If the web parts included in Kentico by default do not meet your requirements, you can create your own web parts. This allows you to add any type of custom content or functionality to portal engine pages.

Developing new web parts consists of two basic steps:

1. Create the web part's code files in your web project.
2. Register the web part in the system.

Note: In many cases, it may be easier to achieve your goal by altering or extending one of the default web parts rather than developing an entirely new one.

See: Customizing web parts

Writing web part code

Implement web parts as user controls (*.ascx* files) that inherit from an appropriate base class:

Base class	Namespace	Use for
CMSAbstractWebPart	CMS.PortalEngine.Web.UI	Standard web parts.
CMSAbstractEditableWebPart	CMS.PortalEngine.Web.UI	Web parts that provide content editing functionality on the **Page** tab of the **Pages** application and in on-site editing mode (such as *Editable text* or *Editable image*).
CMSAbstractLayoutWebPart	CMS.PortalEngine.Web.UI	Layout web parts. See: Developing layout web parts
CMSCheckoutWebPart	CMS.Ecommerce.Web.UI	E-commerce checkout web parts.

To ensure that your custom web parts work correctly:

1. Edit the markup of the user control that implements the web part.
2. In the **Control** declaration, enter the *full relative path* of the code behind file into the **CodeFile** attribute (**CodeBehind** attribute on web application installations).

For example:

```
<%@ Control Language="C#" AutoEventWireup="true" Inherits="
CMSWebParts_Viewers_Documents_cmsrepeater" CodeFile="~/CMSWebParts/Viewers/Documents
/cmsrepeater.ascx.cs" %>
```

You can add any required content into the web part's markup and write custom code behind logic.

Tips:

- Display content from Kentico by placing Kentico Controls into the markup of your web parts.
- See Working with web part properties to learn how to access the values of web part properties in the code.
- To disable web parts in your code, set the **StopProcessing** property to *true*. All web parts inherit this property from the *CMSAbstractWebPart* base class.
- You can implement web parts that have special behavior or additional content when viewed on the **Design** tab of the **Pages** application. Use the following code to check whether the web part is being rendered in Design mode:

```
using CMS.PortalEngine;

if (PortalContext.IsDesignMode(this.PagePlaceholder.ViewMode))
{
        ...
}
```

Setting the properties of controls in web parts

If you use Kentico controls inside your web parts, it is recommended to set/initialize the control properties using a combination of the **OnContentLoaded** and **SetupControl** methods. You can view the code of the default listing web parts to see an example (e.g. *~/CMSWebParts/Viewers/Documents/cmsrepeater.ascx.cs*).

For standard .NET or third party controls, you can set the properties in the handler of the web part control's **Load** event (*OnLoad* method).

If you encounter problems with the control life cycle, try adding your controls to the page through the **User control** web part. This web part enables you to dynamically load user controls on portal engine pages.

Storing files related to web parts

If your web part consists of multiple files (such as other ASCX controls, images, JS scripts), place these files in a subfolder under the directory containing the main web part's files. The name of the sub-folder must match the code name of the web part with ***_fi le*** appended. For example, if the web part's code name is **WebPart**, the subfolder must be **WebPart_files**.

This ensures that the system includes the additional files in the web part's export package when you deploy the website or distribute the web part to other developers.

Managing web parts in the system

Registering web parts

Before you can use your user controls as web parts, you need to register them as objects in Kentico. The system sorts web parts into categories, organized in a tree structure.

1. Open the **Web parts** application.
2. Select the category where you want to place the web part.
3. Click **New web part**.
4. Type a **Display name** for the web part.
5. Select ***Use existing file*** as the **Code files** option.
6. Specify the path of the user control in the **File path** field.
7. Click **Save**.
8. Define the properties of the web part. See Working with web part properties for more information.

