Simio

Forward Thinking

Using Git in the Simio Forum

Jan 2019 (Dhouck)

Contents

Overview

This API Note describes how to use Git and GitHub when using those Simio Forum examples that employ Git.

Git vs GitHub. In a nutshell, Git is a version control system and GitHub is a website devoted to hosting projects that use Git.

What is Git? From Wikipedia: "**Git** is a version-control system for tracking changes in computer files and coordinating work on those files among multiple people. It is primarily used for source-code management in software development,[8] but it can be used to keep track of changes in any set of files."

What is GitHub? GitHub is the largest host of source code in the world with 57 million repositories, and – according to Wikipedia: "**GitHub Inc**. is a web-based hosting service for version control using Git. It is mostly used for computer code. It offers all of the distributed version control and source code management (SCM) functionality of Git as well as adding its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management, and wikis for every project."

At Simio, we use Git for all our source control management, and - starting in 2019 - will be using it as an optional distribution vehicle for some items posted on the forums, particularly for API projects, such as user extensions.

Why use Git for this?

Some of the problems with simply doing file copy to distribute files in the forum

- Difficult to update

- Impossible to get previous versions

- You can't look at an individual file without a full download

- No history information.

- You must download the entire package to look at individual files

- Often dependencies get lost

- Difficult to collaborate with the user community

Git (with the use of GitHub) will help to solve these issues.

How the Simio Forum uses Git

Simio has a repository on the web site GitHub called SimioLLC. The URL is https://github.com/SimioLLC .

In the forum posting that choose to use Git will be a reference to the GitHub project. For example, here is the top-level SimioLLC GitHub repository:

https://github.com/SimioLLC:
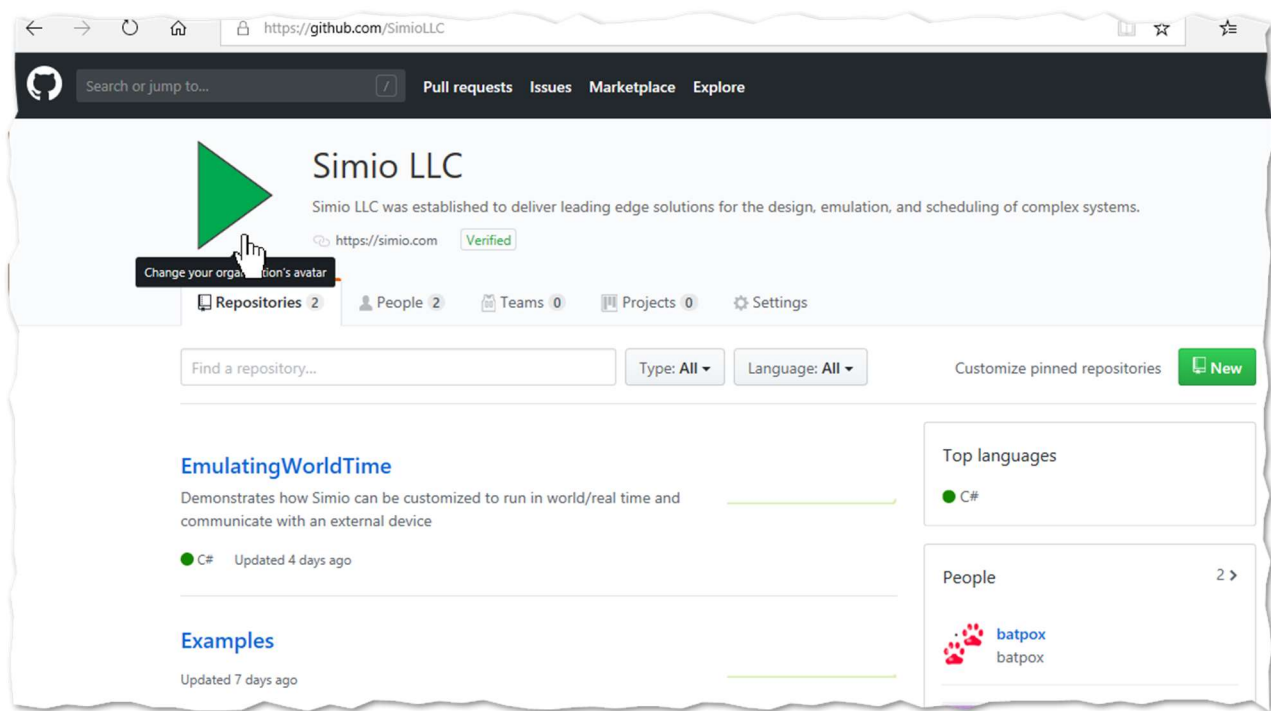
Examining a Project

At the time of writing this document, the SimioLLC repository shows four projects:

1. Using GitHub

2. EmulatingWorldTime

3. Examples

As it just happens, the first repository contains documents (including this document), while the second and third are code repositories.We'll use these samples to show different ways to access these documents.

