

# QuickStart Tutorials

# Hello World

## Prerequisites:

As of Rock v17 you'll want Visual Studio 2022 or Visual Studio Community 2022 (free), and a Microsoft SQL Server database version 2019 or newer (including the free SQL Server 2019 Express editions).

As of Rock v13 you'll need the **Node.js development** tools/Workload installed via Visual Studio Installer. See this [Technical Release Note](#) for v13 here.

Everyone knows the HelloWorld tutorial. We'll create a do-nothing, barebones Hello World *Block* from scratch and show you how to load it onto a page in your own Rock.

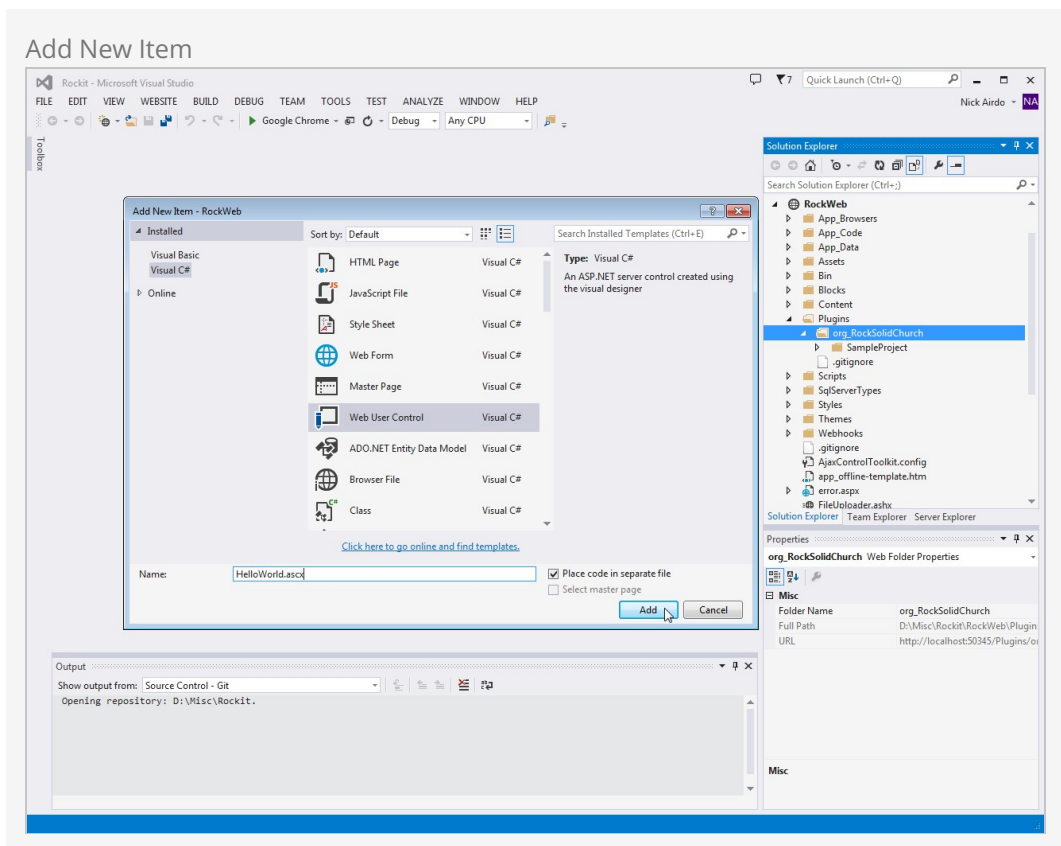
We strongly encourage you to get started and actually perform each step as you're reading. The easiest way to get your custom development environment up and running is to pull the `develop` branch from the Rock repo on Github.

## Note:

Throughout the rest of the tutorial you'll see variations of the domain "RockSolidChurch.org". This is just a generic placeholder. You should replace it with your organization's domain name.

## Step 1 - Add New Item

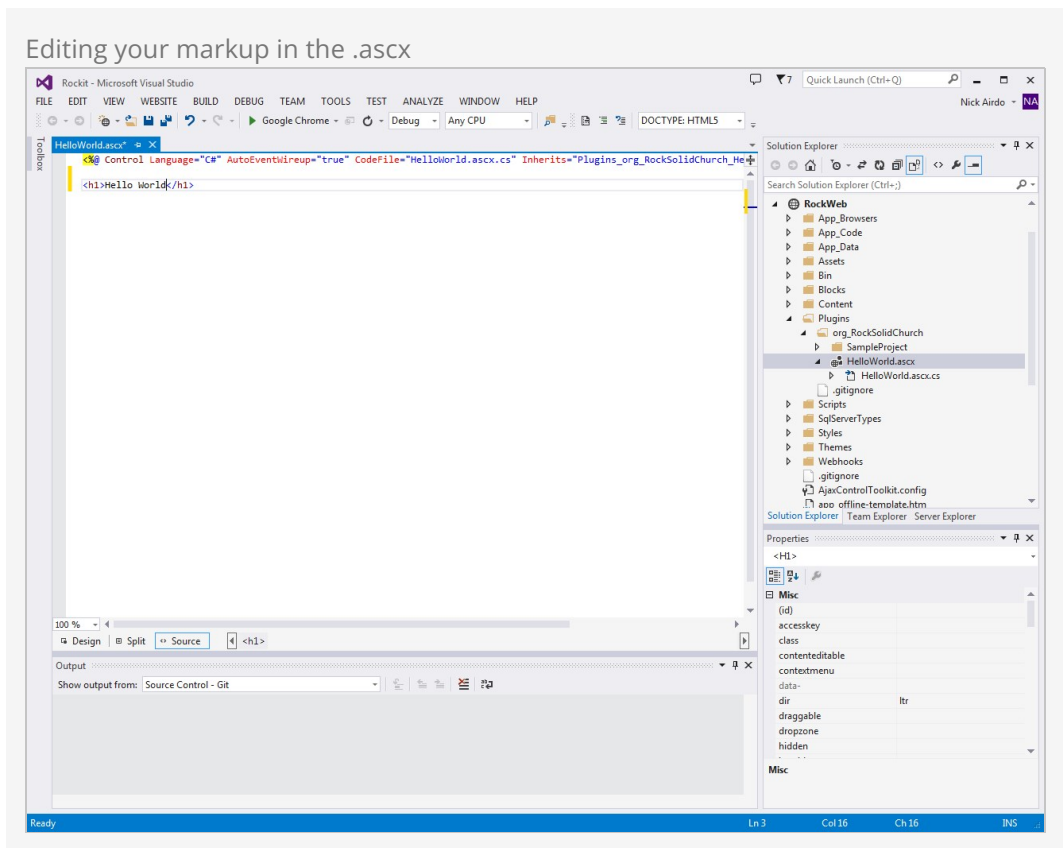
In the Solution Explorer pane (to the right of your main window by default), find your *RockWeb\Plugins\org\_rocksolidchurch\* then right click it and select `Add New Item`. Next, under Visual C#, choose "Web User Control" and give it the name *HelloWorld.ascx*.



Press **Add** so you can start editing.

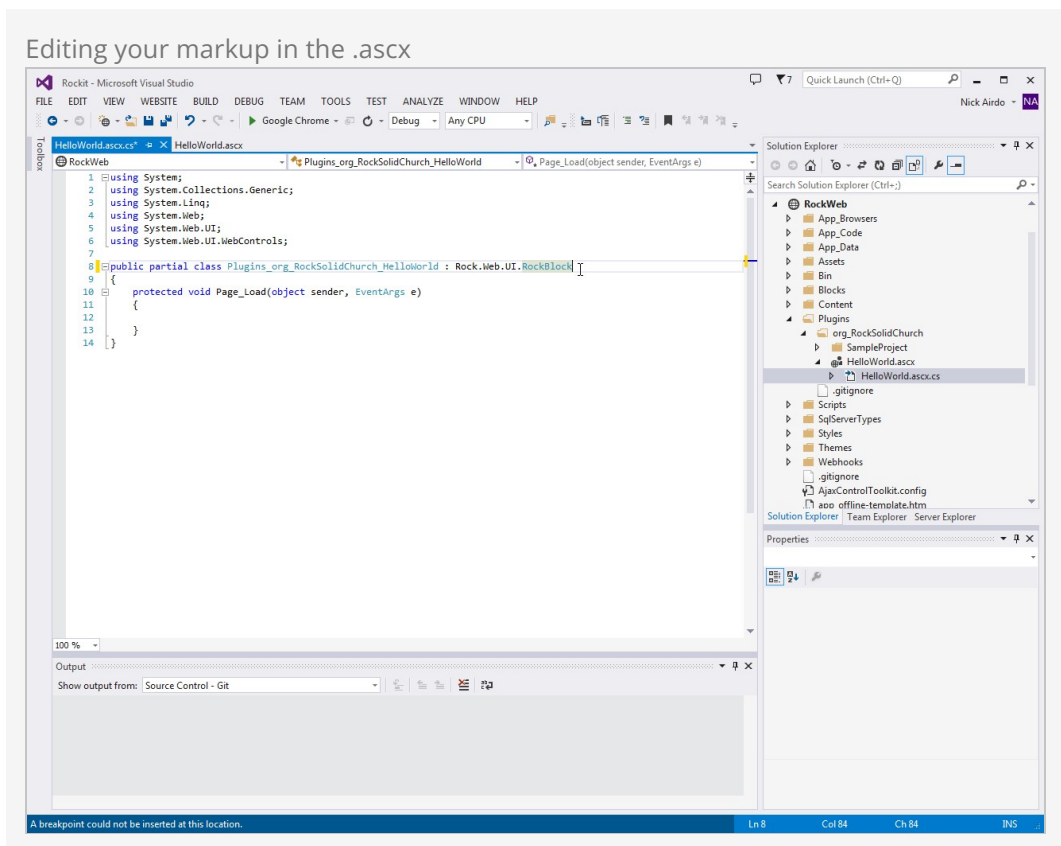
## Step 2 - Edit Markup

Edit the markup in the *HelloWorld.ascx* and add the defacto text, Hello World. You can spice it up with a little HTML markup if you wish - but don't go too crazy yet.



### Step 3 - Edit Code

Edit the code file called *HelloWorld.ascx.cs* (which can be made visible by expanding *HelloWorld.ascx* in the Solution Explorer) and change its inheriting class from the default *System.Web.UI.UserControl* to *Rock.Web.UI.RockBlock*. Doing that gives your standard ASP.Net usercontrol the super-powers of a Rock block. We'll show you how that happens a little bit later.