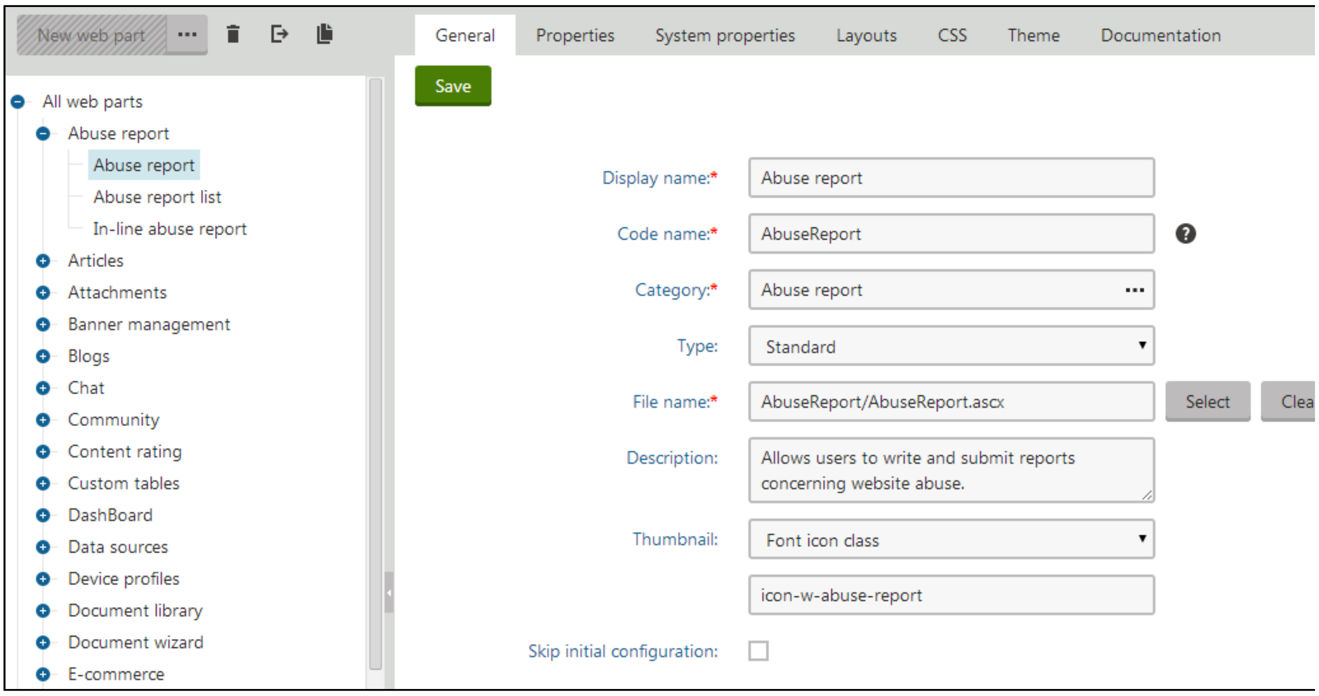
You can now place instances of the web part onto portal engine pages on the **Design** tab of the **Pages** application.

Tip: You can register web parts before creating the user control source files in the web project. Select the **Generate new files** option when creating the web part, and the system automatically adds the required files according to the specified **File name**. The automatically generated user control inherits from **CMSAbstractWebPart**.

Configuring web parts

To edit the settings of a web part, open the **Web parts** application and select the web part in the category tree. When editing web parts, you can configure the following on the **General** tab:

General settings	Description
Display name	The name of the web part displayed to users in the administration interface (in the web part toolbar or selection dialog).
Code name	Serves as a unique identifier for the web part (for example in the API).
Category	The category in the web part catalog where the system stores the web part.
File name	Contains the relative path to the user control that implements the web part. The path starts from the **CMSWebParts** folder. For example: *AbuseReport/AbuseReport.ascx* It is recommended to organize the source files of web parts in a way that matches the structure of the web part categories.
Type	Sets the type of the web part, which affects its behavior and properties. The system identifies different web part types with different colors and icons on the **Design** tab of the **Pages** application. The following web part types are available: • **Standard** - typical web parts that displays some type of content. • **Data source** - do not display any content, only provide data to be displayed by other connected web parts. See Loading and displaying data. • **Filter** - allow users to limit the data provided by a connected data source web part. • **Placeholder** - used only for the *Page placeholder* web part. Specifies an area where nested sub-pages display their content. • **Invisible** - do not display any output on pages, usually perform some type of background task. • **Basic** - basic web parts without partial caching and AJAX UpdatePanel support. • **Layout** - generate a layout for page content by defining additional web part zones. See Working with layout web parts for more information. • **Widget only** - the web parts only serves as base templates for widgets and are not available in the web part toolbar or selection dialog. Assigning the *Widget only* type does not remove or disable existing instances of the web part. • **UI** - used to build pages of the Kentico administration interface (on *UI page* type page templates assigned to UI elements). You cannot add UI web parts onto standard portal engine page templates.
Skip initial configuration	If checked, the system adds new instances of the web part directly onto pages without opening the property configuration dialog. This can be convenient, particularly in the case of web parts that are typically used with their default property values.
Thumbnail	Allows you to set the image that represents the web part in the selection catalog and web part toolbar. You can choose between two types of images: • **Image** - upload a standard image file (for example a png). • **Font icon class** - select a font icon from the icon picker.
Description	Text describing the web part. The system displays the text: • In the web part selection catalog • As a tooltip in the web part toolbar