First, we'll look at project based on code, which is a Simio User-Extension. Clicking on EmulatingWorldTime sends us to that project:
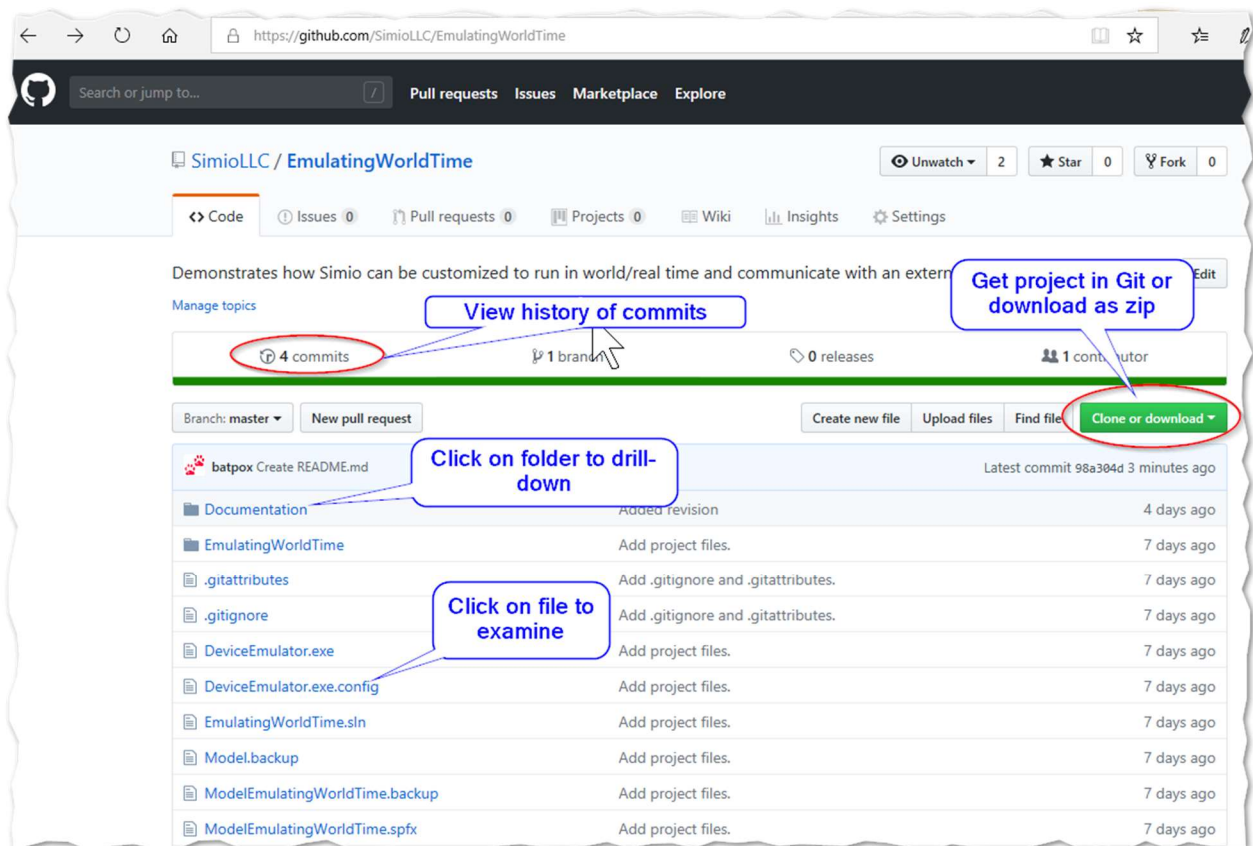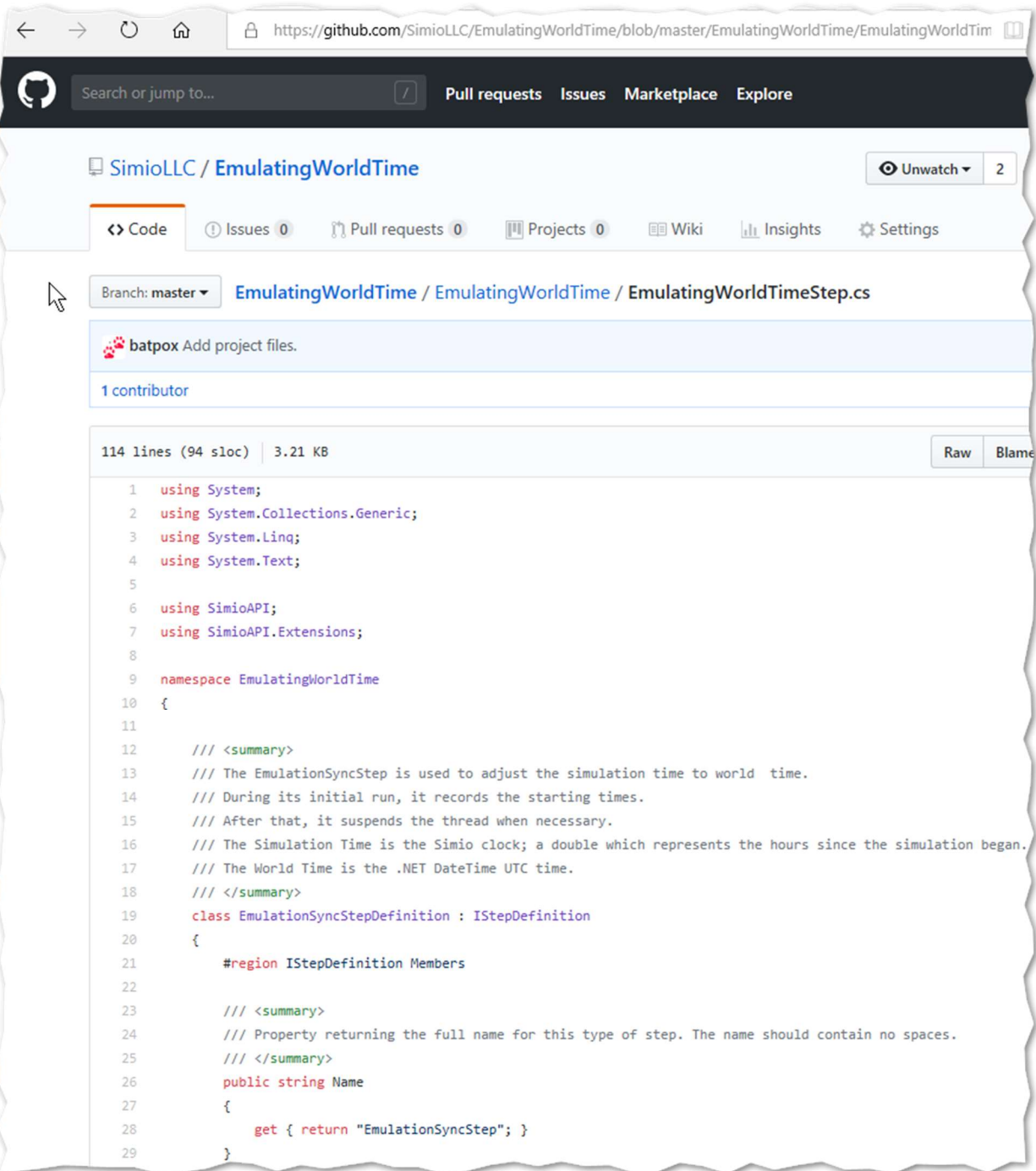