That's it. Now we'll show you how easy it is to register your new block and add it to a page so you can see it in action.



## Step 4 - Add the block to a zone

Start Rock from inside Visual Studio by pressing **F5** and log in as the Admin.

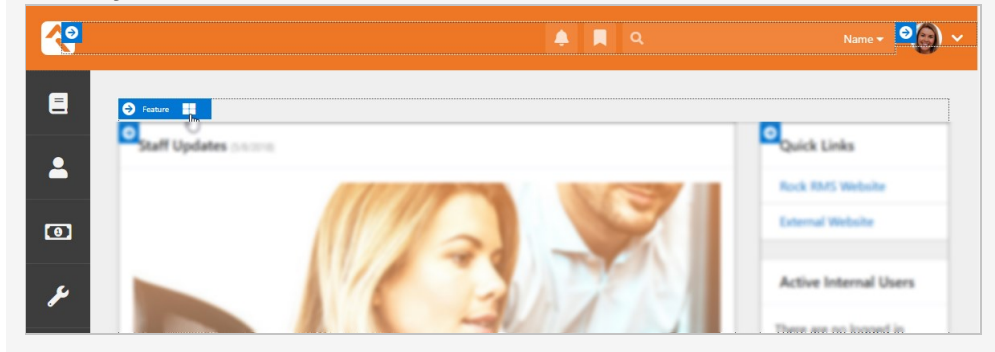
### Logging into your Rockit


The default password for the Admin user is `admin`.

You could create a new page and so forth, but let's keep this simple and just add your new block to the main home page. You can read more about adding blocks and pages in the [Designing and Building Websites Using Rock guide](#).

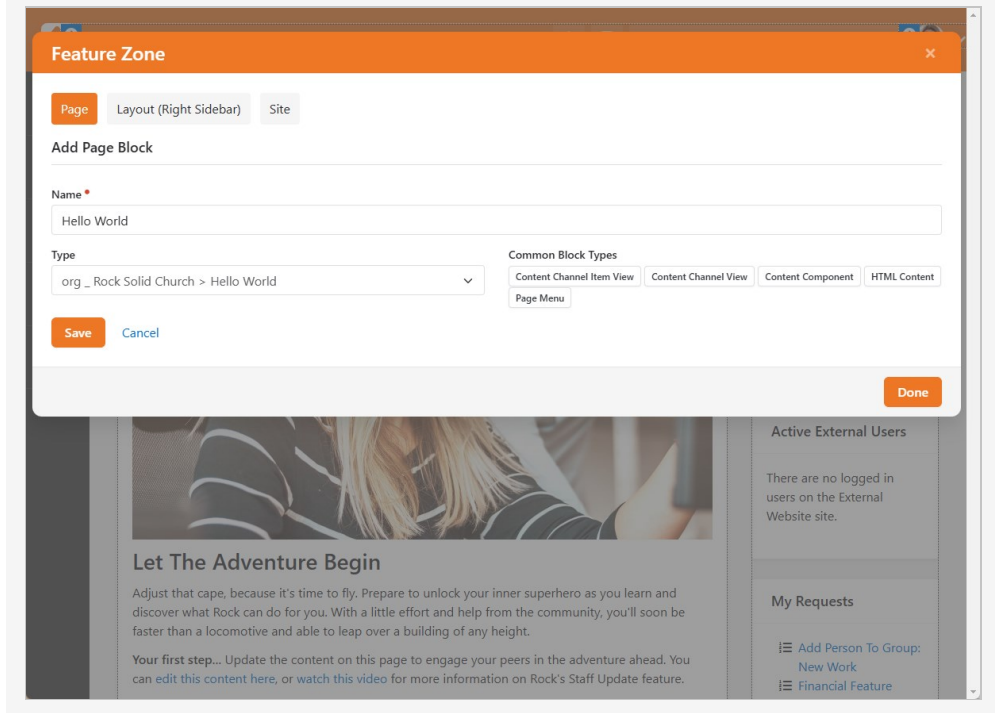
1. Select the  (Page Zone Editor) button in the page's *Admin Toolbar*, which can be found as you *hover the cursor* at the bottom right of your screen.
2. (That should highlight all of the zones on the page for you.)
3. Hover over the fly-out toolbar for the zone you wish to add the block to and click its  (Zone Blocks) button. This will bring up the zone's block list.



### Zone 'fly-out-toolbar'



- Next, click the  (Add Block) button to add the block to the layout. Skip the Name field for the moment and select your new "Hello World" block from bottom of the Type dropdown list (hint: you can type "Hello" to find it quicker).

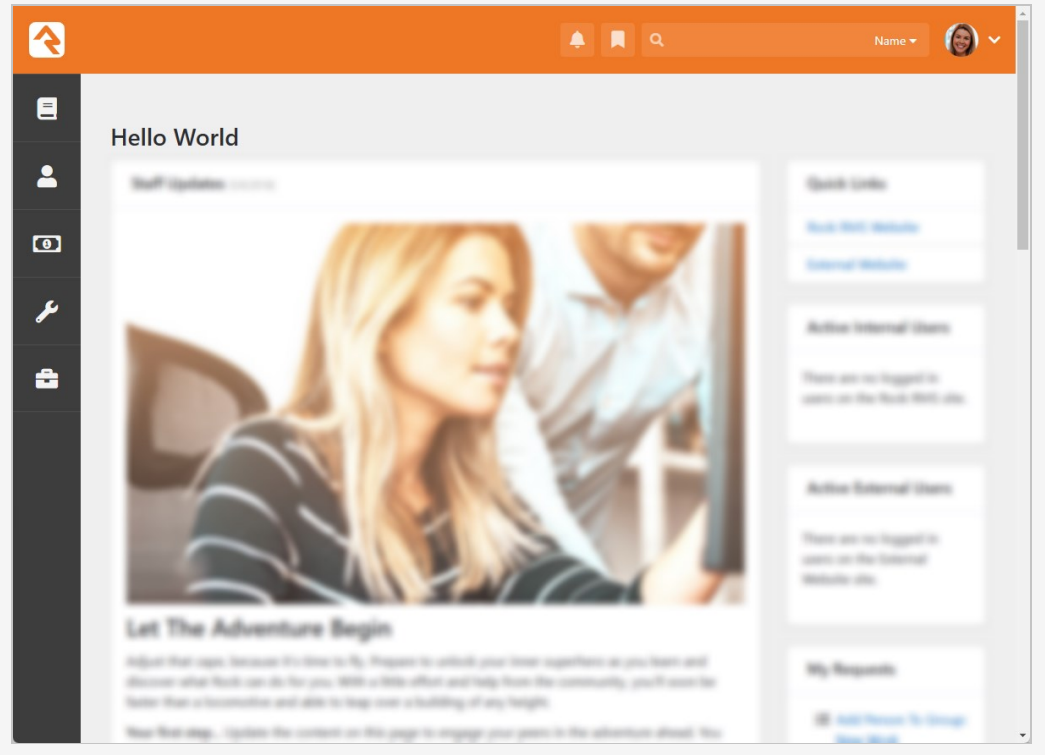
### Add New Item




- Click the  button.
- Now that you've added your block, click the  link and the page will reload with your Hello World block now on the page.

### How did that happen?

You may have noticed you never actually registered your new block the way you have to with other CMS systems. That's because Rock automatically registers blocks when they are discovered in your Plugins folder. Pretty cool, right?



Need code?

If you want the code for this section you can download it right from Github. 

# Fetching Data

Now that you've seen your code run in Rock, let's actually fetch some existing data from Rock. We're going to build a block that lists all the names of everyone in the database.

A block that fetches data

First Name	Last Name
Admin	Admin
Joe	Smith
Suzie	Smith
Mary	Smith

50 500 5,000 4 People

## Step 1 - Copy sample block

Let's create a new block but this time let's save some time by starting with the example *Stark* block that comes shipped with Rock.

Create a new `Tutorials` folder in `RockWeb\Plugins\org_rocksolidchurch\` and copy the `StarkDetail.ascx` file (along with its `.ascx.cs` file) from the `RockWeb\Blocks\Utility\` into it. Rename the `StarkDetail.ascx` file `HelloWorldFetchingData`.

### Tip:

We're using a "Tutorials" folder to keep our related code blocks nice and organized. It's a good idea to organize your associated blocks together in a common folder and project name.

## Step 2 - Update classname/namespace

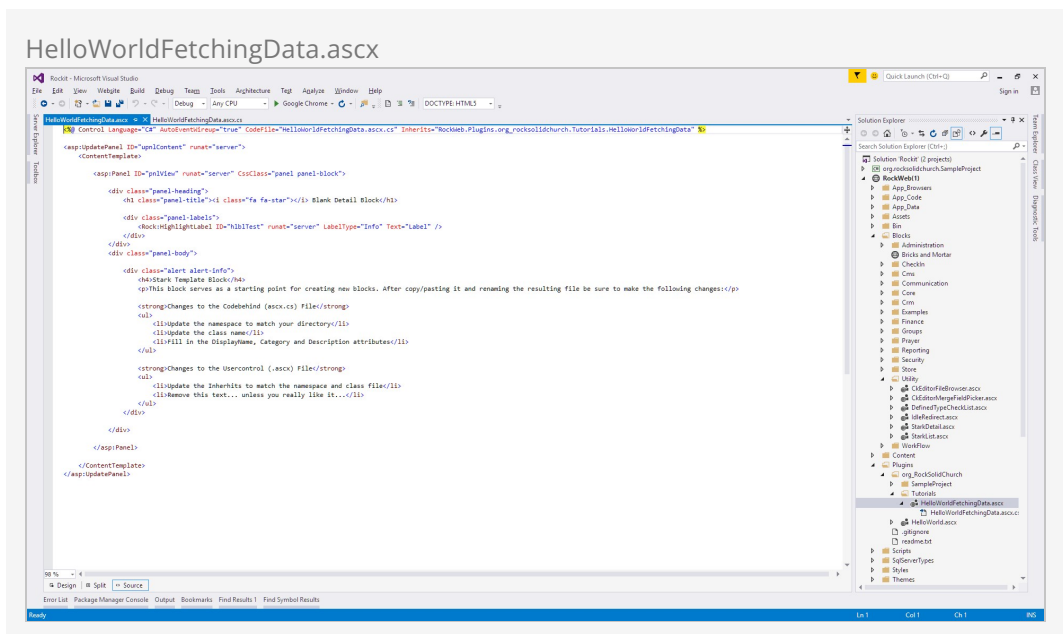
Now let's make this our own. We need to edit the classname and namespaces so that our code does not collide with any other existing code. Edit the `HelloWorldFetchingData.ascx` file and change the

```
Inherits="RockWeb.Blocks.Utility.StarkDetail" to
```

```
Inherits="RockWeb.Plugins.org_rocksolidchurch.Tutorials>HelloWorldFetchingData" ,
```

remembering to replace `org_rocksolidchurch` with our own organization's namespace.



