



CMPS 327: Introduction to Video Game Design and Development

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Fall 2020

Lecture 4: GitHub and Unity 3D

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What is Git and Github?

- Git is a version control system that helps us manage our project files and allows multiple software developers to work on the same project easily
- Github is a web based service that allows its users to upload repositories. Great website to look at open source code and a great place to show off your projects

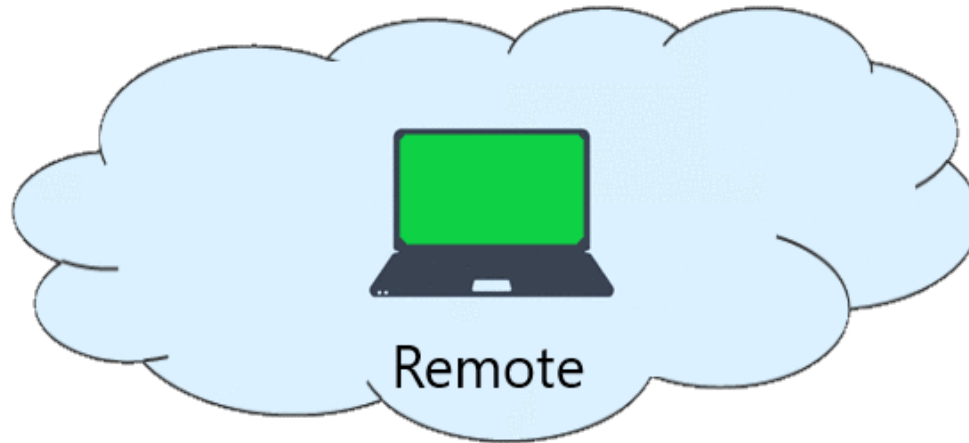
Why use Git?

- Git is great at tracking the history of the project
- Provides an easy to use workflow for allowing new features to be added and tested via branches
- Git makes version control easy. It allows you to go back and reset to a previous stable version.
- When used properly, large amounts of developers can be working on the same codebase simultaneously without issue.

Git Terminology

- Repository - The folder being tracked by git
- Remote - A copy of the original branch located on the server (also called the origin)
- Local - A copy of a repository that lives on your computer instead of on a server
- Clone - The command that copies a repo to your local machine