We can click on the folders and files directly, and GitHub will allow us to navigate into the folder or give us a quick look at the contents of the files.

For an example we'll use the EmulatingWorldTime project. Let's say we want to see the code module EmulatingWorldTimeStep.cs. The code in this case live under the folder EmulatingWorldTime, so click on that to give us the code files:
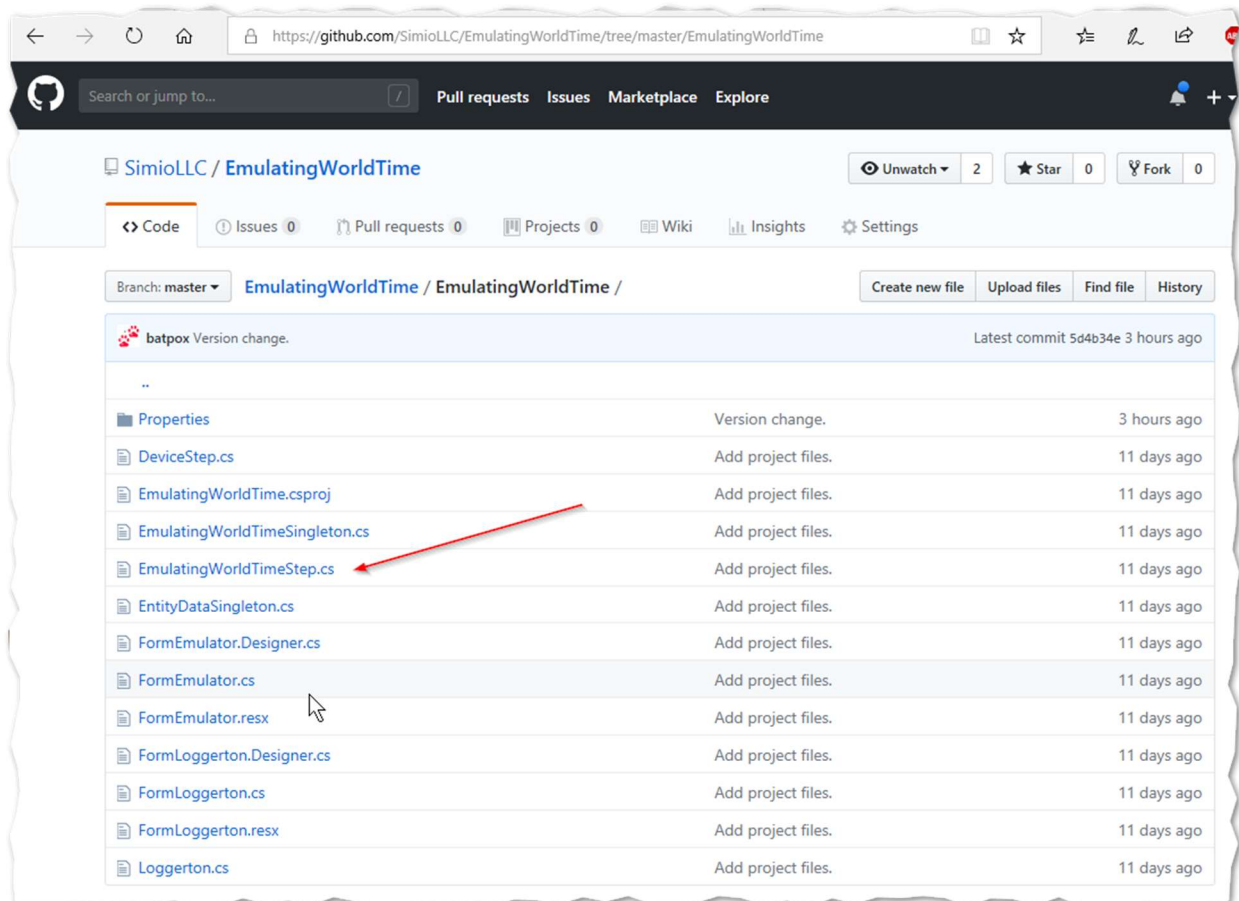
And then we click on EmulatingWorldTimeStep.cs. GitHub not only shows the contents of the files, but also recognizes it as a CSharp file and conveniently displays it with syntax highlighting:

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F o r w a r d   T h i n k i n g

Search or jump to...   Pull requests   Issues   Marketplace   Explore

SimioLLC / **EmulatingWorldTime**   👁 Unwatch ▾   2

<> Code   ⓘ Issues 0   Pull requests 0   Projects 0   Wiki   Insights   Settings

Branch: master ▾   **EmulatingWorldTime** / **EmulatingWorldTime** / **EmulatingWorldTimeStep.cs**

🐾 **batpox** Add project files.

1 contributor

114 lines (94 sloc) | 3.21 KB   Raw   Blame

```csharp
 1    using System;
 2    using System.Collections.Generic;
 3    using System.Linq;
 4    using System.Text;
 5
 6    using SimioAPI;
 7    using SimioAPI.Extensions;
 8
 9    namespace EmulatingWorldTime
10    {
11
12        /// <summary>
13        /// The EmulationSyncStep is used to adjust the simulation time to world  time.
14        /// During its initial run, it records the starting times.
15        /// After that, it suspends the thread when necessary.
16        /// The Simulation Time is the Simio clock; a double which represents the hours since the simulation began.
17        /// The World Time is the .NET DateTime UTC time.
18        /// </summary>
19        class EmulationSyncStepDefinition : IStepDefinition
20        {
21            #region IStepDefinition Members
22
23            /// <summary>
24            /// Property returning the full name for this type of step. The name should contain no spaces.
25            /// </summary>
26            public string Name
27            {
28                get { return "EmulationSyncStep"; }
29            }
```

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Getting the Project Files to Your Machine

Clicking on the green "Clone or download" button presents two options. You can either

1. "Open in Desktop", which means do a Git Clone, or

2. Download the root or "master" as a zipped (compressed) folder
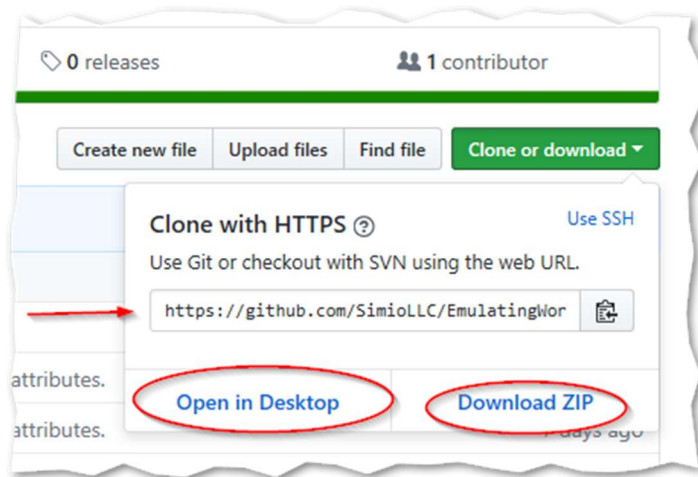
Not that it gives you a URL (the string beginning with https://github... to use for Git or SVN (SVN is another type of document repository). We'll be using Git.