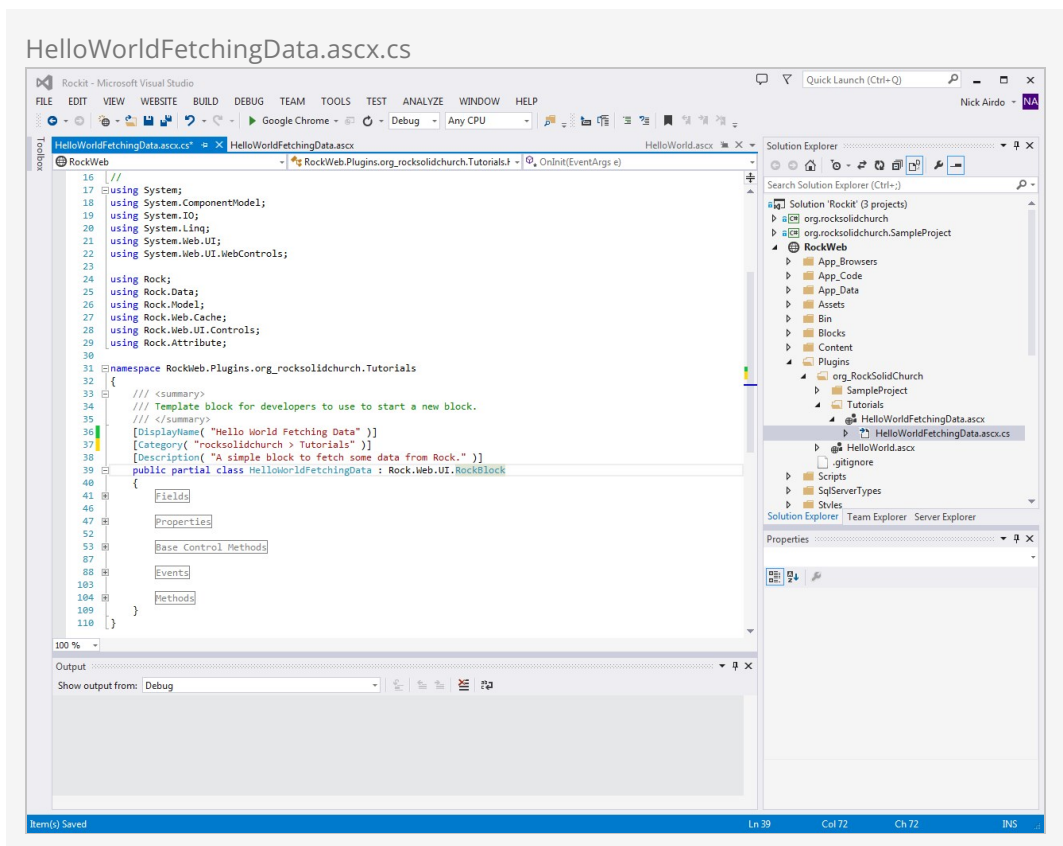


Similarly, update the namespace in the *HelloWorldFetchingData.ascx.cs* from `RockWeb.Blocks.Utility` to `RockWeb.Plugins.org_rocksolidchurch.Tutorials` and update the class name from `StarkDetail` to `HelloWorldFetchingData`.

You'll also need to ensure that the code has the following `using` statements:

- `using System;`
- `using System.ComponentModel;`
- `using System.Linq;`
- `using System.Web.UI;`
- `using System.Web.UI.WebControls;`
- `using Rock.Data;`
- `using Rock.Model;`
- `using Rock.Attribute;`

You probably noticed the three lines just above the class definition called `DisplayName`, `Category`, and `Description`. These class decorator attributes are used to organize the list of blocks in Rock. Set the `DisplayName` with an appropriate name for your block and the `Category` using the convention of "OrganizationName > Project". Don't forget to include a concise explanation of the block in the `Description` field too.



### Step 3 - Markup

We need a place to put all those names we're about to fetch. The Rock:Grid is a perfect UI control for this sort of thing. Edit the markup in the *HelloWorldFetchingData.ascx* and replace the `<ContentTemplate>` section with this:

```
<ContentTemplate>

    <Rock:Grid ID="gPeople" runat="server" AllowSorting="true">
        <Columns>
            <asp:BoundField DataField="FirstName" HeaderText="First Name" />
            <asp:BoundField DataField="LastName" HeaderText="Last Name" />
        </Columns>
    </Rock:Grid>

</ContentTemplate>
```

That's a grid with two columns. One for the person's first name and one for their last name.

### Step 4 - Code

Now we can add code to go and fetch the people data. We'll use Rock's `PersonService()` class to get all people, and then bind it to the data-source of our grid. Edit the code in *HelloWorldFetchingData.ascx.cs*. Find the `OnLoad()` Base Control Method. Replace it with the following code:

```
protected override void OnLoad( EventArgs e )
{
    base.OnLoad( e );
}
```

```

if ( !Page.IsPostBack )
{
    var items = new PersonService( new RockContext() ).Queryable().ToList();
    gPeople.DataSource = items;
    gPeople.DataBind();
}
}

```

## Step 5 - Go Look

Press **F5** in Visual Studio to start Rock then add the block to a page just like you did in the first tutorial. You should see a simple grid listing all the people in your database.

### The results


First Name	Last Name
Admin	Admin
Joe	Smith
Suzie	Smith
Mary	Smith
Theodore	Decker
Cynthia	Decker
Noah	Decker
Alexis	Decker
Benjamin	Jones
Brian	Jones
James	Simmons
Sarah	Simmons
Mariah	Jackson
Madison	Lowe
Craig	Lowe
Tricia	Lowe
Alisha	Marble
William	Marble
Tom	Miller
Thomas	Miller
Peter	Foster
Adelle	Foster
Jennifer	Michaels
Paul	Smith
Taylor	McClintock

50 500 5,000 25 People

### Uh oh!

Don't see anyone listed? Try adding some fake people data to your database. Use the Sample Data block found under Admin Tools > Power Tools.

### Need code?

The code for this section can be downloaded right from Github. 

# Configurable Blocks

You're making great progress. Now let's continue with the previous tutorial and show you how to make the block configurable using *Block Attributes*.

## Reviewing Your Options

The grid we created might list thousands of records. Perhaps we should limit it to include only males? You could hardcode that logic into a `Where` clause like this:

```
var items = new PersonService( new RockContext() ).Queryable()
    .Where( p => p.Gender == Gender.Male ).ToList();
```

However, it would be smarter to make the gender choice a configurable setting. This is where Block Attributes come in handy. They are one of Rock's amazingly powerful features.

Let's see how easy it is to add a configuration setting to the block.

## Step 1 - Add an Attribute

Edit the *HelloWorldFetchingData.ascx.cs* file and add a *CustomRadioListField* attribute just above the class definition like this:

```
using Rock.Attribute;



// ...

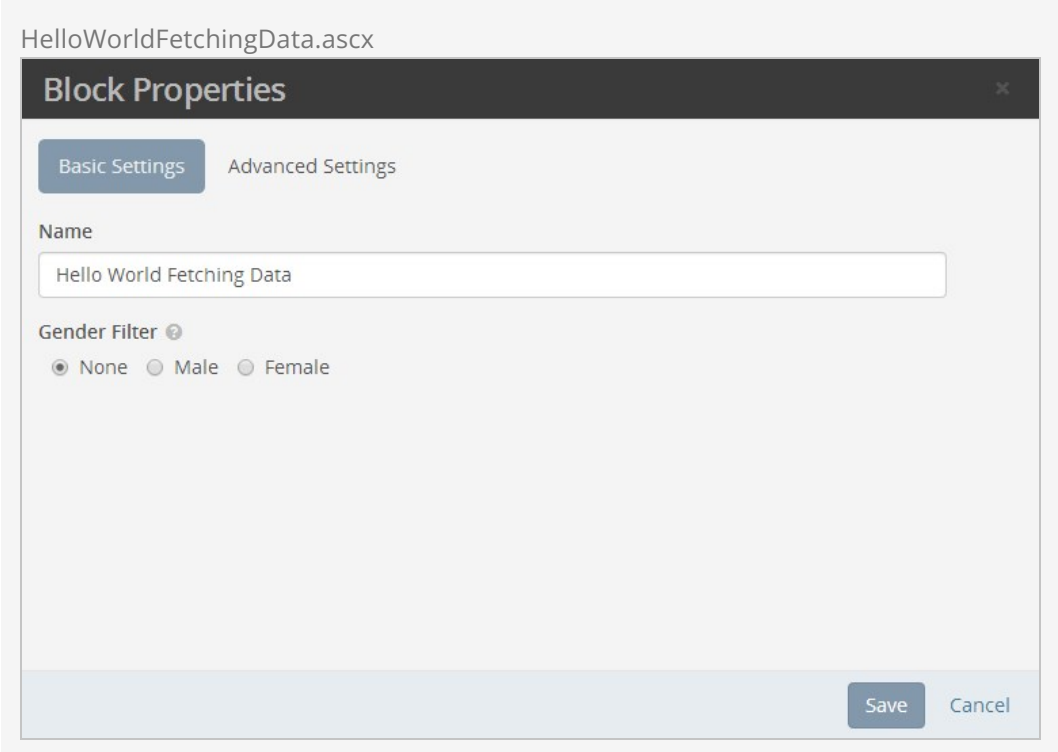
[CustomRadioListField( "Gender Filter", "Select in order to list only records for that gender",
    "1^Male,2^Female", required: false )]
public partial class HelloWorldFetchingData : Rock.Web.UI.RockBlock
{
    //...
```

### Note:

The `using Rock.Attribute;` gives you access to all kinds of different block attributes in Rock.

Adding the *CustomRadioListField* allows the administrator to optionally pick either Male or Female in the block property settings. It's optional because we've set the 'required' parameter to false.

In a few minutes once you're done and the block is on a page, you can access these settings by clicking the  (Block Configuration) button in the *Admin Toolbar* followed by the  (Block Properties) button from the block's fly-out menu.



HelloWorldFetchingData.ascx

### Block Properties

Basic Settings    Advanced Settings

Name

Gender Filter ?

None    Male    Female

Save    Cancel

But first let's continue and write the code that fetches that value set by the administrator.