Clone From Remote

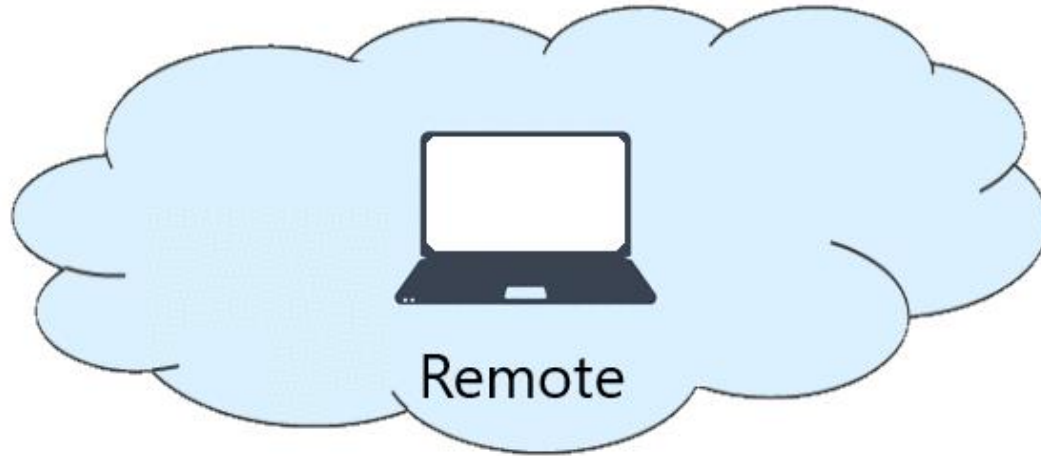


Local

Git Terminology

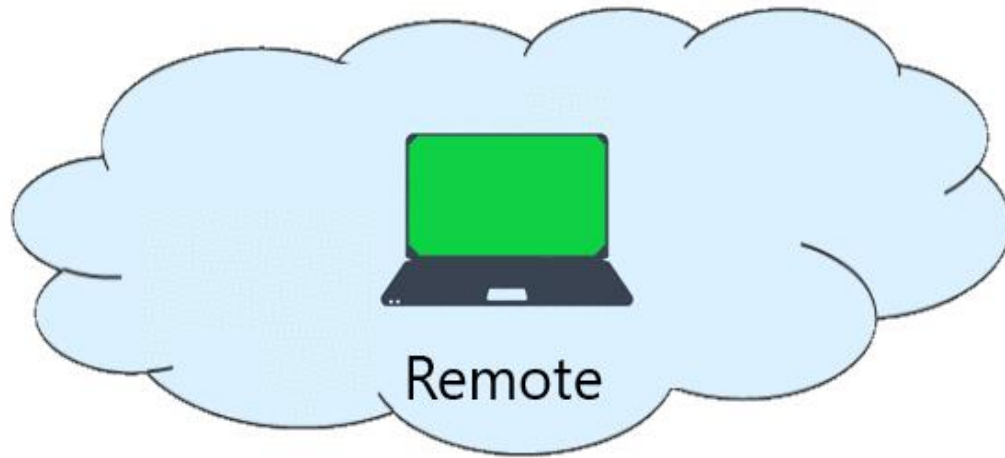
- Commit - Snapshot of all changes to files. Usually accompanied with a message detailing what has changed.
- Revert – Undo previous commits
- Push - Updates local changes to the remote
- Pull - Downloads and merges the remote branch locally

