Blend. The **C1.WPF.Expression.Design.dll** and **C1.WPF.VisualStudio.Design.dll** assemblies installed with **TimeEditor for WPF** should always be placed in the same folder as **C1.WPF.dll**; the DLLs should NOT be placed in the Global Assembly Cache (GAC).

Installing Demonstration Versions

If you wish to try **ComponentOne TimeEditor for WPF** and do not have a serial number, follow the steps through the installation wizard and use the default serial number.

The only difference between unregistered (demonstration) and registered (purchased) versions of our products is that registered versions will stamp every application you compile so that a ComponentOne banner will not appear when your users run the applications.

Uninstalling TimeEditor for WPF

To uninstall **ComponentOne TimeEditor for WPF**:

1. Open the **Control Panel** and select **Add or Remove Programs** (**Programs and Features** in Vista).
2. Select **ComponentOne Studio for WPF** and click the **Remove** button.
3. Click **Yes** to remove the program.

End-User License Agreement

All of the ComponentOne licensing information, including the ComponentOne end-user license agreements, frequently asked licensing questions, and the ComponentOne licensing model, is available online at http://www.componentone.com/SuperPages/Licensing/.

Licensing FAQs

This section describes the main technical aspects of licensing. It may help the user to understand and resolve licensing problems he may experience when using ComponentOne .NET and ASP.NET products.

What is Licensing?

Licensing is a mechanism used to protect intellectual property by ensuring that users are authorized to use software products.

Licensing is not only used to prevent illegal distribution of software products. Many software vendors, including ComponentOne, use licensing to allow potential users to test products before they decide to purchase them.

Without licensing, this type of distribution would not be practical for the vendor or convenient for the user. Vendors would either have to distribute evaluation software with limited functionality, or shift the burden of managing software licenses to customers, who could easily forget that the software being used is an evaluation version and has not been purchased.

How does Licensing Work?

ComponentOne uses a licensing model based on the standard set by Microsoft, which works with all types of components.

> **Note:** The **Compact Framework** components use a slightly different mechanism for run-time licensing than the other ComponentOne components due to platform differences.

When a user decides to purchase a product, he receives an installation program and a Serial Number. During the installation process, the user is prompted for the serial number that is saved on the system. (Users can also enter the serial number by clicking the **License** button on the **About Box** of any ComponentOne product, if available, or by rerunning the installation and entering the serial number in the licensing dialog box.)

When a licensed component is added to a form or Web page, Visual Studio obtains version and licensing information from the newly created component. When queried by Visual Studio, the component looks for licensing information stored in the system and generates a run-time license and version information, which Visual Studio saves in the following two files:

- An assembly resource file which contains the actual run-time license.
- A "licenses.licx" file that contains the licensed component strong name and version information.

These files are automatically added to the project.

In WinForms and ASP.NET 1.x applications, the run-time license is stored as an embedded resource in the assembly hosting the component or control by Visual Studio. In ASP.NET 2.x applications, the run-time license may also be stored as an embedded resource in the **App_Licenses.dll** assembly, which is used to store all run-time licenses for all components directly hosted by WebForms in the application. Thus, the **App_licenses.dll** must always be deployed with the application.

The **licenses.licx** file is a simple text file that contains strong names and version information for each of the licensed components used in the application. Whenever Visual Studio is called upon to rebuild the application resources, this file is read and used as a list of components to query for run-time licenses to be embedded in the appropriate assembly resource. Note that editing or adding an appropriate line to this file can force Visual Studio to add run-time licenses of other controls as well.

Note that the **licenses.licx** file is usually not shown in the Solution Explorer; it appears if you press the **Show All Files** button in the Solution Explorer's Toolbox or, from Visual Studio's main menu, select **Show All Files** on the **Project** menu.

Later, when the component is created at run time, it obtains the run-time license from the appropriate assembly resource that was created at design time and can decide whether to simply accept the run-time license, to throw an exception and fail altogether, or to display some information reminding the user that the software has not been licensed.

All ComponentOne products are designed to display licensing information if the product is not licensed. None will throw licensing exceptions and prevent applications from running.

Common Scenarios

The following topics describe some of the licensing scenarios you may encounter.

Creating components at design time

This is the most common scenario and also the simplest: the user adds one or more controls to the form, the licensing information is stored in the **licenses.licx** file, and the component works.

Note that the mechanism is exactly the same for Windows Forms and Web Forms (ASP.NET) projects.

Creating components at run time

This is also a fairly common scenario. You do not need an instance of the component on the form, but would like to create one or more instances at run time.

In this case, the project will not contain a **licenses.licx** file (or the file will not contain an appropriate run-time license for the component) and therefore licensing will fail.

To fix this problem, add an instance of the component to a form in the project. This will create the **licenses.licx** file and things will then work as expected. (The component can be removed from the form after the **licenses.licx** file has been created).

Adding an instance of the component to a form, then removing that component, is just a simple way of adding a line with the component strong name to the **licenses.licx** file. If desired, you can do this manually using notepad or Visual Studio itself by opening the file and adding the text. When Visual Studio recreates the application resources, the component will be queried and its run-time license added to the appropriate assembly resource.

Inheriting from licensed components

If a component that inherits from a licensed component is created, the licensing information to be stored in the form is still needed. This can be done in two ways:

- Add a **LicenseProvider** attribute to the component.

  This will mark the derived component class as licensed. When the component is added to a form, Visual Studio will create and manage the **licenses.licx** file and the base class will handle the licensing process as usual. No additional work is needed. For example:

```
[LicenseProvider(typeof(LicenseProvider))]
class MyGrid: C1.Win.C1FlexGrid.C1FlexGrid
{
  // ...
}
```

- Add an instance of the base component to the form.