Display name:* Abuse report
Code name:* AbuseReport
Category:* Abuse report
Type: Standard
File name:* AbuseReport/AbuseReport.ascx
Description: Allows users to write and submit reports concerning website abuse.
Thumbnail: Font icon class
icon-w-abuse-report
Skip initial configuration: ☐

Styling web parts using CSS

We recommend that you style the content of web parts in the CSS that you use for the entire website. See Designing websites using CSS for more information on the two recommended approaches.

Example - Creating a new web part

The following example guides you through the process of creating a simple "Hello world" web part that displays a label and a button. When a user clicks the button, the label displays the current time.

Creating the web part code files

1. Open your web project in Visual Studio using the **WebSite.sln** (or **WebApp.sln**) file.
2. Right-click the **CMSWebParts** folder in the Solution Explorer window and click **Add -> New Folder**.
3. Name the sub-folder *MyWebParts*.
4. Create a **Web User Control** named *HelloWorld.ascx* in the *MyWebParts* folder.
5. In the **Control** declaration, enter the full relative path of the control's code behind file into the **CodeFile** attribute (**CodeBehind** attribute on web application installations).

```
<%@ Control Language="C#" AutoEventWireup="true" CodeFile="~/CMSWebParts
/MyWebParts/HelloWorld.ascx.cs" Inherits="CMSWebParts_MyWebParts_HelloWorld" %>
```

6. Add a **Button** and **Label** control into the control's markup.

```
<asp:Button ID="Button1" runat="server" Text="Button" /><br />
<asp:Label ID="Label1" runat="server" Text="Label" />
```

7. Set the **Visible** property of the Label control to *False*.
8. Switch to **Design** mode and double-click the Button control.
   - Visual Studio opens the control's code behind file and creates a handler method for the button click event.
9. Add the following code into the **Button1_Click** method:

```
Label1.Text = DateTime.Now.ToString();
Label1.Visible = true;
```

10. Add the following references to the beginning of the control's code behind:

```
using CMS.PortalEngine.Web.UI;
using CMS.Helpers;
```

11. Modify the control's class declaration so that it inherits from **CMSAbstractWebPart**:

```
public partial class CMSWebParts_MyWebParts_HelloWorld : CMSAbstractWebPart
```