Open in Desktop Option

With "Open in Desktop" we are going to create what is called a Git "clone" of the repository. This means a copy of the Simio Forum repository at a location of your choosing.

When you click the button your Windows OS will see if you have a default program to handle Git repositories.

Opening the Project in Visual Studio

In this section, we'll use this the Clone (i.e. "Open in Desktop") option to open the project in VS (Visual Studio 2017). Start VS and create new project and then go to Team Explorer.
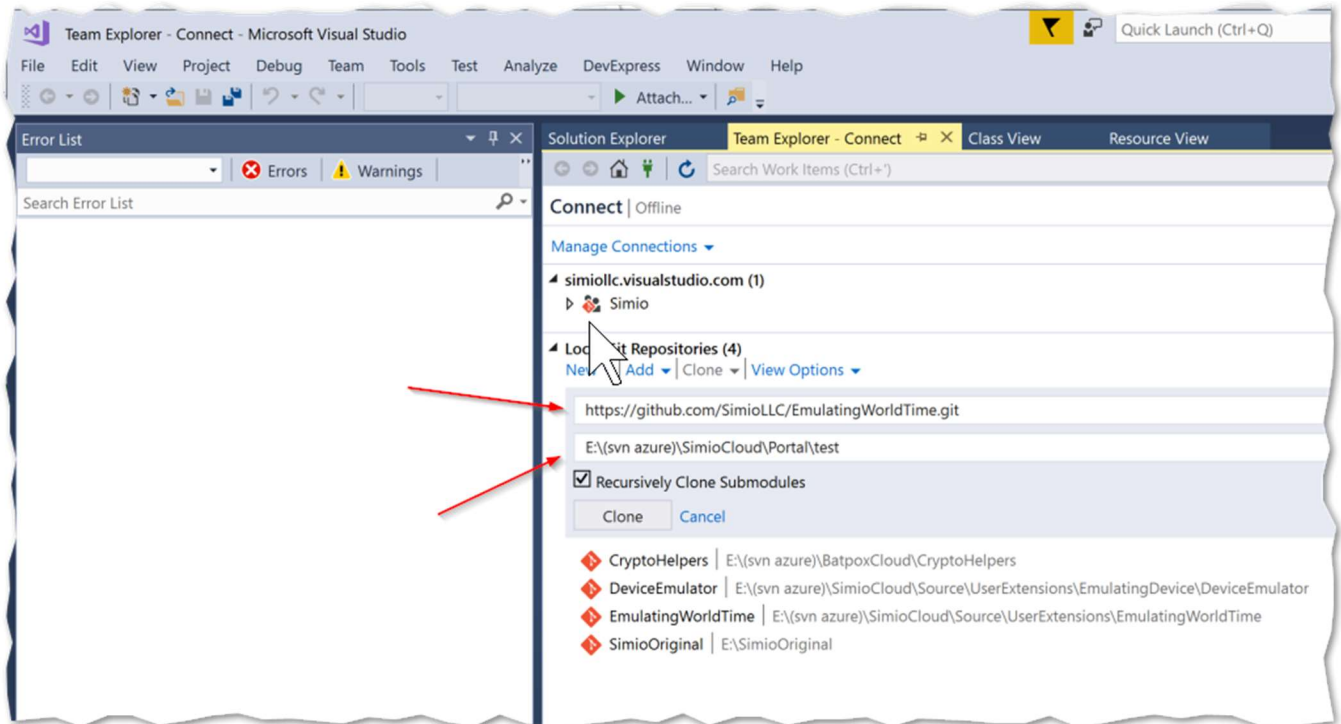

Take the URL that you copied from GitHub and paste it into the upper box, and then select a location on your desktop for the lower box. And then press the "Clone" button.