  This will embed the licensing information into the **licenses.licx** file as in the previous scenario and the base component will find it and use it. As before, the extra instance can be deleted after the **licenses.licx** file has been created.

Please note that ComponentOne licensing will not accept a run-time license for a derived control if the run-time license is embedded in the same assembly as the derived class definition and the assembly is a DLL. This restriction is necessary to prevent a derived control class assembly from being used in other applications without a design-time license. If you create such an assembly, you will need to take one of the actions previously described create a component at run time.

Using licensed components in console applications

When building console applications, there are no forms to add components to and therefore Visual Studio won't create a **licenses.licx** file.

In these cases, create a temporary Windows Forms application and add all the desired licensed components to a form. Then close the Windows Forms application and copy the **licenses.licx** file into the console application project.

Make sure the **licenses.licx** file is configured as an embedded resource. To do this, right-click the **licenses.licx** file in the Solution Explorer window and select **Properties**. In the Properties window, set the **Build Action** property to **Embedded Resource**.

Using licensed components in Visual C++ applications

There is an issue in VC++ 2003 where the **licenses.licx** is ignored during the build process; therefore, the licensing information is not included in VC++ applications.

To fix this problem, extra steps must be taken to compile the licensing resources and link them to the project. Note the following:

1. Build the C++ project as usual. This should create an EXE file and also a licenses.licx file with licensing information in it.
2. Copy the **licenses.licx** file from the application directory to the target folder (**Debug** or **Release**).
3. Copy the **C1Lc.exe** utility and the licensed DLLs to the target folder. (Don't use the standard lc.exe, it has bugs.)
4. Use **C1Lc.exe** to compile the **licenses.licx** file. The command line should look like this:
   ```
   c1lc /target:MyApp.exe /complist:licenses.licx /i:C1.Win.C1FlexGrid.dll
   ```
5. Link the licenses into the project. To do this, go back to Visual Studio, right-click the project, select **Properties**, and go to the **Linker/Command Line** option. Enter the following:
   ```
   /ASSEMBLYRESOURCE:Debug\MyApp.exe.licenses
   ```
6. Rebuild the executable to include the licensing information in the application.

Using licensed components with automated testing products

Automated testing products that load assemblies dynamically may cause them to display license dialog boxes. This is the expected behavior since the test application typically does not contain the necessary licensing information and there is no easy way to add it.

This can be avoided by adding the string "C1CheckForDesignLicenseAtRuntime" to the **AssemblyConfiguration** attribute of the assembly that contains or derives from ComponentOne controls. This attribute value directs the ComponentOne controls to use design-time licenses at run time.

For example:

```
#if AUTOMATED_TESTING
   [AssemblyConfiguration("C1CheckForDesignLicenseAtRuntime")]
```

```
#endif
   public class MyDerivedControl : C1LicensedControl
   {
         // ...
   }
```

Note that the **AssemblyConfiguration** string may contain additional text before or after the given string, so the **AssemblyConfiguration** attribute can be used for other purposes as well. For example:

```
[AssemblyConfiguration("C1CheckForDesignLicenseAtRuntime,BetaVersion")]
```

THIS METHOD SHOULD ONLY BE USED UNDER THE SCENARIO DESCRIBED. It requires a design-time license to be installed on the testing machine. Distributing or installing the license on other computers is a violation of the EULA.

Troubleshooting

We try very hard to make the licensing mechanism as unobtrusive as possible, but problems may occur for a number of reasons.

Below is a description of the most common problems and their solutions.

I have a licensed version of a ComponentOne product but I still get the splash screen when I run my project.

If this happens, there may be a problem with the **licenses.licx** file in the project. It either doesn't exist, contains wrong information, or is not configured correctly.

First, try a full rebuild (**Rebuild All** from the Visual Studio **Build** menu). This will usually rebuild the correct licensing resources.

If that fails follow these steps:

1. Open the project and go to the Solution Explorer window.
2. Click the **Show All Files** button on the top of the window.
3. Find the **licenses.licx** file and open it. If prompted, continue to open the file.
4. Change the version number of each component to the appropriate value. If the component does not appear in the file, obtain the appropriate data from another **licenses.licx** file or follow the alternate procedure following.
5. Save the file, then close the **licenses.licx** tab.
6. Rebuild the project using the **Rebuild All** option (not just **Rebuild**).

Alternatively, follow these steps:

1. Open the project and go to the Solution Explorer window.
2. Click the **Show All Files** button on the top of the window.
3. Find the **licenses.licx** file and delete it.
4. Close the project and reopen it.
5. Open the main form and add an instance of each licensed control.
6. Check the Solution Explorer window, there should be a **licenses.licx** file there.
7. Rebuild the project using the **Rebuild All** option (not just **Rebuild**).

For ASP.NET 2.x applications, follow these steps:

1. Open the project and go to the Solution Explorer window.
2. Find the **licenses.licx** file and right-click it.

3. Select the **Rebuild Licenses** option (this will rebuild the **App_Licenses.licx** file).
4. Rebuild the project using the **Rebuild All** option (not just **Rebuild**).

I have a licensed version of a ComponentOne product on my Web server but the components still behave as unlicensed.

There is no need to install any licenses on machines used as servers and not used for development.

The components must be licensed on the development machine, therefore the licensing information will be saved into the executable (.exe or .dll) when the project is built. After that, the application can be deployed on any machine, including Web servers.

For ASP.NET 2.x applications, be sure that the App_Licenses.dll assembly created during development of the application is deployed to the bin application bin directory on the Web server.

If your ASP.NET application uses WinForms user controls with constituent licensed controls, the runtime license is embedded in the WinForms user control assembly. In this case, you must be sure to rebuild and update the user control whenever the licensed embedded controls are updated.