Commit and Push



Local

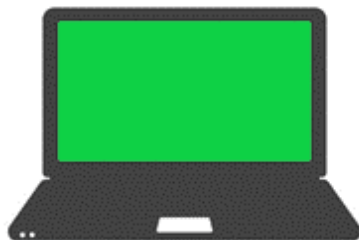
Pull



Local



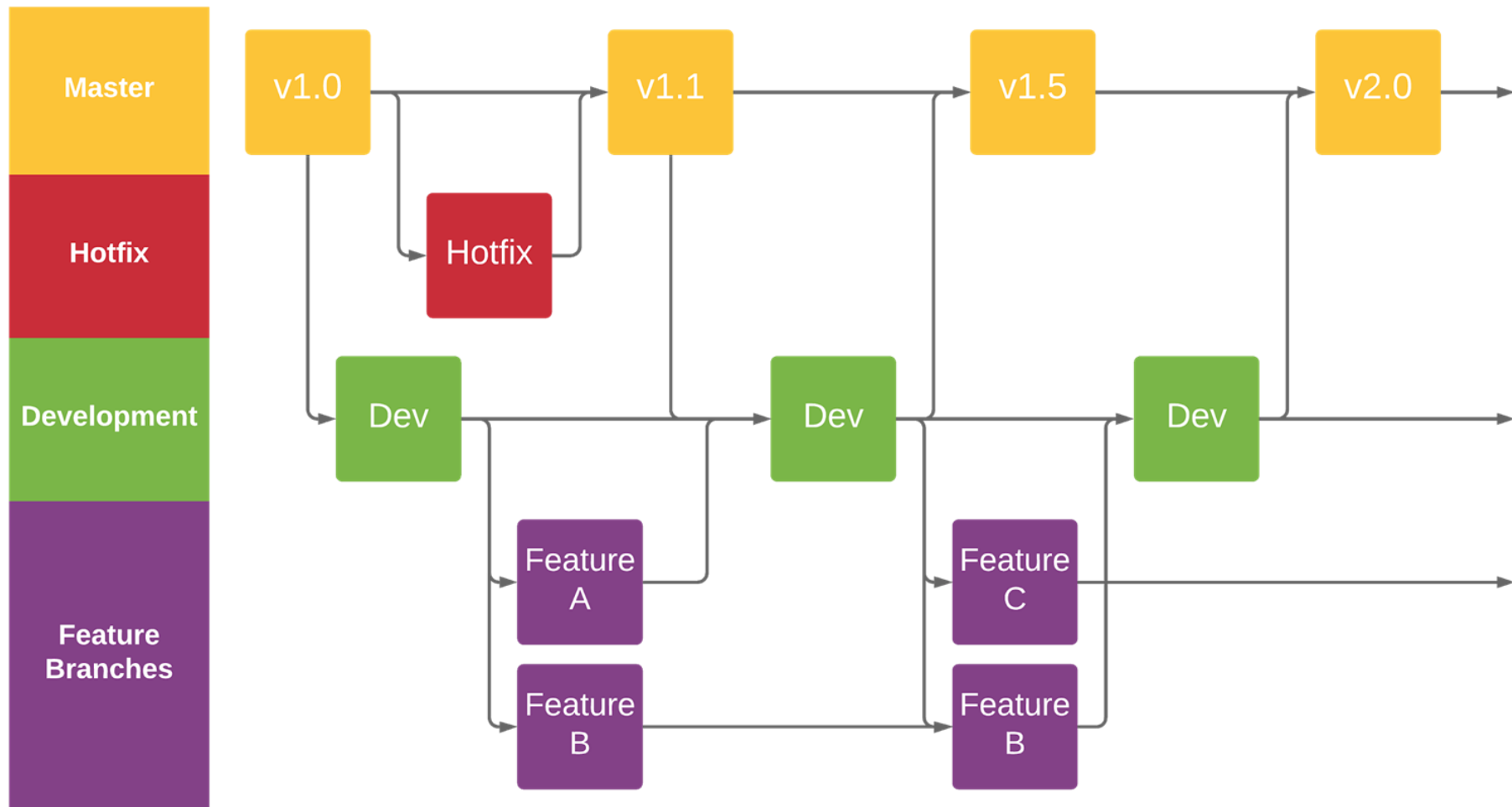
User A commits
new code



Git Terminology

- Master - Primary branch all others are based off of
- Branch - A version of the repository that diverges from the master
- Merge - Brings the contents of another branch into the current branch
- Head - Current branch