Within a few seconds you should see your project in a build-able state and ready to use.
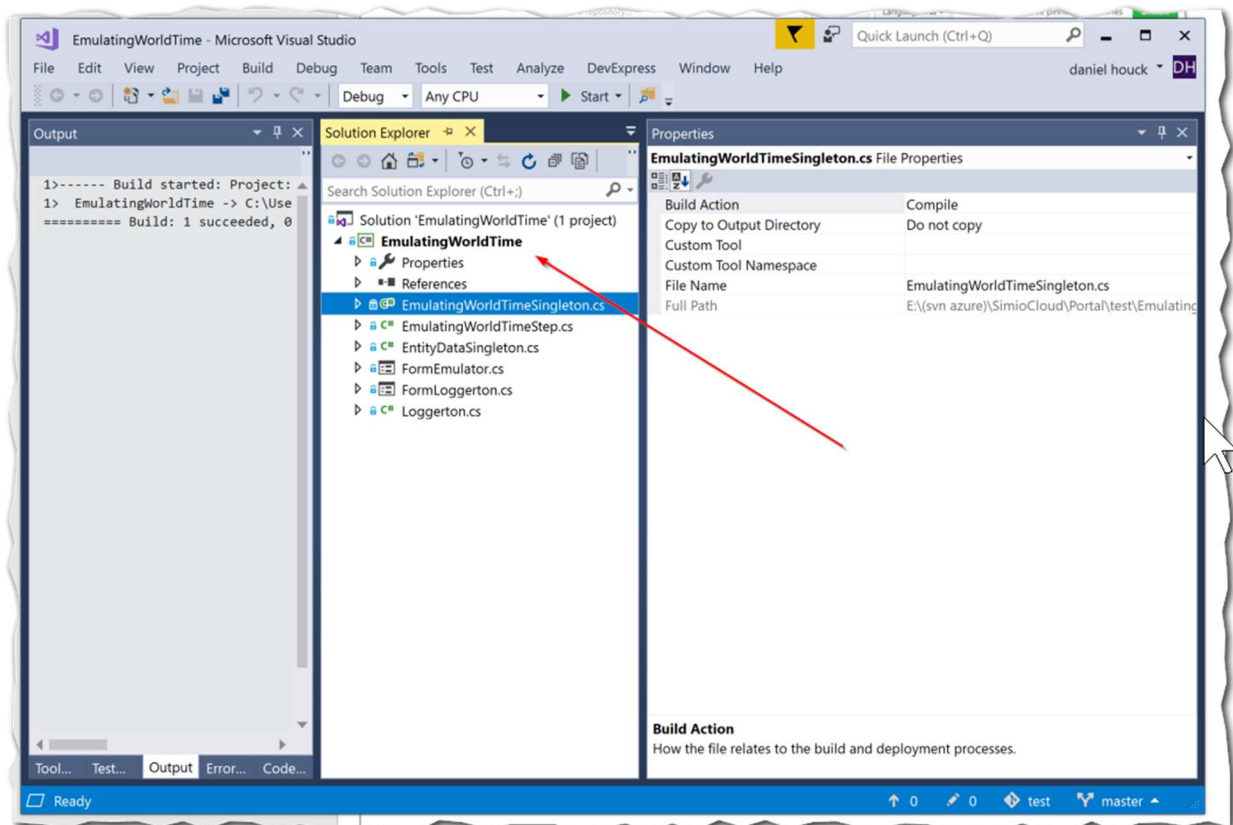
At this point, you not only have a full copy of the project, but you also can get the latest version if the project is updated. Furthermore, with permission of the author, you can make changes and request that the author "pull" your changes back into the project.
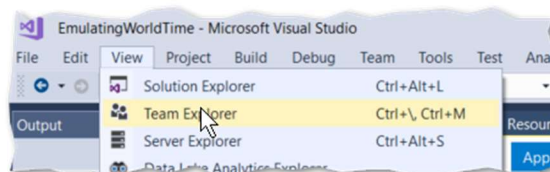
Use the View > Team Explorer to bring up the Team Explorer window. From Home you can do things like view the history of Changes or Sync with the repository.
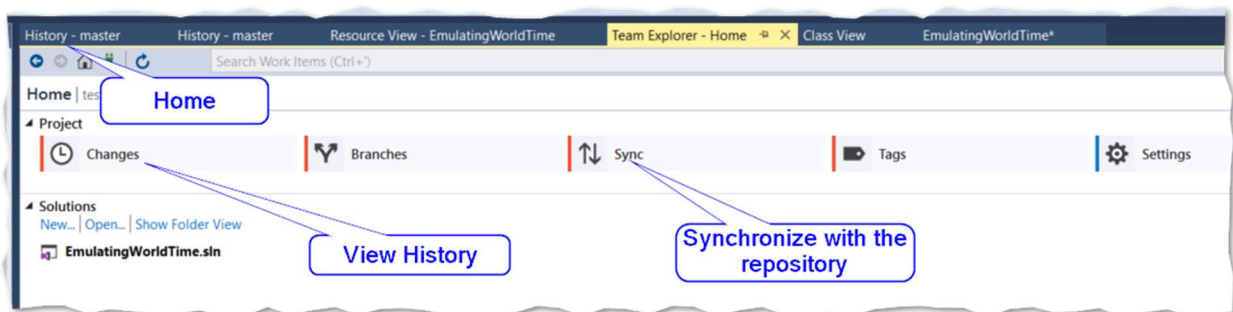
This ability to collaborate does not make sense for all Simio forum projects, but will be quite valuable for some.