I downloaded a new build of a component that I have purchased, and now I'm getting the splash screen when I build my projects.

Make sure that the serial number is still valid. If you licensed the component over a year ago, your subscription may have expired. In this case, you have two options:

Option 1 – Renew your subscription to get a new serial number.

If you choose this option, you will receive a new serial number that you can use to license the new components (from the installation utility or directly from the **About Box**).

The new subscription will entitle you to a full year of upgrades and to download the latest maintenance builds directly from http://prerelease.componentone.com/.

Option 2 – Continue to use the components you have.

Subscriptions expire, products do not. You can continue to use the components you received or downloaded while your subscription was valid.

Technical Support

ComponentOne offers various support options. For a complete list and a description of each, visit the ComponentOne Web site at http://www.componentone.com/Support.

Some methods for obtaining technical support include:

- **Online Support via HelpCentral**
  ComponentOne HelpCentral provides customers with a comprehensive set of technical resources in the form of FAQs, samples, Version Release History, Articles, searchable Knowledge Base, searchable Online Help and more. We recommend this as the first place to look for answers to your technical questions.
- **Online Support via our Incident Submission Form**
  This online support service provides you with direct access to our Technical Support staff via an online incident submission form. When you submit an incident, you'll immediately receive a response via e-mail confirming that you've successfully created an incident. This email will provide you with an Issue Reference ID and will provide you with a set of possible answers to your question from our Knowledgebase. You will receive a response from one of the ComponentOne staff members via e-mail in 2 business days or less.
- **Peer-to-Peer Product Forums and Newsgroups**
  ComponentOne peer-to-peer product forums and newsgroups are available to exchange information, tips, and techniques regarding ComponentOne products. ComponentOne sponsors these areas as a forum for

users to share information. While ComponentOne does not provide direct support in the forums and newsgroups, we periodically monitor them to ensure accuracy of information and provide comments when appropriate. Please note that a ComponentOne User Account is required to participate in the ComponentOne Product Forums.

- **Installation Issues**
  Registered users can obtain help with problems installing ComponentOne products. Contact technical support by using the online incident submission form or by phone (412.681.4738). Please note that this does not include issues related to distributing a product to end users in an application.
- **Documentation**
  ComponentOne documentation is installed with each of our products and is also available online at HelpCentral. If you have suggestions on how we can improve our documentation, please email the Documentation team. Please note that e-mail sent to the Documentation team is for documentation feedback only. Technical Support and Sales issues should be sent directly to their respective departments.

Note: You must create a ComponentOne Account and register your product with a valid serial number to obtain support using some of the above methods.

Redistributable Files

ComponentOne TimeEditor for WPF is developed and published by ComponentOne LLC. You may use it to develop applications in conjunction with Microsoft Visual Studio or any other programming environment that enables the user to use and integrate the control(s). You may also distribute, free of royalties, the following Redistributable Files with any such application you develop to the extent that they are used separately on a single CPU on the client/workstation side of the network:

- C1.WPF.dll
- C1.WPF.DateTimeEditors.dll
- C1.WPF.DateTimeEditors.Expression.Design.dll
- C1.WPF.DateTimeEditors.VisualStudio.Design.dll

In addition, the following file from the Microsoft WPF Toolkit is also installed and is redistributable:

- WPFToolkit.dll

Site licenses are available for groups of multiple developers. Please contact Sales@ComponentOne.com for details.

About this Documentation

You can create your applications using Microsoft Expression Blend or Visual Studio, but Blend is currently the only design-time environment that allows users to design XAML documents visually. In this documentation, we will use the **Design** workspace of Blend for most examples.

Acknowledgements

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ComponentOne Doc-To-Help

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XAML and XAML Namespaces

XAML is a declarative XML-based language that is used as a user interface markup language in Windows Presentation Foundation (WPF) and the .NET Framework 3.0. With XAML you can create a graphically rich customized user interface, perform data binding, and much more. For more information on XAML and the .NET Framework 3.0, please see http://www.microsoft.com.

XAML Namespaces

Namespaces organize the objects defined in an assembly. Assemblies can contain multiple namespaces, which can in turn contain other namespaces. Namespaces prevent ambiguity and simplify references when using large groups of objects such as class libraries.

When you create a Microsoft Expression Blend project, a XAML file is created for you and some initial namespaces are specified:

Namespace	Description
xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"	This is the default Windows Presentation Foundation namespace.
xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"	This is a XAML namespace that is mapped to the **x:** prefix. The **x:** prefix provides a quick, easy way to reference the namespace, which defines many commonly-used features necessary for WPF applications.

When you add a C1TimeEditor control to the window in Microsoft Expression Blend or Visual Studio, **Blend** or **Visual Studio** automatically creates an XML namespace for the control. The namespace looks like the following:

```
xmlns:my="clr-
namespace:C1.WPF.DateTimeEditors;assembly=C1.WPF.DateTimeEditors"
```

The namespace value is **my** and the namespace is **C1.WPF.DateTimeEditors**.