12. Add the following code to the **Page_Load** method:

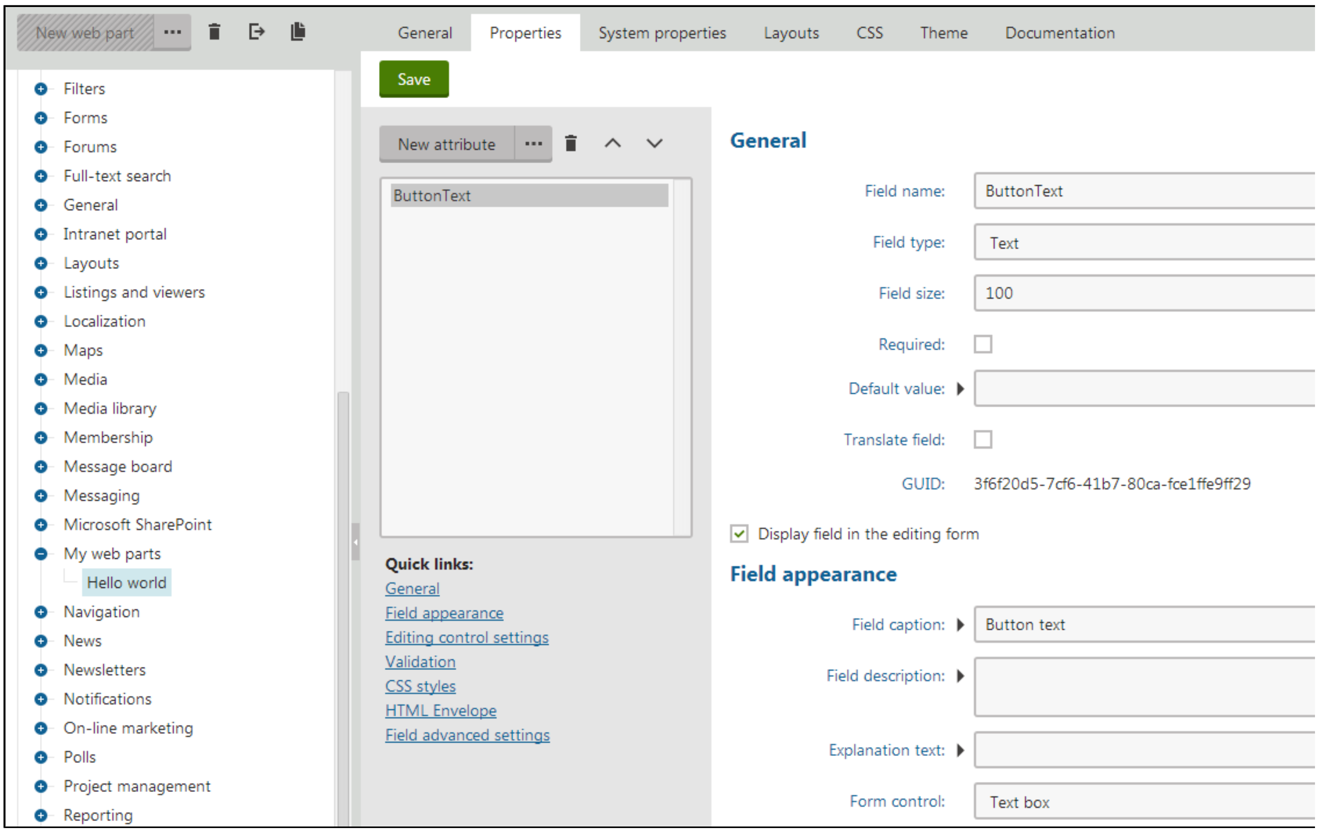
```
Button1.Text = DataHelper.GetNotEmpty(GetValue("ButtonText"), "Show time");
```

13. Save the user control's files.

The web part's source files are now ready. If your Kentico project was installed as a *web application*, you must **Build** the project.

Registering the web part in the system

1. Log in to the Kentico administration interface and open the **Web parts** application.
2. Select the root of the tree (*All web parts*), click **...** next to the **New web part** button and select **New category**.
3. Type *My web parts* into the **Category display name** field and click **Save**.
4. Select the new category and click **New web part**.
5. Specify the following values:
   - **Web part**: Create a new
   - **Display name**: Hello world
   - **Code files**: Use existing file
   - **File path**: ~/CMSWebParts/MyWebParts/HelloWorld.ascx
6. Click **Save**.
7. Switch to the **Properties** tab and click **New field** to create a web part property:
   - **Field name**: ButtonText
   - **Data type**: Text
   - **Size**: 100
   - **Field caption**: Button text
   - **Form control**: Text box
8. Click **Save**.



General

Field name: ButtonText
Field type: Text
Field size: 100
Required: ☐
Default value:
Translate field: ☐
GUID: 3f6f20d5-7cf6-41b7-80ca-fce1ffe9ff29

☑ Display field in the editing form

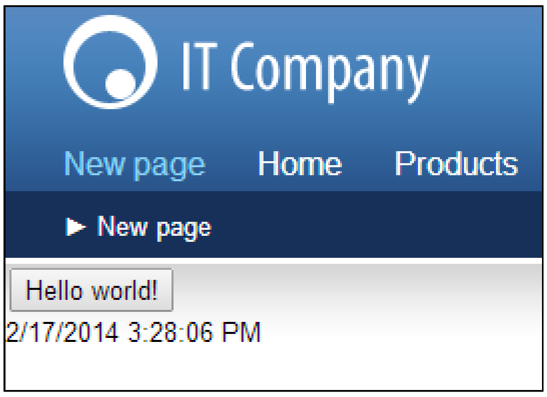
Field appearance

Field caption: Button text
Field description:
Explanation text:
Form control: Text box

Adding an instance of the web part to a page

1. Open the **Pages** application.
2. Create a new page in your website's content tree.
3. Switch to the **Design** tab.
4. Add the **Hello world** web part onto the page.
5. In the web part configuration dialog, set the value of the **Button text** property to *Hello world!*.
6. Click **OK**.

If you switch to **Preview** mode, you can see the button with a *Hello world!* caption. When you click the button, the label displays the current date and time.


IT Company
New page
Home
Products
New page
Hello world!
2/17/2014 3:28:06 PM