## Step 2 - Get and Use the Attribute Value

Fetch the selected gender value using Rock's `GetAttributeValue()` method by passing it the attribute's key, `GenderFilter`. *The key is just the attribute name with all spaces removed.*

```
protected override void OnLoad( EventArgs e )
{
    base.OnLoad( e );

    if ( !Page.IsPostBack )
    {
        var genderValue = GetAttributeValue( "GenderFilter" );
    }
}
```

Now use the value to limit the query. Let's change our variables a bit so we only perform the `Where()` clause when the administrator actually selected a particular gender. Then call the `ToList()` method last, right as we're setting it to the grid's data-source.

```
var query = new PersonService( new RockContext() ).Queryable();

if ( !string.IsNullOrEmpty( genderValue ) )
{
    Gender gender = genderValue.ConvertToEnum<Gender>();
    query = query.Where( p => p.Gender == gender );
}
```

```

}

gPeople.DataSource = query.ToList();
gPeople.DataBind();

```

### Note:

Notice the use of the handy `ConvertToEnum()` extension method to convert our `1` and `2` string values into a proper Gender enumeration? The `using Rock;` gives you access to many useful extension methods we've created for you.

## Final Code

When finished, your entire \*.cs file should look something like this:

```

using System;
using System.ComponentModel;
using System.IO;
using System.Linq;
using System.Web.UI;
using System.Web.UI.WebControls;

using Rock;
using Rock.Data;
using Rock.Model;
using Rock.Web.Cache;
using Rock.Web.UI.Controls;
using Rock.Attribute;

namespace RockWeb.Plugins.org_rocksolidchurch.Tutorials
{
    /// <summary>
    /// Template block for developers to use to start a new block.
    /// </summary>
    [DisplayName( "Hello World Fetching Data" )]
    [Category( "rocksolidchurch > Tutorials" )]
    [Description( "A simple block to fetch some data from Rock." )]

    [CustomRadioListField( "Gender Filter", "Select in order to list only records for that gender",
        "1^Male,2^Female", required: false )]
    public partial class HelloWorldFetchingData : Rock.Web.UI.RockBlock
    {
        #region Base Control Methods

        /// <summary>
        /// Raises the <see cref="E:System.Web.UI.Control.Load" /> event.
        /// </summary>
        /// <param name="e">The <see cref="T:System.EventArgs" /> object that contains the
        event data.</param>
        protected override void OnLoad( EventArgs e )
        {
            base.OnLoad( e );

            if ( !Page.IsPostBack )
            {
                var genderValue = GetAttributeValue( "GenderFilter" );

                var query = new PersonService( new RockContext() ).Queryable();

```

```
        if ( !string.IsNullOrEmpty( genderValue ) )
        {
            Gender gender = genderValue.ConvertToEnum<Gender>();
            query = query.Where( p => p.Gender == gender );
        }

        gPeople.DataSource = query.ToList();
        gPeople.DataBind();
    }
}

#endregion
}
```

Depending how you set the block property, you'll see different results.

When the block property is set to male you'll see only the men:

Gender block property set to Male

First Name	Last Name
Theodore	Decker
Noah	Decker
Benjamin	Jones
Brian	Jones
James	Simmons
Craig	Lowe
William	Marble
Tom	Miller
Thomas	Miller
Peter	Foster

50 500 5,000 10 People


...and only women when the block property is set to female:



### Gender block property set to Female

First Name	Last Name
Cynthia	Decker
Alexis	Decker
Sarah	Simmons
Mariah	Jackson
Madison	Lowe
Tricia	Lowe
Alisha	Marble
Adelle	Foster
Jennifer	Michaels

50 500 5,000 9 People



[Need code?](#)

The code for this section can be downloaded right from Github. 

# Connecting Blocks

It would be nice if our block would take you to the person's details when you click a name, right? Let's make that happen.

## Step 1 - Add an event handler to the grid

First we'll set an event handler named `gPeople_RowSelected` for the `OnRowSelected` property of the grid. We also need to let the grid know that the `Id` property of an item in the grid represents the key/identifier for the item in each row. We do this by adding `DataKeyNames="Id"` to the grid's markup. We'll use the key value when we handle the `OnRowSelected` event in our code.

```
<Rock:Grid ID="gPeople" runat="server" AllowSorting="true"
  OnRowSelected="gPeople_RowSelected" DataKeyNames="Id">
```

## Step 2 - Handle that event in code

Now we can write code to do something when a particular row is clicked. Since Rock already has a page with a named route `~/Person/{0}` for viewing a person's details, all we need to do is take the person's Id (for the selected row's key) and redirect to the route.

Edit the `*.cs` file and add this event handler:

```
protected void gPeople_RowSelected( object sender, RowEventArgs e )
{
    int personId = (int)e.RowKeyValues["Id"];
    Response.Redirect( string.Format( "~/Person/{0}", personId ), false );

    // prevents .NET from quietly throwing ThreadAbortException
    Context.ApplicationInstance.CompleteRequest();
    return;
}
```

That's all there is to it!

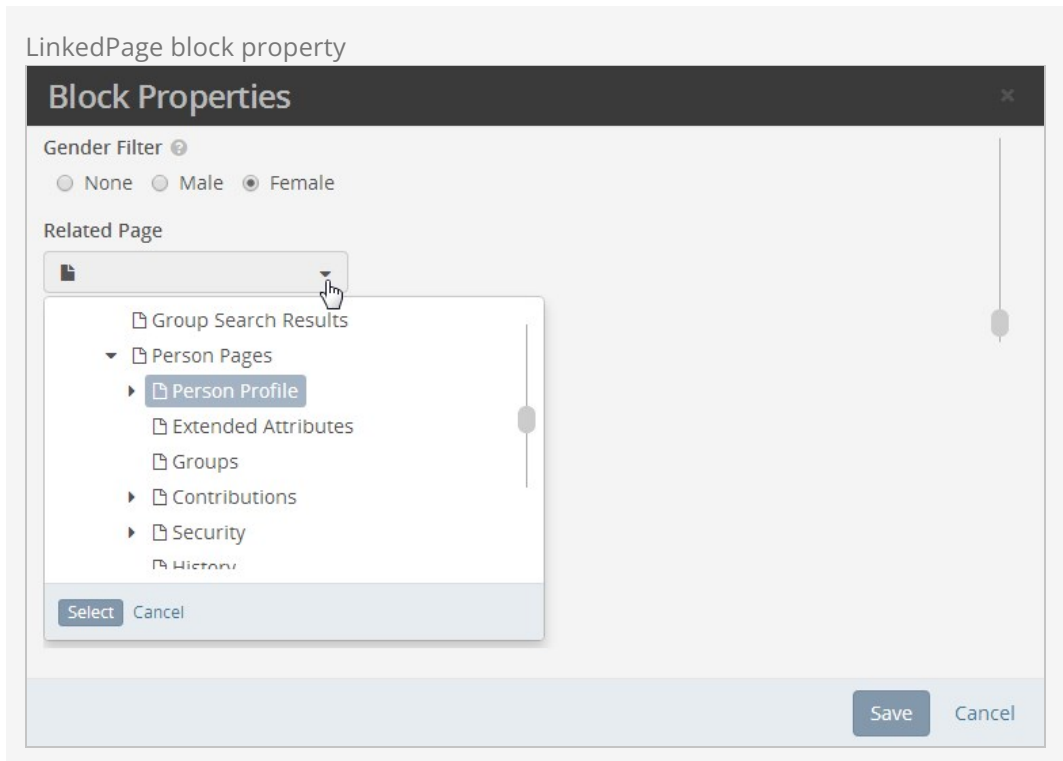
That was a bit too easy. What will you do when there is no *named route* available? Let's try a different, configuration based approach for those cases. Yep, you guessed it. Another block property attribute to the rescue.

## Step 2 redux - Use a `LinkedPage` block property

It's a common situation to link your block to another page where a related block lives. By adding the `LinkedPage` attribute to your block, the administrator can wire up your

block to the page of their choosing.

```
[LinkedPage( "Related Page" ) ]
```



The string "Related Page" is the attribute name and its key is just "RelatedPage".

Change your `gPeople_RowSelected` handler to call the special `NavigateToLinkedPage()` method and pass in the attribute key that has the linked page, the name of a query string parameter and the value for that parameter. Since we're expecting the admin to link the block to the *Person Profile* page, we'll use the `PersonId` as the parameter and the person's Id will be the parameter value.


Our code would look like this:

```
protected void gPeople_RowSelected( object sender, RowEventArgs e )
{
    NavigateToLinkedPage( "RelatedPage", "PersonId", (int)e.RowKeyValues["Id"] );
}
```

Rock will automatically build a redirect link in the form of `.../Page/[id-of-related-page]?PersonId=[id-of-selected-person]` (E.g. `http://rock.rocksolidchurchdemo.com/page/93?PersonId=2`)

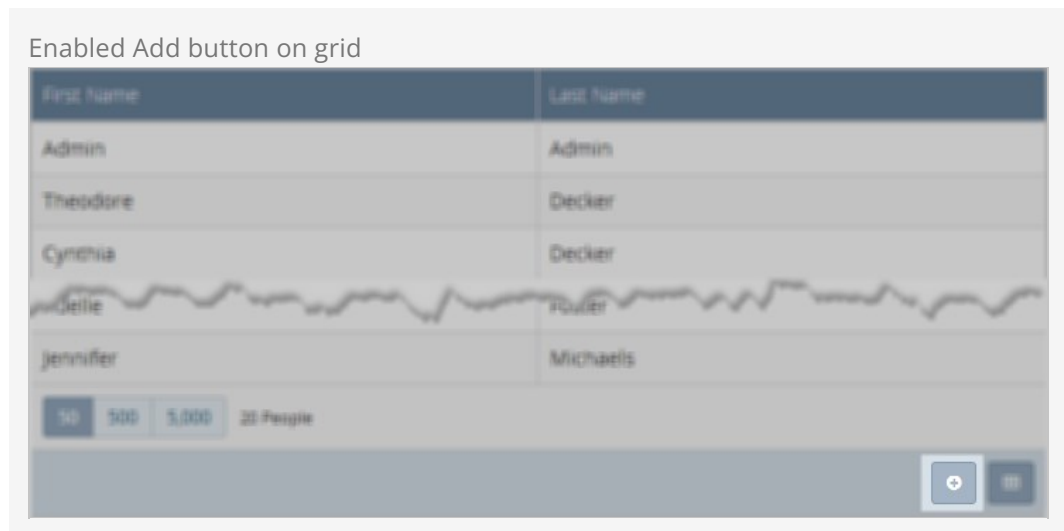
And yes, I tricked you because this new event handler code is even easier than the previous code.