You can also choose to create your own custom name for the namespace. For example:

```
xmlns:MyMTB=http://schemas.componentone.com/wpf/C1TimeEditor
```

You can now use your custom namespace when assigning properties, methods, and events. For example, use the following XAML to add a border around the panel:

```
<MyMTB:C1TimeEditor Name="c1TimeEditor1" BorderThickness="10,10,10,10">
```

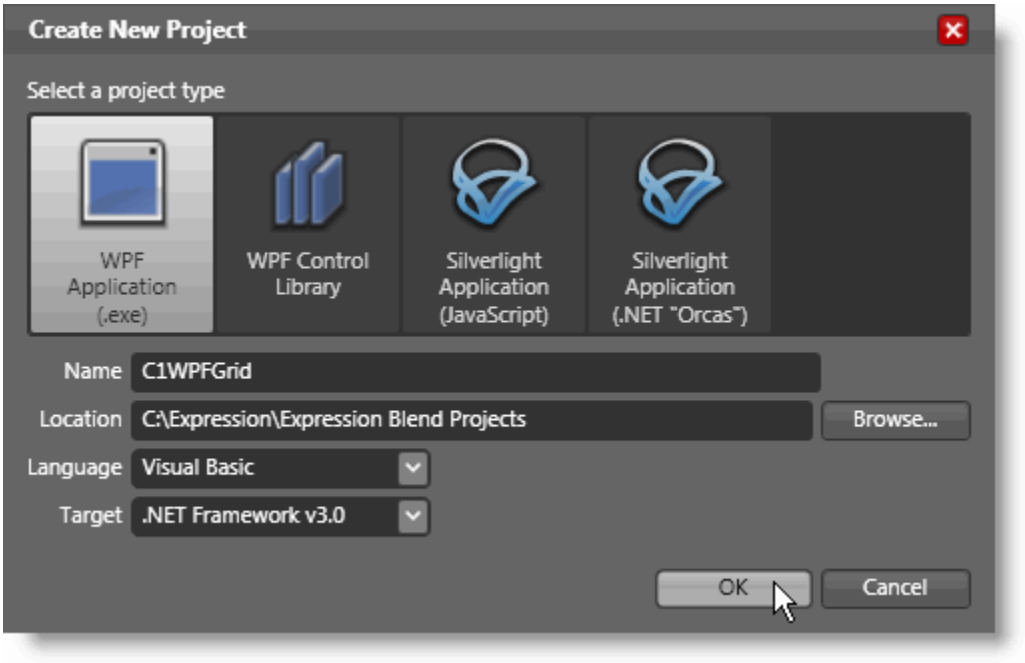
Creating a Microsoft Blend Project

To create a new Blend project, complete the following steps:

1. From the **File** menu, select **New Project** or click **New Project** in the Blend startup window.

   The **Create New Project** dialog box opens.

2. Make sure **WPF Application (.exe)** is selected and enter a name for the project in the Name text box. The **WPF Application (.exe)** creates a project for a Windows-based application that can be built and run while being designed.
3. Select the **Browse** button to specify a location for the project.
4. Select a language from the **Language** drop-down box and click **OK**.



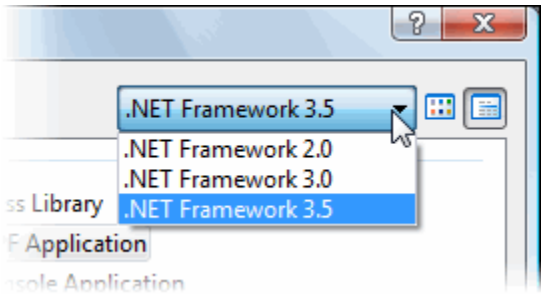
A new Blend project with a XAML window is created.

Creating a .NET Project in Visual Studio

To create a new .NET project in Visual Studio 2008, complete the following steps:

1. From the **File** menu in Microsoft Visual Studio 2008, select **New Project**.

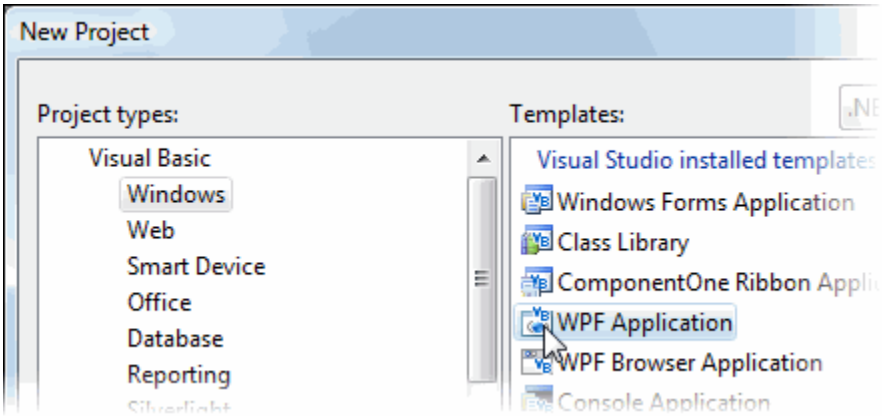
   The **New Project** dialog box opens.
2. Choose the appropriate .NET Framework from the Framework drop-down box in the top-right of the dialog box.



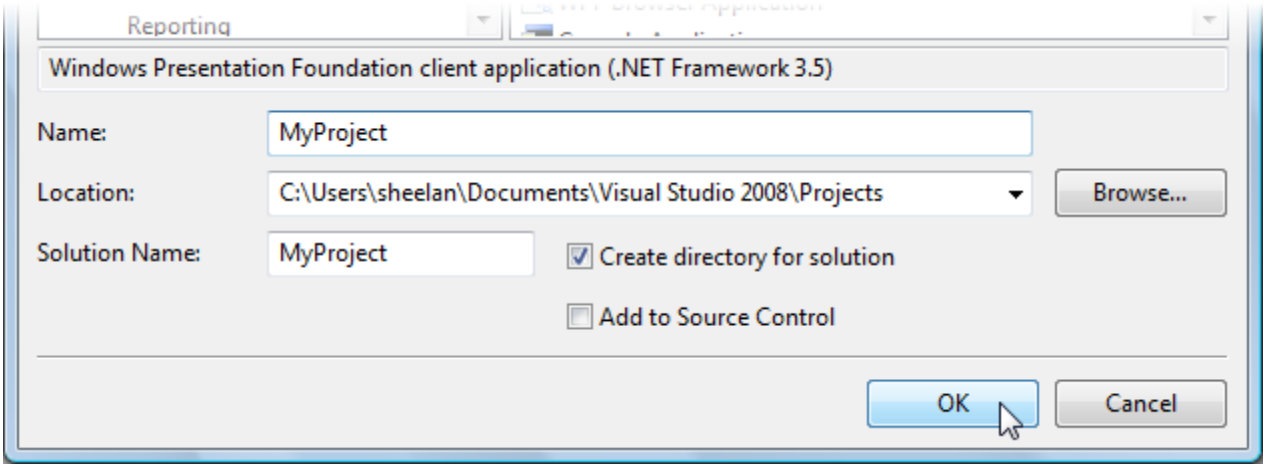
3. Under **Project types**, select either **Visual Basic** or **Visual C#**.