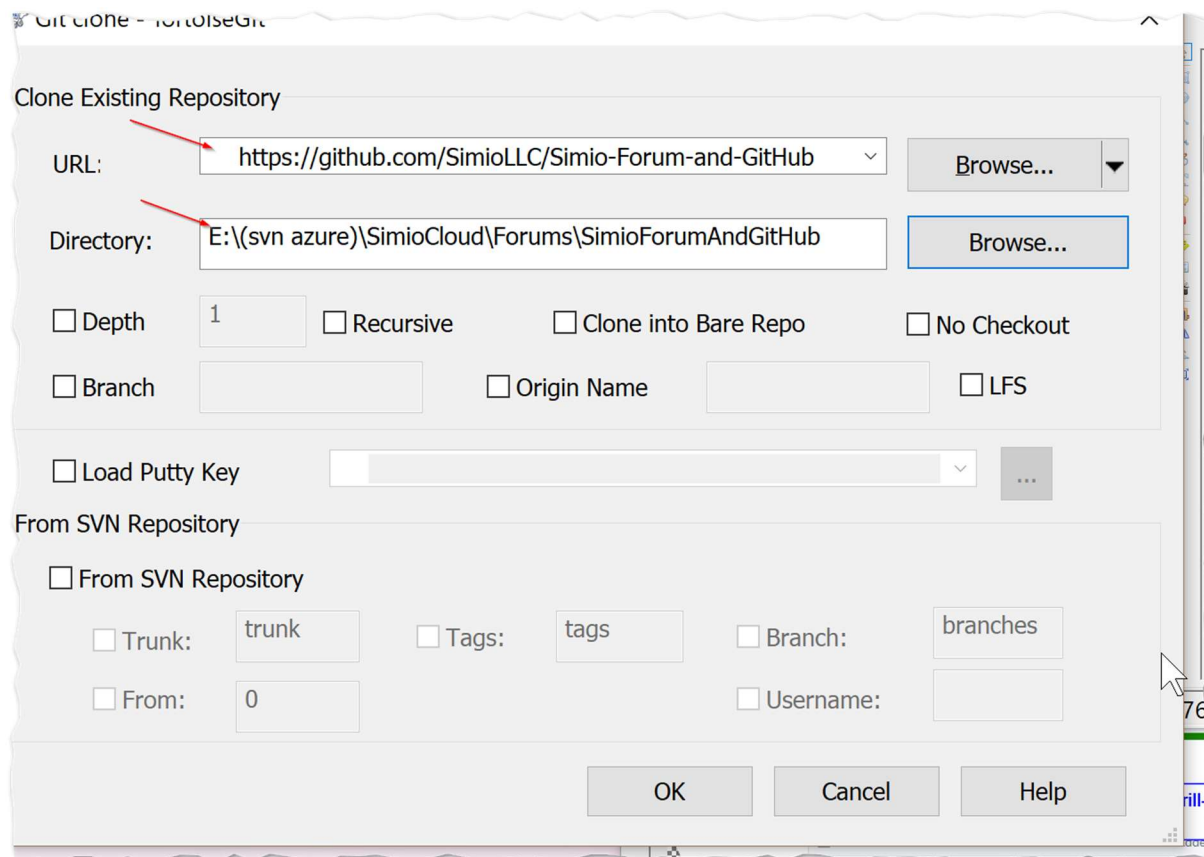Whether or not you choose to collaborate, the use of Git is useful to Simio as it makes it easier to make changes and have a complete history of submissions.

The full scope of Git is beyond this document, so please consult the References section of this document.

Opening the Project in Some Other Git-Enabled App

You don't have to use Visual Studio to synchronize these projects on your computer. You can also simply use the Windows file system to see and make changes to the projects. This is useful for non-VS projects, like documents or Simio projects.

On my computer, I have the free Tortoise Git application, so when I made this document, I used it to create a git repository on my local drive.

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E:\(svn azure)\SimioCloud\F...\Using Git on the Simio Forum.pdf - Commit - To...   —   ☐   ✕

Commit to: master   ☐ new branch

Message:

```
The resulting PDF file
```

1/23

☐ Amend Last Commit

☐ Set author date

☐ Set author   [Add Signed-off-by]

Changes made (double-click on file for diff):

Check: **All None** *Unversioned* **Versioned Added** *Deleted Modified* **Files** *Submodules*

Path	Extension	Status	Lines added	Lines removed
☑ 🖹 Using Git on the Simio Forum.pdf	.pdf	Added	-	-

☐ Show Unversioned Files   1 files selected, 1 files total

☐ Do not autoselect submodules   View Patch>>

☐ Show Whole Project

☐ Message only   [Commit & Push ▼]   [Cancel]   [Help]