Need code?

The code for this section can be downloaded right from Github. 

# Customizing and Securing Blocks

Sometimes you want to show certain features only to certain people or people with a certain role. Let's add a standard `Add` button to the bottom of the grid that only shows up for people who are authorized with "Edit" rights to our block.



## Step 1 - Check the user's authorization

Use the `IsUserAuthorized()` method by passing it the name of an action. That method returns `true` if the person viewing the block is authorized for that action. When true, we'll set the grid's Action bar to show the `Add` button.

Add the `using Rock.Security;` in the top section of your block to get access to the Authorization class and add the authorization check to the `OnInit` method like this:

```
using Rock.Security;
// ...
protected override void OnInit( EventArgs e )
{
    base.OnInit( e );

    if ( IsUserAuthorized( Authorization.EDIT ) )
    {
        gPeople.Actions.ShowAdd = true;
    }

    // ...
}
```

## Note

If it makes more sense for the authorization check to be based on the *page* where the block lives, you can do a page authorization check like this:

```
var currentPage = Rock.Web.Cache.PageCache.Read( RockPage.PageId );
currentPage.IsAuthorized( Authorization.EDIT, CurrentPerson );
```

## Step 2 - Handle the button click

Let's wrap this up by handling the click action for your new Add button. We'll register a click handler called `gPeople_Add` in the `OnInit()` method and then create the handler method in the appropriate code region.

```
protected override void OnInit( EventArgs e )
{
    base.OnInit( e );

    if ( IsUserAuthorized( Authorization.EDIT ) )
    {
        gPeople.Actions.ShowAdd = true;
        gPeople.Actions.AddClick += gPeople_Add;
    }

    // ...
}

protected void gPeople_Add( object sender, EventArgs e )
{
    Response.Redirect( "~/NewFamily/" );

    // prevents .NET from quietly throwing ThreadAbortException
    Context.ApplicationInstance.CompleteRequest();
    return;
}
```

Once again, we can rely on a built-in *named route* used for adding new people/families.

## Tip

For information about using "Page\_Load (OnLoad) vs OnInit" read the Performance Considerations in the Blocks documentation.

## Step 3 - Code cleanup

For best practice sake, let's move our grid data binding code into it's own method called `BindGrid()`. This will set us up for one more little improvement we'll cover in the next step.

```
protected override void OnLoad( EventArgs e )
{
    base.OnLoad( e );

    if ( !Page.IsPostBack )
```

```

    {
        BindGrid();
    }
}

// ...

protected void BindGrid()
{
    var genderValue = GetAttributeValue( "GenderFilter" );

    var query = new PersonService( new RockContext() ).Queryable();

    if ( !string.IsNullOrEmpty( genderValue ) )
    {
        Gender gender = genderValue.ConvertToEnum<Gender>();
        query = query.Where( p => p.Gender == gender );
    }

    gPeople.DataSource = query.ToList();
    gPeople.DataBind();
}

```

## Step 4 - That little improvement

Have you noticed that you've had to reload the page after you change a block property in order to see it take effect? Let's fix that so the grid refreshes immediately when the property changes.

The Stark block you started with comes with the necessary event handlers that allows you do something when the block's properties change. You may have even seen those extra lines in the `OnInit` method and an empty `Block_BlockUpdated()` code block. This `Block_BlockUpdated()` method *is* being called but it won't do anything until you add some appropriate code.

Now that we moved our data binding code to its own `BindGrid()` method, we can call it in `Block_BlockUpdated()` like this:.

```

protected void Block_BlockUpdated( object sender, EventArgs e )
{
    BindGrid();
}

```

Now go and change the gender setting and watch the magic.

### Best Practice

It's a best practice to handle the `BlockUpdated` event intelligently whenever possible.

Here is the final, complete code:

```

using System;
using System.ComponentModel;
using System.IO;
using System.Linq;

```

```

using System.Web.UI;
using System.Web.UI.WebControls;

using Rock;
using Rock.Data;
using Rock.Model;
using Rock.Web.Cache;
using Rock.Web.UI.Controls;
using Rock.Attribute;
using Rock.Security;

namespace RockWeb.Plugins.org_rocksolidchurch.Tutorials
{
    /// <summary>
    /// Template block for developers to use to start a new block.
    /// </summary>
    [DisplayName( "Hello World Fetching Data" )]
    [Category( "rocksolidchurch > Tutorials" )]
    [Description( "A simple block to fetch some data from Rock." )]

    [CustomRadioListField( "Gender Filter", "Select in order to list only records for that
gender",
        "1^Male,2^Female", required: false )]
    [LinkedPage( "Related Page" )]
    public partial class HelloWorldFetchingData : Rock.Web.UI.RockBlock
    {
        protected override void OnInit( EventArgs e )
        {
            base.OnInit( e );

            if ( IsUserAuthorized( Authorization.EDIT ) )
            {
                gPeople.Actions.ShowAdd = true;
                gPeople.Actions.AddClick += gPeople_Add;
            }

            // This event gets fired after block settings are updated.
            this.BlockUpdated += Block_BlockUpdated;
            this.AddConfigurationUpdateTrigger( upnlContent );
        }

        protected override void OnLoad( EventArgs e )
        {
            base.OnLoad( e );

            if ( !Page.IsPostBack )
            {
                BindGrid();
            }
        }

        protected void Block_BlockUpdated( object sender, EventArgs e )
        {
            BindGrid();
        }

        protected void gPeople_Add( object sender, EventArgs e )
        {
            Response.Redirect( "~/NewFamily/" );

            // prevents .NET from quietly throwing ThreadAbortException
            Context.ApplicationInstance.CompleteRequest();
            return;
        }
    }
}

```

```
protected void gPeople_RowSelected( object sender, RowEventArgs e )
{
    NavigateToLinkedPage( "RelatedPage", "PersonId", (int)e.RowKeyValues["Id"] );
}


protected void BindGrid()
{
    var genderValue = GetAttributeValue( "GenderFilter" );

    var query = new PersonService( new RockContext() ).Queryable();

    if ( !string.IsNullOrEmpty( genderValue ) )
    {
        Gender gender = genderValue.ConvertToEnum<Gender>();
        query = query.Where( p => p.Gender == gender );
    }

    gPeople.DataSource = query.ToList();
    gPeople.DataBind();
}
}
```

### Need code?

The code for this section can be downloaded right from Github. 



# Appendix - New Developer Environment Setup

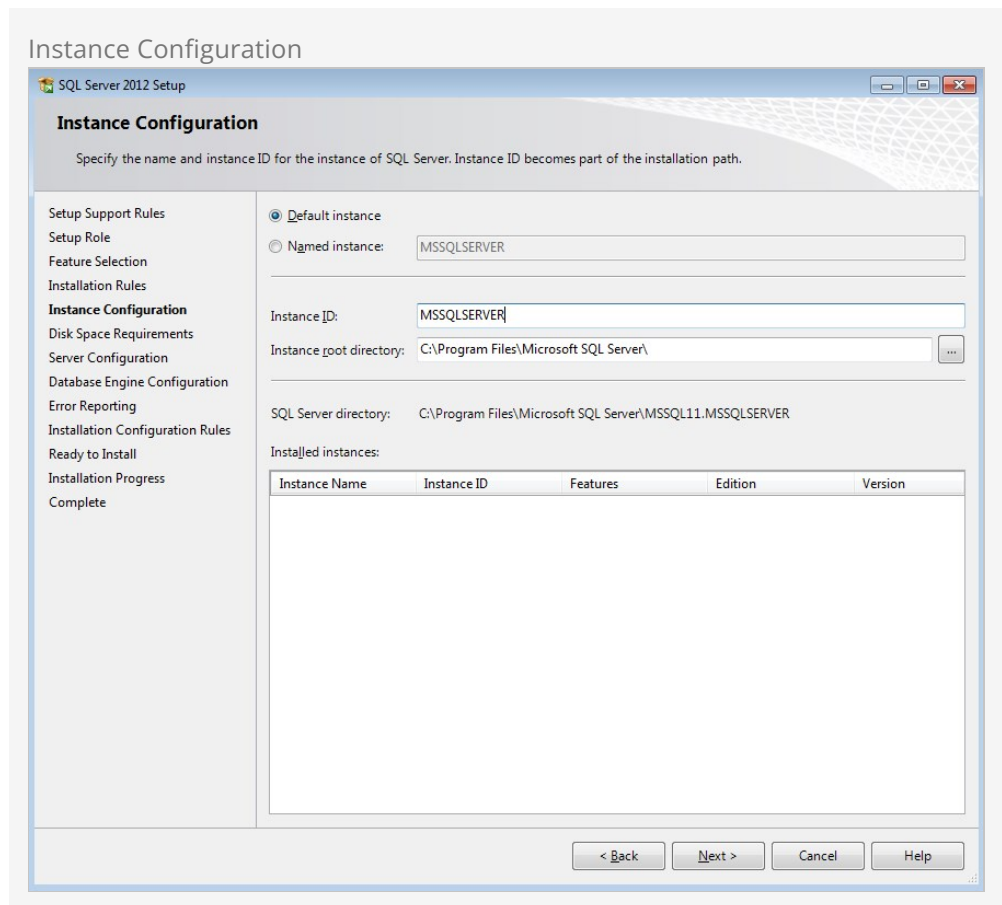
If you're a relatively new .Net web developer we can walk you through a few things to help get you started on the right foot. If you're not a .Net developer already, we probably can't make you one by reading this chapter. In that case you would be best served by going through some .Net introductions or tutorials.