Note: In Visual Studio 2005 select **NET Framework 3.0** under **Visual Basic** or **Visual C#** in the Project types menu.

4. Choose **WPF Application** from the list of **Templates** in the right pane.



5. Enter a name for your application in the **Name** field and click **OK**.



A new Microsoft Visual Studio .NET WPF project is created with a XAML file that will be used to define your user interface and commands in the application.

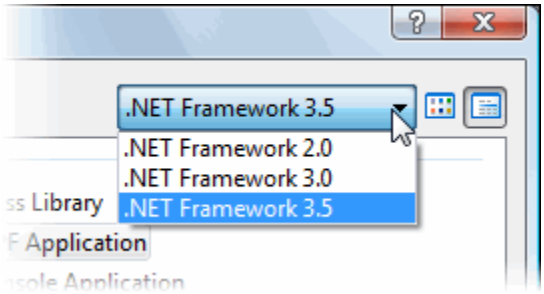
Note: You can create your WPF applications using Microsoft Expression Blend or Visual Studio, but Blend is currently the only design-time environment that allows users to design XAML documents visually. In this documentation, Blend will be used for most examples.

Creating an XAML Browser Application (XBAP) in Visual Studio

To create a new XAML Browser Application (XBAP) in Visual Studio 2008, complete the following steps:

1. From the **File** menu in Microsoft Visual Studio 2008, select **New Project**. The **New Project** dialog box opens.

2. Choose the appropriate .NET Framework from the Framework drop-down box in the top-right of the dialog box.



3. Under Project types, select either **Visual Basic** or **Visual C#**.
4. Choose **WPF Browser Application** from the list of **Templates** in the right pane.

> **Note:** If using Visual Studio 2005, you may need to select **XAML Browser Application (WPF)** after selecting **NET Framework 3.0** under **Visual Basic** or **Visual C#** in the left-side menu.

5. Enter a name for your application in the **Name** field and click **OK**.

   A new Microsoft Visual Studio .NET WPF Browser Application project is created with a XAML file that will be used to define your user interface and commands in the application.

Adding the TimeEditor for WPF Components to a Blend Project

In order to use C1TimeEditor or another **ComponentOne TimeEditor for WPF** component in the Design workspace of Blend, you must first add a reference to the **C1.WPF.Extended** assembly and then add the component from Blend's **Asset Library**.

To add a reference to the assembly:

1. Select Project | Add Reference.
2. Browse to find the **C1.WPF.DateTimeEditors.dll**assembly installed with **TimeEditor for WPF**.

> **Note:** The **C1.WPF.DateTimeEditors.dll** file is installed to **C:\Program Files\ComponentOne\Studio for WPF\bin** by default.

3. Select **C1.WPF.DateTimeEditors.dll** and click **Open**. A reference is added to your project.

To add a component from the Asset Library:

1. Once you have added a reference to the **C1.WPF.DateTimeEditors** assembly, click the **Asset Library** button  in the Blend Toolbox. The **Asset Library** appears:

2. Click the **Custom Controls** tab. All of the **TimeEditor for WPF** main and auxiliary components are listed here.
3. Select **C1TimeEditor**. The component will appear in the Toolbox above the **Asset Library** button.
4. Double-click the **C1TimeEditor** component in the Toolbox to add it to **Window1.xaml**.

Adding the TimeEditor for WPF Components to a Visual Studio Project

When you install **ComponentOne TimeEditor for WPF** the C1TimeEditor control should be added to your Visual Studio Toolbox. You can also manually add ComponentOne controls to the Toolbox.

ComponentOne TimeEditor for WPF provides the following control:

- C1TimeEditor

To use a **TimeEditor for WPF** panel or control, add it to the window or add a reference to the **C1.WPF** assembly to your project.

Manually Adding TimeEditor for WPF to the Toolbox

When you install **TimeEditor for WPF**, the following **TimeEditor for WPF** control and panel will appear in the Visual Studio Toolbox customization dialog box:

- C1TimeEditor

To manually add the C1TimeEditor control to the Visual Studio Toolbox, complete the following steps:

1. Open the Visual Studio IDE (Microsoft Development Environment). Make sure the Toolbox is visible (select **Toolbox** in the **View** menu, if necessary) and right-click the Toolbox to open its context menu.
2. To make **TimeEditor for WPF** components appear on its own tab in the Toolbox, select **Add Tab** from the context menu and type in the tab name, **C1WPFTimeEditor**, for example.
3. Right-click the tab where the component is to appear and select **Choose Items** from the context menu.

   The **Choose Toolbox Items** dialog box opens.
4. In the dialog box, select the **WPF Components** tab.

5. Sort the list by Namespace (click the *Namespace* column header) and select the check boxes for components belonging to the **C1.WPF.DateTimeEditors** namespace. Note that there may be more than one component for each namespace.