Download Zip Option

This option is self-explanatory; when you click on this button you are prompted for a location for the Zip file, which you can extract and use any way you wish. This is very similar to how file distribution has always been done in the Simio Forum.
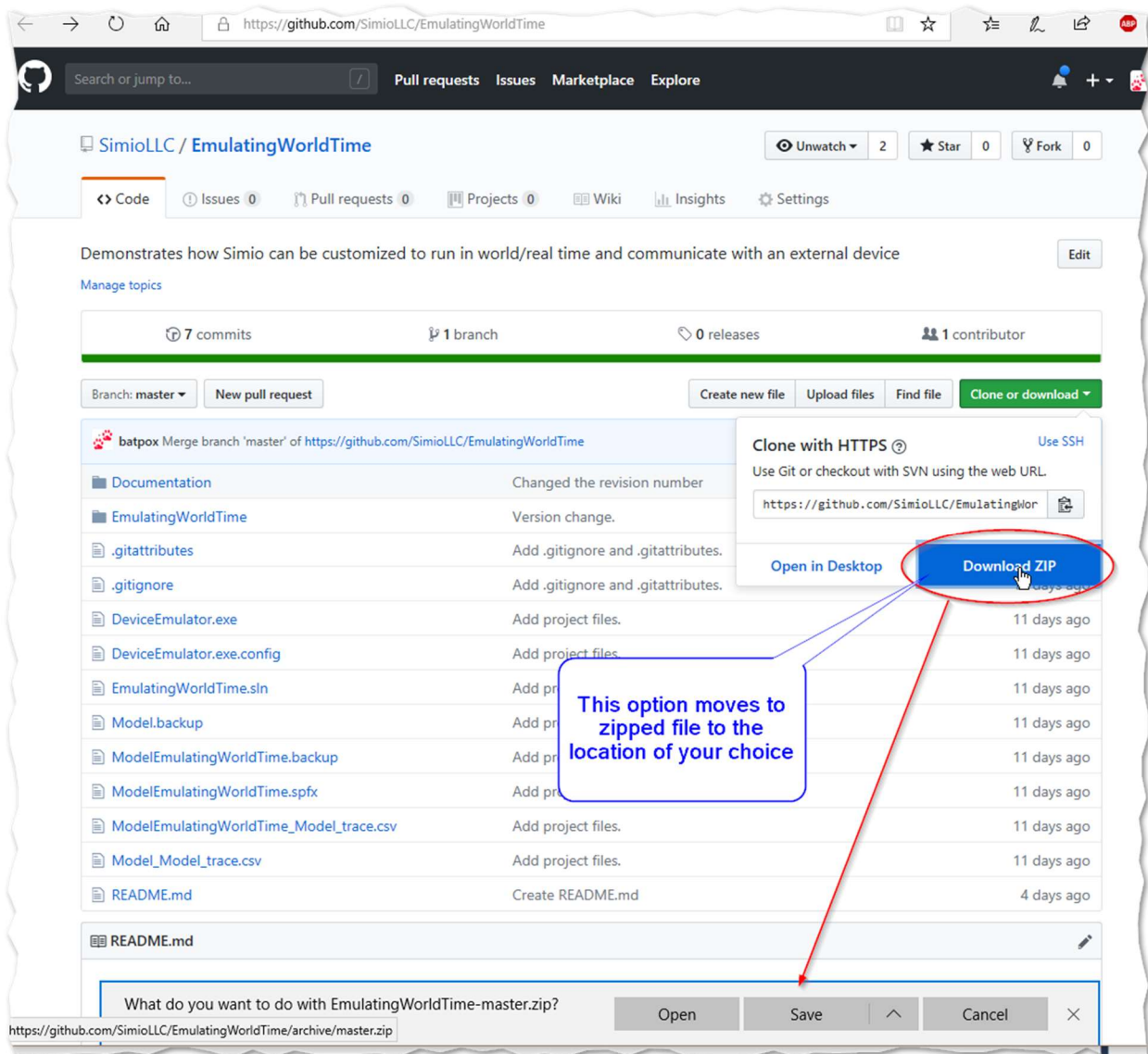
Git References

Here are some Git and GitHub references.

Wikipedia explains GitHub:

https://en.wikipedia.org/wiki/GitHub

Tortoise Git Application integrates git with your Windows system. It is free and located here:

https://tortoisegit.org/

Wikipedia explanation of Git:

https://en.wikipedia.org/wiki/Git

The Git home site, which includes tutorials:

https://git-scm.com/

A good free Kindle book for learning Git is "Ry's Git Tutorial":

https://www.amazon.com/Rys-Git-Tutorial-Ryan-Hodson-ebook/dp/B00QFIA5OC/ref=sr_1_1?ie=UTF8&qid=1547844178&sr=8-1&keywords=ry%27s+git+tutorial

A blog on Git that is well written and clears up questions

http://alblue.bandlem.com/Tag/git/