## Installing Your Microsoft SQL Server (Database) Environment

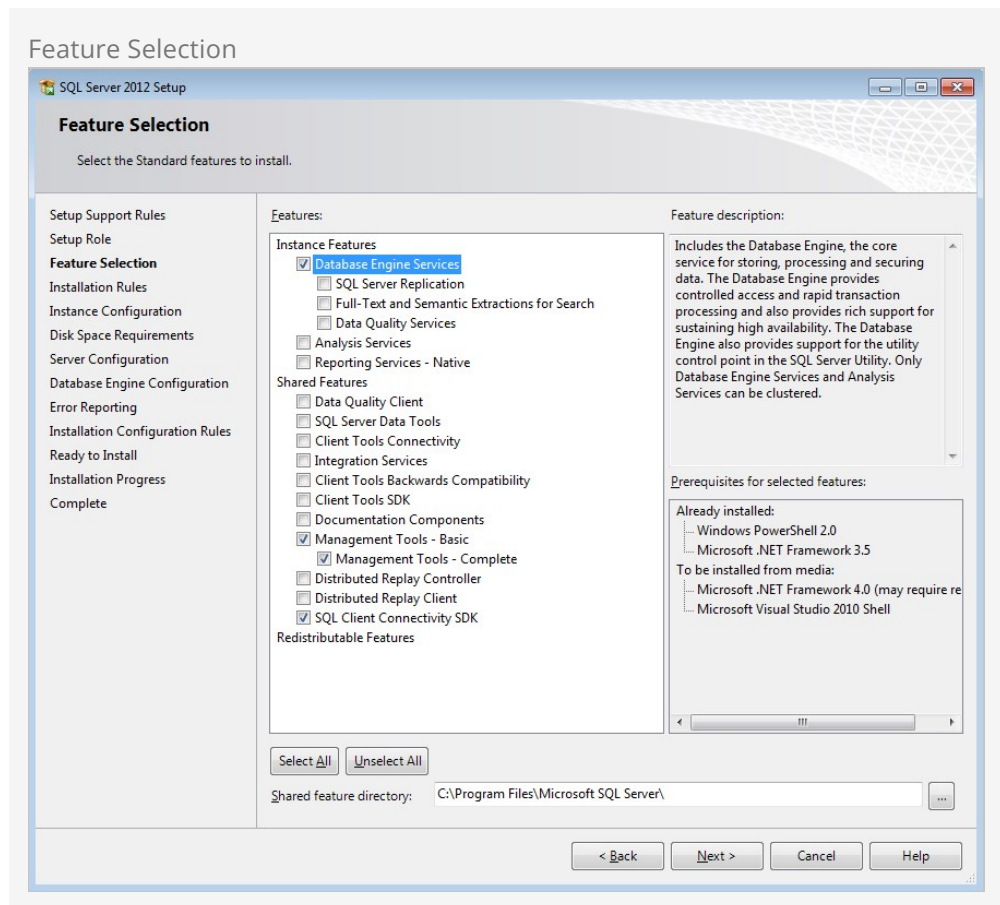
We like to setup the database first. If you're licensed to use one of the paid versions of SQL Server go ahead and download that now. Otherwise you can download and use the free SQL Server Express version.

Going through the installer can be an *interesting* experience. For the most part we've found you can typically use the default settings -- except for a few places. In those spots you really need to be careful and set things just right:

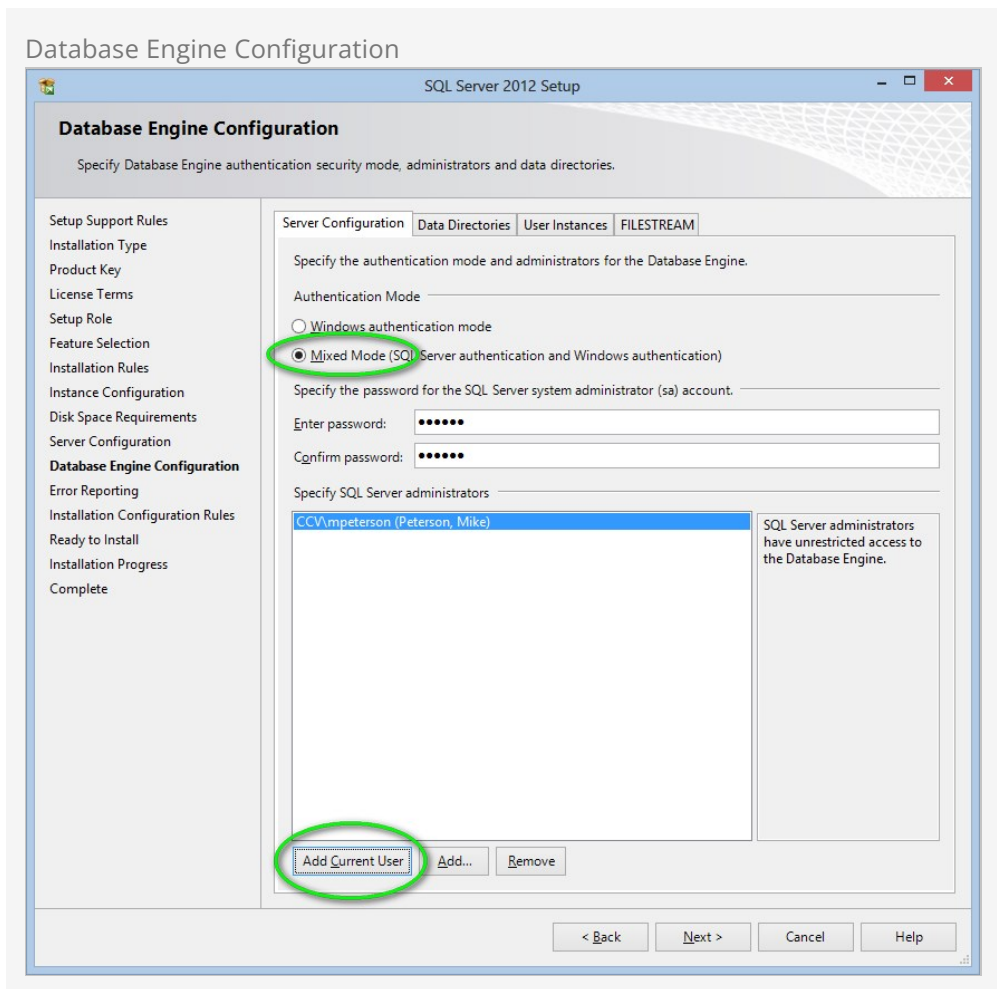
- **Instance Configuration** - On the Instance Configuration page, choose Default Instance with Instance ID: MSSQLSERVER (you can create a named instance if you want, but you might have to figure out your connection strings on your own).



- **Feature Selection** - On the Feature Selection page, you'll need at a minimum: Database Engine Services, Management Tools, and SQL Client Connectivity SDK.

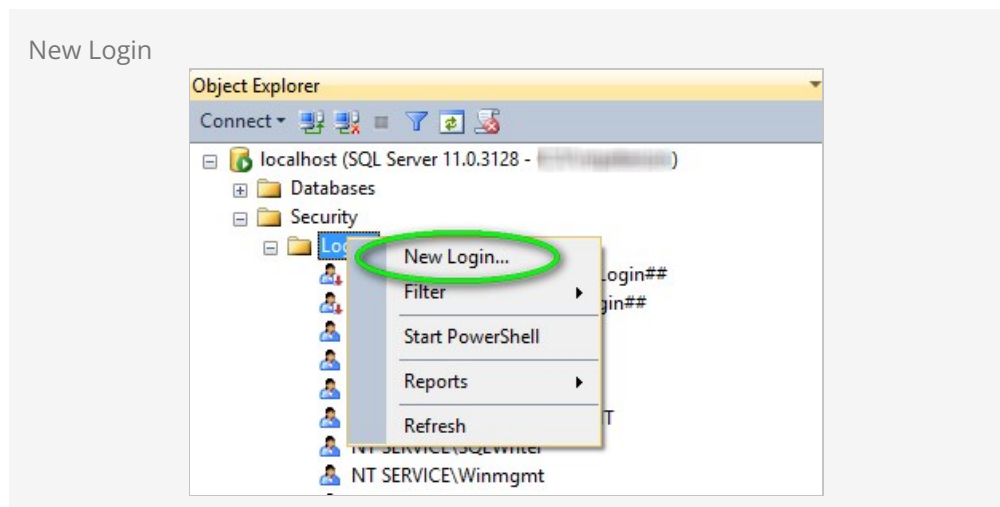


- **Database Engine Configuration** - On the Database Engine Configuration page, make sure to choose *Mixed Mode*. This is important! If you get weird errors later when trying build the Rock Database for the first time, an incorrect setting here might be the problem. Also, enter some password for the SA account. Then, click Add Current User, and make sure it adds your account. By the way, you probably won't ever really need to login as SA if you do the Add Current User. Then press Next, and click thru the rest of the OK and Next buttons until the install is complete.

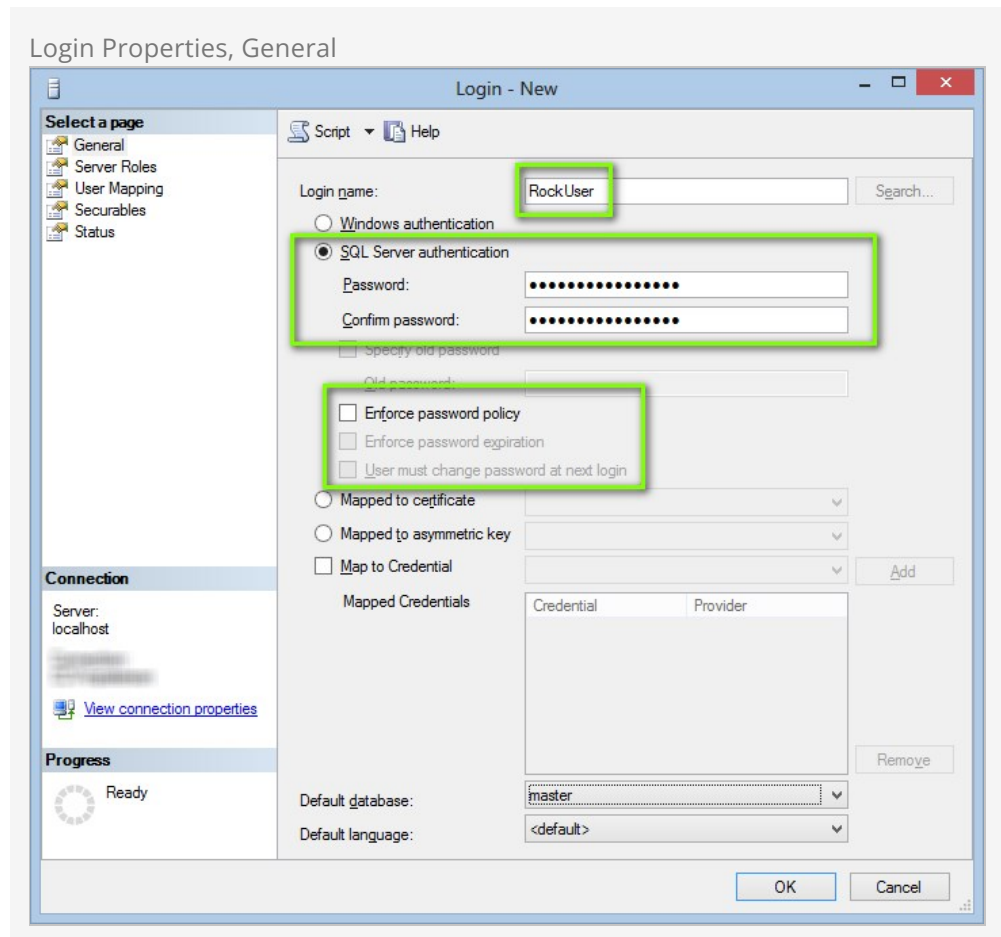


You will need to create a SQL Server Login called "RockUser". (You can actually use any name you wish but we recommend RockUser to keep things simple for now.) You will need to use SQL Server Management Studio do to this (which would have been installed when you did the Install SQL Server step, or if you add the Management Tools feature to an existing SQL Server install.