Adding TimeEditor for WPF to the Window

To add **ComponentOne TimeEditor for WPF** to a window or page, complete the following steps:

1. Add the C1TimeEditor control to the Visual Studio Toolbox.
2. Double-click C1TimeEditor or drag the control onto the window.

Adding a Reference to the Assembly

To add a reference to the **TimeEditor for WPF** assembly, complete the following steps:

1. Select the **Add Reference** option from the **Project** menu of your project.
2. Select the **ComponentOne TimeEditor for WPF** assembly from the list on the **.NET** tab or on the **Browse** tab, browse to find the **C1.WPF.dll** assembly and click **OK**.
3. Double-click the window caption area to open the code window. At the top of the file, add the following **Imports** statements (**using** in C#):

```
Imports C1.WPF.DateTimeEditors
```

   This makes the objects defined in the **TimeEditor for WPF** assembly visible to the project.

Key Features

ComponentOne TimeEditor for WPF allows you to create customized, rich applications. Make the most of **TimeEditor for WPF** by taking advantage of the following key features:

- **Several Displayable Versions**

  Choose from preset time formats, including **ShortTime**, **LongTime**, and **TimeSpan**. See Time Formats (page 17) for more information.

- **Spin Buttons**

  The C1TimeEditor control supports spin (increase/decrease) buttons for selecting time.

- **Null Values**

  C1TimeEditor allows entering null values, by default. You can disable this by setting the **AllowNull** property to **False**.

TimeEditor for WPF Quick Start

The following quick start guide is intended to get you up and running with **TimeEditor for WPF**. In this quick start, you'll start in Visual Studio to create a new project, add a C1TimeEditor control to your application, and customize the C1TimeEditor control.

Step 1 of 3: Creating an Application with a C1TimeEditor Control

In this step, you'll begin in Visual Studio to create a WPF application using **TimeEditor for WPF**.

Complete the following steps:

1. In Visual Studio, select **File | New | Project**.

2. In the **New Project** dialog box, select **WPF Application**.
3. Enter a **Name** and **Location** for your project and click **OK** to create the new application.
4. In the Toolbox, double-click the C1TimeEditor icon to add the C1TimeEditor control to the WPF application.

You have completed the first step of the **TimeEditor for WPF** quick start. In this step, you created a project and added a C1TimeEditor control to it. In the next step, you'll customize the control.

Step 2 of 3: Customizing the Control

In this step, you will customize the C1TimeEditor control using both Blend and code.

Select the C1TimeEditor control and then, in **Properties** window, set the following properties:

- Set the Format property to **ShortTime**. This will change the time format of the control so that it shows only hours and minutes.
- Set the Increment property to "01:00:00". This will cause the value of the control to change by one hour each time a user clicks the spin button.
- Set the Interval property to "1000". This will cause the control to hesitate for one second before changing the value of the control.
- Set the Value property to "17:00:00".

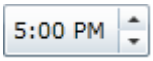
Now that you've customized the application, you can run the project and observe the run time behaviors of the control.

Step 3 of 3: Running the Application

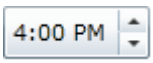
In the previous two steps, you created a WPF application with a C1TimeEditor control and customized the control. In the last step of this quick start, you will run the project and interact with the control.

Complete the following steps:

1. Press **F5** to run the project. Observe that it loads with a time value of 5:00 p.m. and that the control only shows hours and minutes.



2. Click the decrease time button and observe that time value decreases by one hour to 4:00 p.m.



3. Click and hold the increase time button so that the control will spin through values. Observe that the control waits one second between value changes.

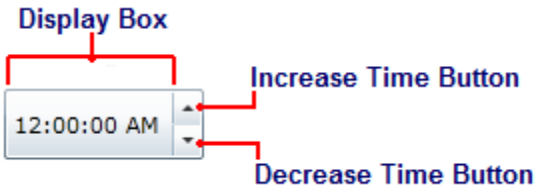
Congratulations – you have completed the TimeEditor for WPF quick start. Now that you have finished this quick start, we recommend that you visit the Working with C1TimeEditor (page 16) or TimeEditor for WPF Task-Based Help (page 19) topics.

Working with C1TimeEditor

The following topics introduce you to all of the elements and several features of the C1TimeEditor control.

C1TimeEditor Elements

ComponentOne TimeEditor for WPF includes the C1TimeEditor control, a simple control which provides a time picker that can show short time, long time, and time spans. When you add the C1TimeEditor control to a XAML window, it exists as a completely functional time picker. By default, the control's interface looks similar to the following image:



The C1TimeEditor control consists of the following elements:

- **Display Box**

  The display box presents the selected time. This can be set using the Value property. Users can also input numeric date into the display box. When you enter a numeric value, it will automatically be converted into time. The control can display time in three edit modes: **LongTime** (default), **ShortTime**, and **TimeSpan**.

- **Increase Time Button**

  The increase time button allows you to increase the time displayed in the time picker. Clicking the increase button will increase the time by one minute unless you have specified another interval.

- **Decrease Time Button**

  The decrease time button allows you to decrease the time displayed in the time picker. Clicking the decrease button will decrease the time by one minute unless you have specified another interval.

Spin Interval

There are two ways that users can increase or decrease values using the spin button: they can either repeatedly click one of the buttons to increase or decrease the time at their own pace, or they can hold down the decrease time button or increase time button while time increases or decreases at the speed of program-specified intervals. You can specify the interval by setting the Interval property.

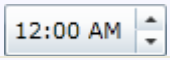
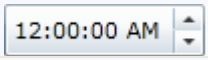
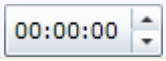
By default, the Interval property is set to 33 milliseconds, which allows users to scroll through time values at faster rates. You can slow that scrolling time down by specifying a higher number, such as 500 milliseconds (one-half of a second), or speed it up by specifying a lower number, such as 10 milliseconds (one-hundredth of a second). You cannot set the Interval to "0".

Value Increment

Each time a user clicks the increase time or decrease time spin buttons, the value of the control increases or decreases by a program-specified increment. By default, this increment is 00:01:00, or one minute. You can increase or decrease this increment by setting the Increment property. The Increment property will take any value between 00:00:00 (which will disable the spin buttons) and 23:59:59.

Time Formats

You can use the Format property to set the format that the date picker displays. You can set Format property to **ShortTime**, **LongTime**, or **TimeSpan**. The table below illustrates each date formats.

Time Format	Result	Description
ShortTime		The control displays a short time format that excludes seconds.
LongTime (default)		The control displays a long time format that includes seconds.
TimeSpan		The control displays a time span and removes the a.m./p.m. designators.

TimeEditor for WPF Layout and Appearance

The following topics detail how to customize the C1TimeEditor control's layout and appearance. You can use built-in layout options to lay your controls out in panels such as Grids or Canvases. Themes allow you to customize the appearance of the grid and take advantage of WPF's XAML-based styling. You can also use templates to format and layout the control and to customize the control's actions.

TimeEditor for WPF Appearance Properties

ComponentOne TimeEditor for WPF includes several properties that allow you to customize the appearance of the control. You can change the appearance of the text displayed in the control and customize graphic elements of the control. The following topics describe some of these appearance properties.

Text Properties

The following properties let you customize the appearance of text in the C1TimeEditor control.

Property	Description
FontFamily	Gets or sets the font family of the control. This is a dependency property.
FontSize	Gets or sets the font size. This is a dependency property.
FontStretch	Gets or sets the degree to which a font is condensed or expanded on the screen. This is a dependency property.
FontStyle	Gets or sets the font style. This is a dependency property.

FontWeight	Gets or sets the weight or thickness of the specified font. This is a dependency property.

Color Properties

The following properties let you customize the colors used in the control itself.

Property	Description
Background	Gets or sets a brush that describes the background of a control. This is a dependency property.
Foreground	Gets or sets a brush that describes the foreground color. This is a dependency property.

Border Properties

The following properties let you customize the control's border.

Property	Description
BorderBrush	Gets or sets a brush that describes the border background of a control. This is a dependency property.
BorderThickness	Gets or sets the border thickness of a control. This is a dependency property.

Size Properties

The following properties let you customize the size of the **C1TimeEditor** control.

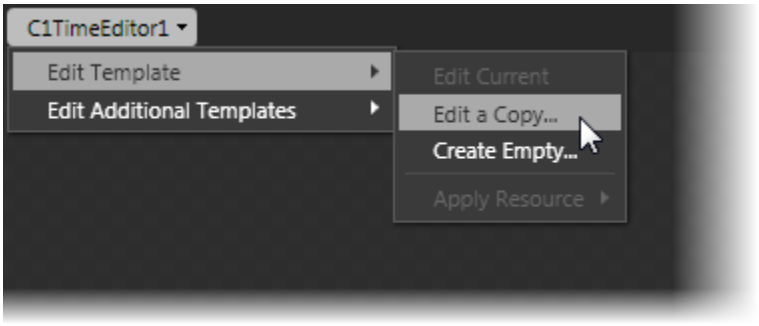
Property	Description
ActualHeight	Gets the rendered height of this element. This is a dependency property.
ActualWidth	Gets the rendered width of this element. This is a dependency property.
Height	Gets or sets the suggested height of the element. This is a dependency property.
MaxHeight	Gets or sets the maximum height constraint of the element. This is a dependency property.
MaxWidth	Gets or sets the maximum width constraint of the element. This is a dependency property.
MinHeight	Gets or sets the minimum height constraint of the element. This is a dependency property.
MinWidth	Gets or sets the minimum width constraint of the element. This is a dependency property.
Width	Gets or sets the width of the element. This is a dependency property.

Templates

One of the main advantages to using a WPF control is that controls are "lookless" with a fully customizable user interface. Just as you design your own user interface (UI), or look and feel, for WPF applications, you can provide your own UI for data managed by **ComponentOne TimeEditor for WPF**. Extensible Application Markup Language (XAML; pronounced "Zammel"), an XML-based declarative language, offers a simple approach to designing your UI without having to write code.

Accessing Templates

You can access templates in Microsoft Expression Blend by selecting the C1TimeEditor control and, in the menu, selecting **Edit Template**. Select **Edit a Copy** to create an editable copy of the current template or **Create Empty** to create a new blank template.



Note: If you create a new template through the menu, the template will automatically be linked to that template's property. If you manually create a template in XAML you will have to link the appropriate template property to the template you've created.

Note that you can use the Template property to customize the template.

TimeEditor for WPF Task-Based Help

The task-based help assumes that you are familiar with programming in Visual Studio .NET and know how to use the C1TimeEditor control in general. If you are unfamiliar with the **ComponentOne TimeEditor for WPF** product, please see the **TimeEditor for WPF** quick start first.

Each topic in this section provides a solution for specific tasks using the **ComponentOne TimeEditor for WPF** product.

Each task-based help topic also assumes that you have created a new WPF project.

Allowing Null Values

By default, the C1TimeEditor control doesn't allow users to enter null values, but you can force the control to accept a null value by setting the AllowNull property to **True**. In this topic, you will learn how to set the AllowNull property to **True** in the designer, in XAML, and in code.