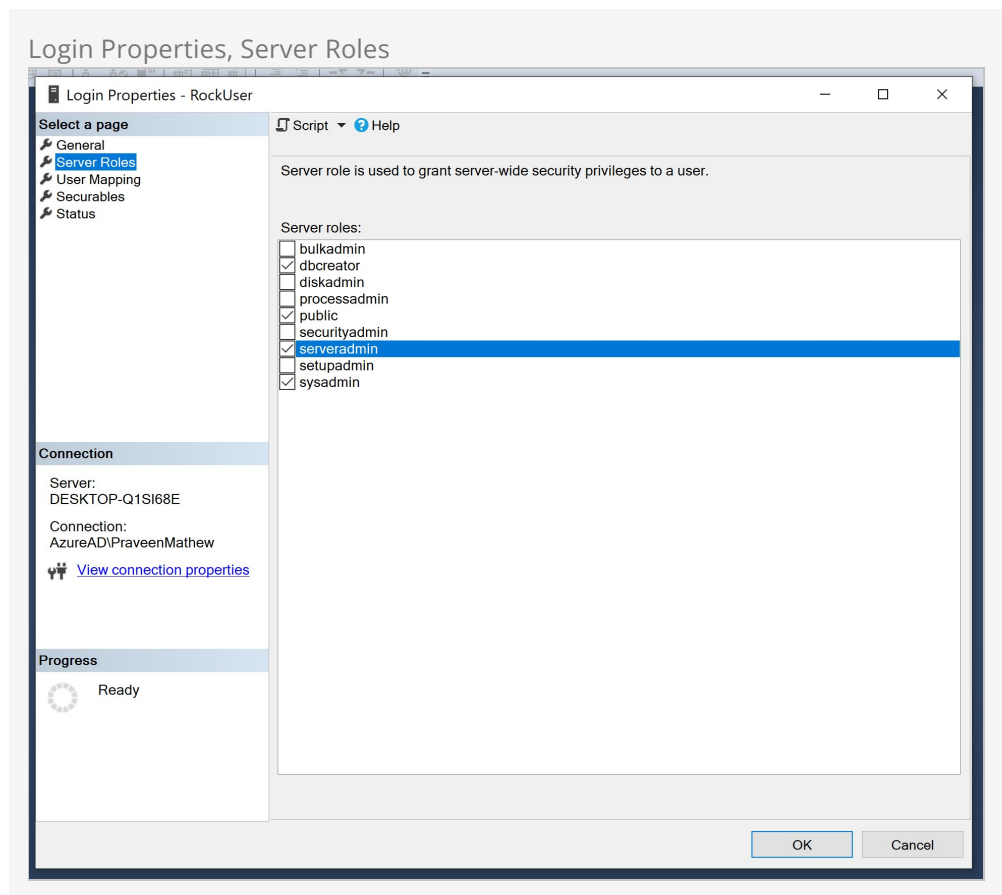
1. After logging in, in the Object Explorer window, navigate to localhost | Security | Logins. Next, right-click on Logins and click "New Login...".



2. On the Login - New page, put RockUser as the Login name and choose SQL Server authentication. For the password you'll probably want to uncheck the "Enforce password" and "User must change password" checkboxes. *NOTE: You'll also need to copy this password to your web.ConnectionStrings.config as described in the next chapter. Don't press OK yet, do the next step (Server Roles) first!*



3. While still on the Login - New page, select "Server Roles" then check "dbcreator" and "public". Now you can press OK, and your SQL Server RockUser login is created.



## Installing Visual Studio

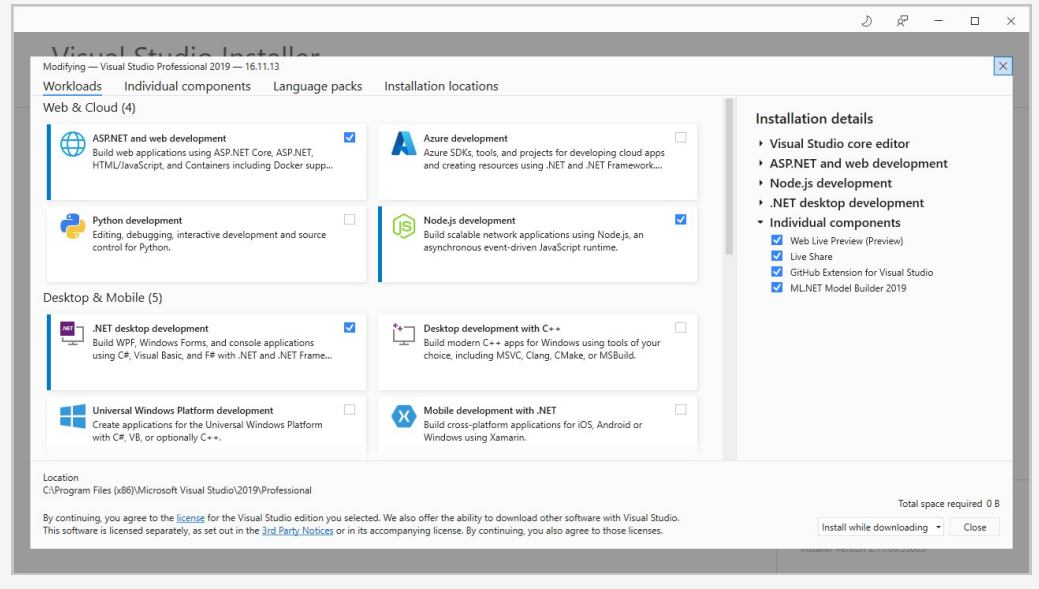
If you're licensed to use one of the paid versions of Visual Studio go ahead and download it now. Otherwise you can download the free "Visual Studio Community" version. If you run into any trouble Microsoft even has a Live Chat support to assist you.

### Visual Studio Workloads

Run the Visual Studio Installer and select "Modify" on your installation. Then install these workloads:

- "ASP.NET and web development"
- "Node.js development"
- (optional) ".NET desktop development"

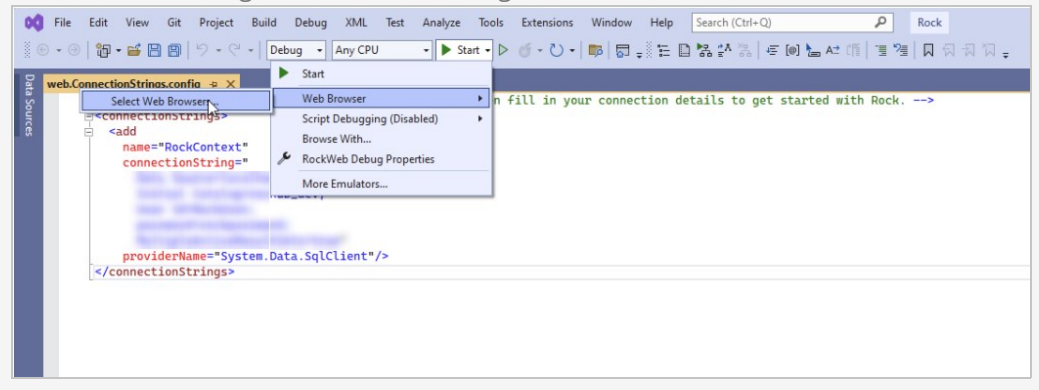
## Visual Studio Workloads

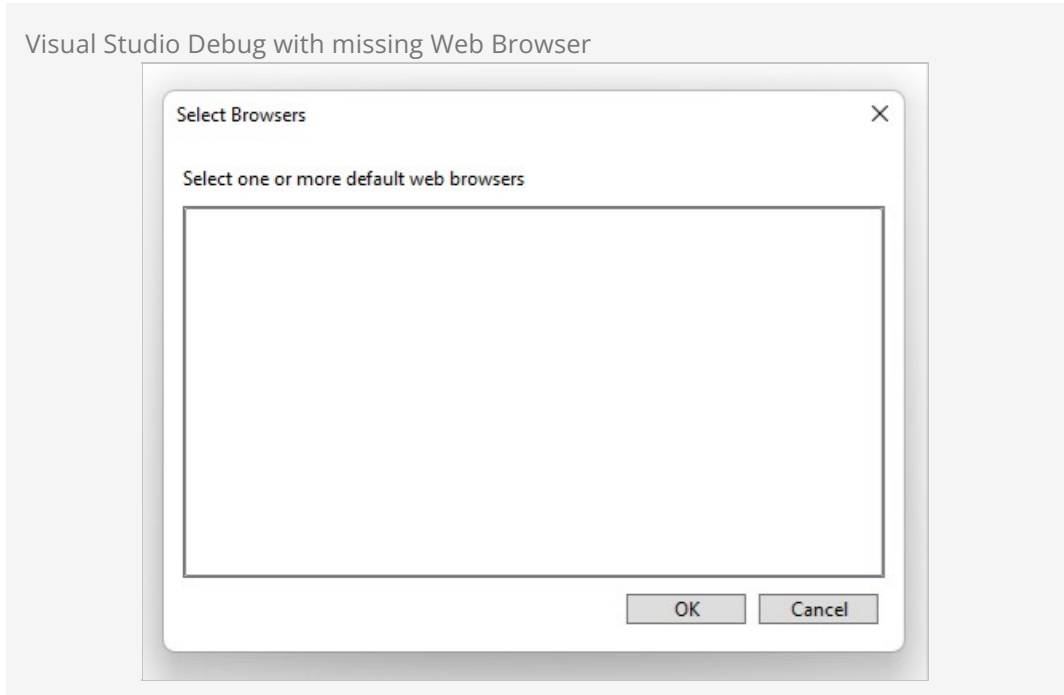


## Troubleshooting

If Visual Studio crashes upon running, make sure the Visual Studio "Start" > "Web Browser" has a browser selected.

## Visual Studio Debug Web Browser Setting





### Running

Once you have Visual Studio up and running, you're all set to open up the Rock solution file. Once you open that you'll want to adjust your `web.ConnectionStrings.config` file as described in the Setup Appendix.



# Appendix - Setup

## Opening your Solution

These are the steps you'll follow the first time you use the Rock solution.

1. Open the Rock.sln file. This should launch Visual Studio 2022.
2. Edit the `web.ConnectionStrings.config.sample` and replace the `[server_name]`, `[database_name]`, `[user_name]`, and `[password]` with the values for your system.

When you're done it might look something like this:

```
<add name="RockContext"
      connectionString="Data Source=localhost;Initial Catalog=RockTestDB;
      User Id=MyRockUser; password=yOursShouldBeBetter;MultipleActiveResultSets=true"
      providerName="System.Data.SqlClient"/>
```

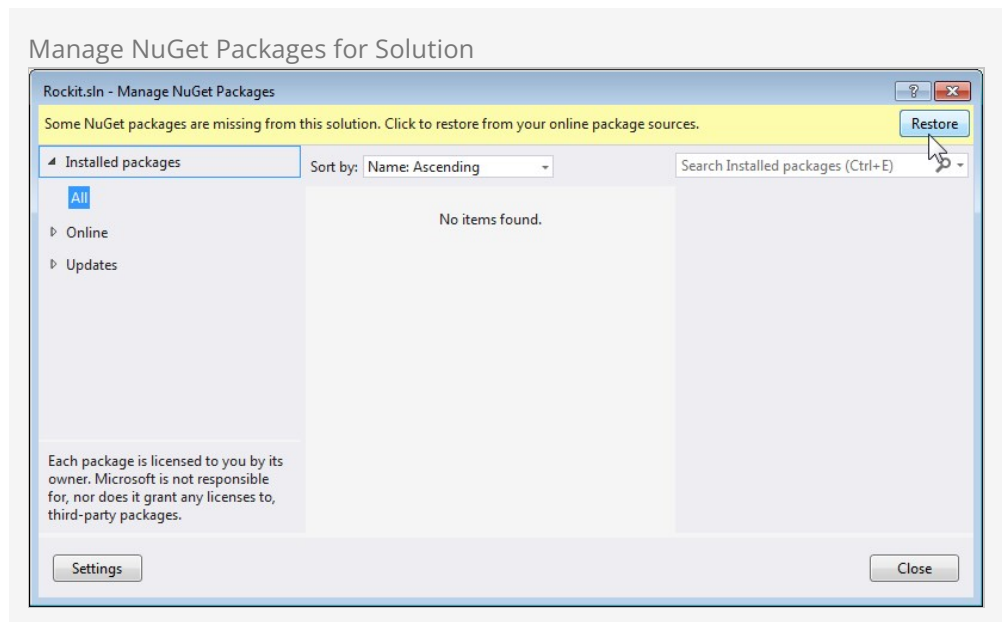
### Important!

Make sure the SQL User Id you use has the dbcreator role. The first time Rock runs it will see that the database does not exist and will need to create it for you.

**Note:** If using SQL Express / LocalDB Edition, your connection string will look a bit different and also needs to include some other parameters as seen here:

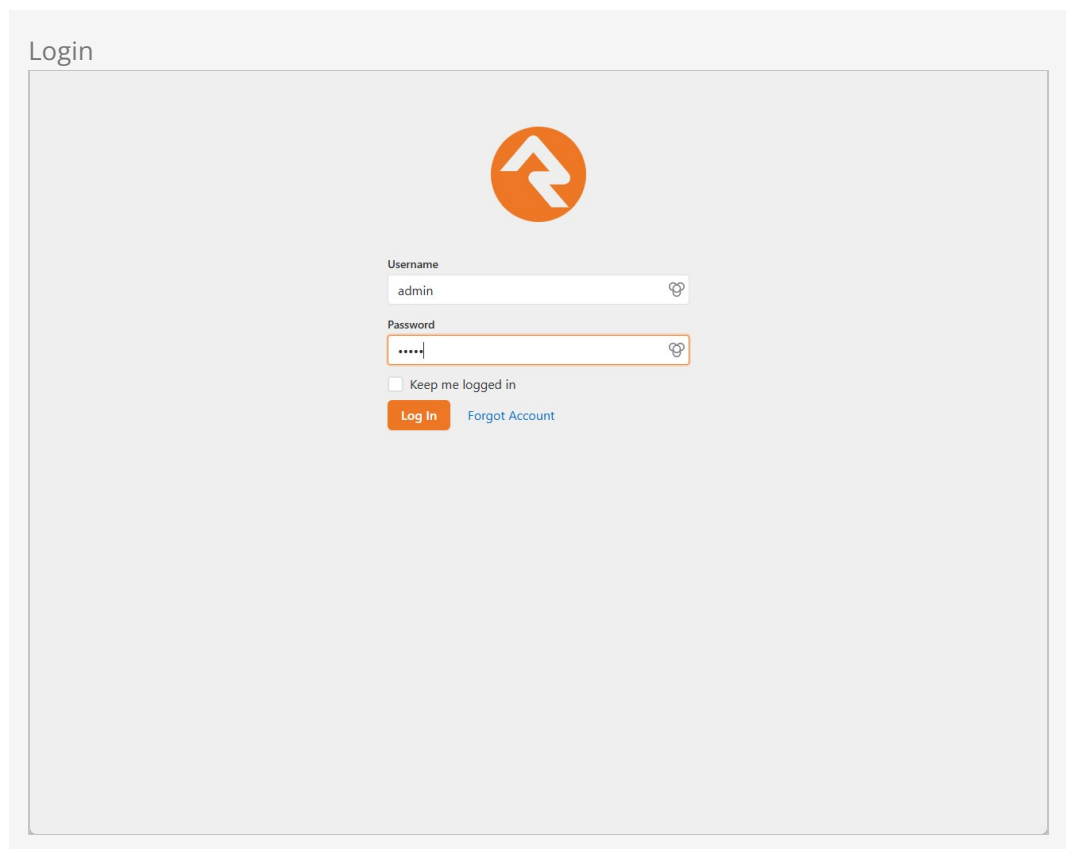
```
<add name="RockContext"
      connectionString="Server=(localdb)\v11.0; Initial Catalog=RockTestDB;
      Integrated Security=true;MultipleActiveResultSets=true; Persist Security Info=true
;"
      providerName="System.Data.SqlClient"/>
```

3. **!** Then **rename the file** to `web.ConnectionStrings.config`
4. Go to Tools > NuGet Package Manager > Manage NuGet Packages for Solution...
5. If you see a `Restore` button you'll need to click it in order to fetch the required open-source libraries Rock needs to compile. *We don't ship them in the SDK in order to keep the file size small.* After clicking "Restore" you can close the window.

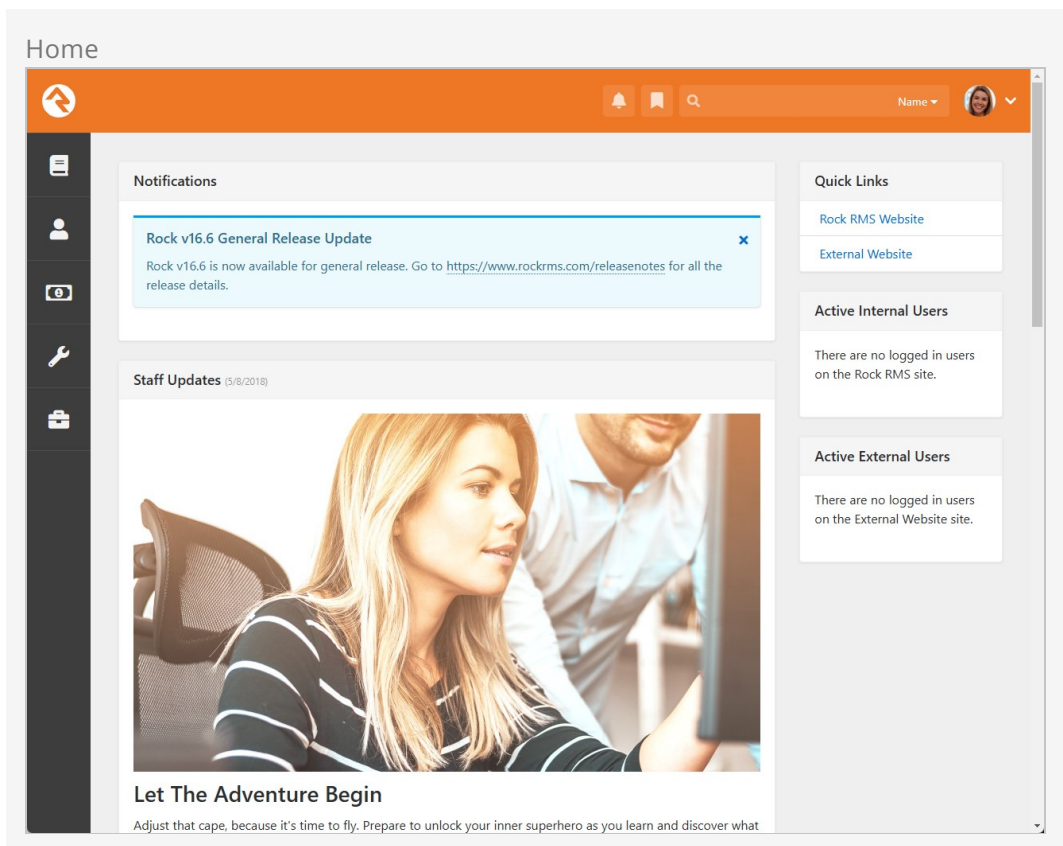


Press F5 to build and run (debug) Rock. After completing the compile/build process, it will start your web-browser (on something like <http://localhost:57566/>) and you'll see a white screen for several minutes while it creates the database.

When finished, you will see a Login screen:



...and after logging in with 'admin' you should see this:



That's it. Happy coding!

### Updating your Environment

Steps to keep your environment up-to-date with upcoming Rock releases:

1. Subscribe to our developer group (in the Community Developer Subscribe sidebar) to get notified when a release goes alpha.
2. Join the #develop channel on our [community.rockrms.com/chat](https://community.rockrms.com/chat). Let us know you're new and a friendly developer in the community should greet you there.
3. Pull the latest from the Rock repo as needed. We use a Gitflow Branching Strategy so if you wanted to only work from a particular release, you can pull that particular `release-x.y.z` branch. Hotfix branches are `hotfix-x.y.z`.