In the Designer

Complete the following steps:

1. Click the C1TimeEditor control once to select it.

2. In the **Properties** window, select the AllowNull check box.

In XAML

To allow null values, place `AllowNull="True"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor AllowNull="True"/>
```

In Code

Complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.AllowNull = True
     ```
   - C#
     ```
     c1TimeEditor1.AllowNull = true;
     ```
3. Run the project.

Removing the Spin Buttons

You can remove the C1TimeEditor control's spin buttons by setting the ShowButtons property to **False**. In this topic, you will learn how to set the ShowButtons property to **False** in the designer, in XAML, and in code.

In the Designer

Complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, clear the ShowButtons check box.

In XAML

To remove the spin buttons, place `ShowButtons="False"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor ShowButtons="False"/>
```

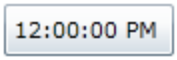
In Code

Complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.ShowButtons = False
     ```
   - C#
     ```
     c1TimeEditor1.ShowButtons = false;
     ```
3. Run the project.

This Topic Illustrates the Following:

The following image depicts a C1TimeEditor control with its spin buttons removed.



Selecting the Time Format

By default, the C1TimeEditor control displays the time in a long format that includes seconds, but it can also display time in a shorter format or into a time span format. In this topic, you will learn how to change the time format in the designer, in XAML, and in code.

In the Designer

To change the time format, complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, click the Format drop-down arrow and select a mode from the list. For this example, select **ShortTime**.

In XAML

To change the time format, place `Format="ShortTime"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor Format="ShortTime">
```

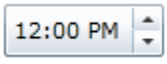
In Code

To change the time format, complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Import the following namespace:
   - Visual Basic
     ```
     Imports C1.WPF.DateTimeEditors
     ```
   - C#
     ```
     using C1.WPF.DateTimeEditors;
     ```
3. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.Format = C1TimeEditorFormat.ShortTime
     ```
   - C#
     ```
     c1TimeEditor1.Format = C1TimeEditorFormat.ShortTime;
     ```
4. Run the project.

This Topic Illustrates the Following:

In this topic, you set the Format to **ShortTime**, which provides a shortened time display. The final result will resemble the following image:



Setting the Spin Interval

By default, the Interval property is set to 33 milliseconds, which allows users to scroll through the time values at faster rates. In this topic, you will specify a longer interval between value changes by setting the Interval property to 1000 milliseconds. For more information on spin intervals, visit the Spin Interval (page 16) topic.

In the Designer

Complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, locate the Interval property and enter "1000" into its text box.
3. Run the project and then click and hold the increase time button . Observe that the value only increases once a second.

In XAML

Complete the following steps:

1. Add `Interval="1000"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor Interval="1000"/>
```

2. Run the project and then click and hold the increase time button . Observe that the value only increases once a second.

In Code

Complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.Interval = 1000
     ```
   - C#
     ```
     c1TimeEditor1.Interval = 1000;
     ```
3. Run the project and then click and hold the increase time button . Observe that the value only increases once a second.

Setting the Value Increment

By default, the time on a C1TimeEditor control is set to move in one minute increments. You can change this by setting the Increment property to whatever time increment you specify. In this topic, you will set the time increment on the C1TimeEditor control to one hour and thirty minutes. For more information about time increments, visit the Value Increment (page 17) topic.

In the Designer

Complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, locate the Increment property and enter "01:30:00" into its text box.
3. Run the project and click the increase time button . Observe that time jumps ahead by one hour and thirty minutes.

In XAML

Complete the following steps:

1. Add `Increment="01:30:00"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor Increment="01:30:00"/>
```

2. Run the project and click the increase time button . Observe that time jumps ahead by one hour and thirty minutes.

In Code

Complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.Increment = New TimeSpan(01, 30, 00)
     ```
   - C#
     ```
     c1TimeEditor1.Increment = new TimeSpan(01,30,00);
     ```
3. Run the project and click the increase time button . Observe that time jumps ahead by one hour and thirty minutes.

Specifying the Current Time

You can specify the current time of a C1TimeEditor control by setting the Value property in the designer, in XAML, and in code.

Note: Try to avoid setting the Value property in XAML as a string value. Parsing these values from strings is culture specific. If you set a value with your current culture and a user is using different culture, the user can get XamlParseException when loading your site. The best practice is to set these values from code or via data binding.

In the Designer

Complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, set the Value property to " 07:00:00".

In XAML

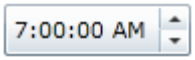
To specify the current time, place `Value="07:00:00"` to the `<my:C1TimeEditor>` tag so that the markup resembles the following:

```
<my:C1TimeEditor Value="07:00:00"/>
```

In Code

Complete the following steps:

1. Open the **Window1.xaml.cs** page.
2. Place the following code beneath the **InitializeComponent()** method:
   - Visual Basic
     ```
     C1TimeEditor1.Value = New TimeSpan(7, 0, 0)
     ```
   - C#
     ```
     c1TimeEditor1.Value = new TimeSpan(7,0,0);
     ```
3. Run the project and observe that the C1TimeEditor control shows a current time of 7:00:00 a.m.



Working with Time Spans

You can modify a C1TimeEditor control so that it will display a time span. In this tutorial, you will create a C1TimeEditor control that represents a time span between 5:00 and 10:00. You will also write code for the project that sets the starting value to 7:00 a.m.

Complete the following steps:

1. Click the C1TimeEditor control once to select it.
2. In the **Properties** window, complete the following steps:
   - Set the Format property to **TimeSpan**.
   - Set the Maximum property to a value, such as "10:00:00".
   - Set the Minimum property to a value, such as "05:00:00".
   - Set the Value property to a value, such as "07:00:00".
3. Run the project and observe that the control loads with a time of 07:00:00 a.m.
4. Click the increase time button until you can go no further. It will stop at 10:00:00.
5. Click the decrease time button until you can go no further. It will stop at 05:00:00.