Simple Git Workflow



Remote

Remote Master

Remote Branch

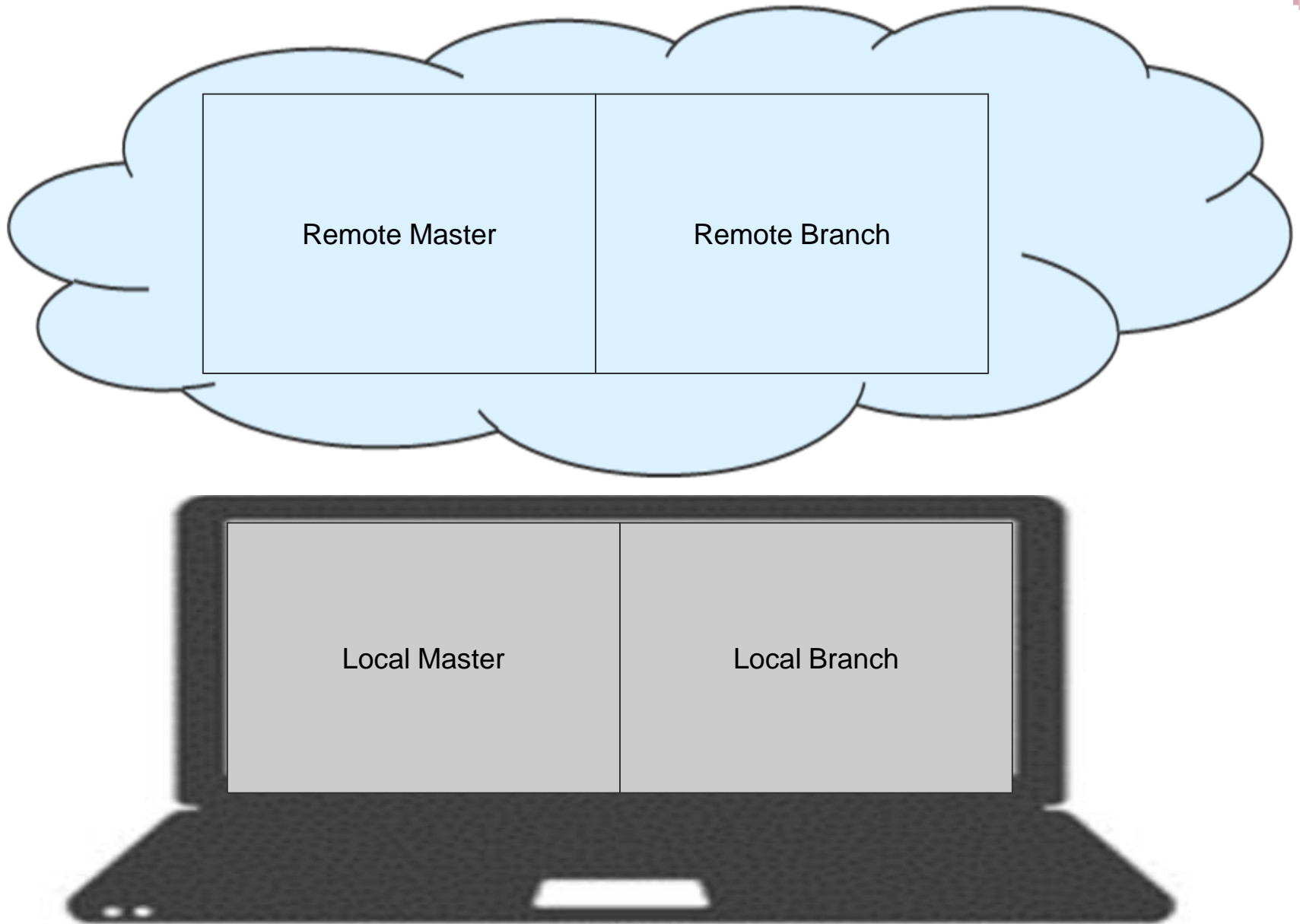
Local

Local Master

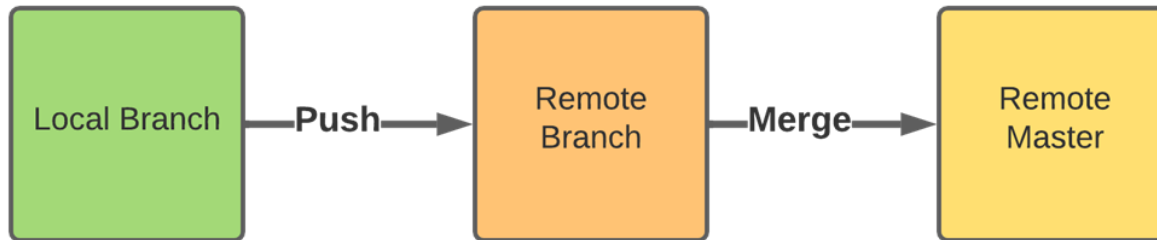
Local Branch

Master

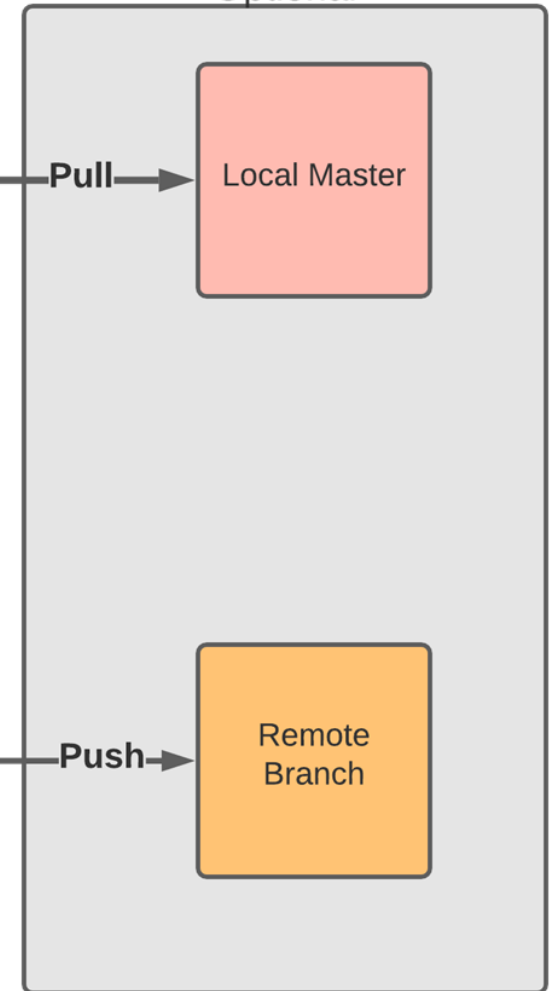
Branch



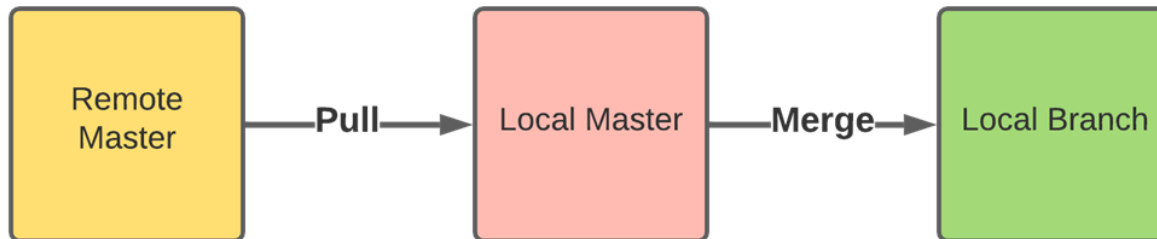
Pushing and Merging with Master



Optional



Pulling and Merging with Local



Unity Specific Issues

- Unity creates hundreds of temporary files to make booting up quicker or to store local settings.
- Just opening and closing unity with no changes being made can modify these temporary files.
- A lot of which aren't needed to be tracked and cause unnecessary commits. Unity can rebuild itself without these files.

Creating a .gitignore

- Github provides a standard .gitignore tailored to unity (recommended)

```
.gitignore
# This .gitignore file should be placed at the root of your Unity project directory
#
# Get latest from https://github.com/github/gitignore/blob/master/Unity.gitignore
#
/[Ll]ibrary/
/[Tt]emp/
/[Oo]bj/
/[Bb]uild/
/[Bb]uilds/
/[Ll]ogs/
/[Mm]emoryCaptures/

# Never ignore Asset meta data
!/[Aa]ssets/**/*.meta
```


GitHub

github.com

Search or jump to...

Pull requests Issues Marketplace Explore

Gatorbite

Repositories

Find a repository...

New

ulhclab/OilRig

yitosheeul/trial

Gatorbite/OilRig

Gatorbite/GithubDemo

Gatorbite/Check

bburkman/CSCE_500

Gatorbite/test2

Show more

Your teams

Find a team...

ULGameLab/team-won-fp

ULGameLab/team-won

You've been added to the ulhclab organization!

Here are some quick tips for a first-time organization member.

- Use the switch context button in the upper left corner of this page to switch between your personal context (Gatorbite) and organizations you are a member of.
- After you switch contexts you'll see an organization-focused dashboard that lists out organization repositories and activities.

defunkt

Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you watch and people you follow.

Explore GitHub

ProTip! The feed shows you events from people you follow and repositories you watch.

Subscribe to your news feed

Securing software together

Introducing new ways to identify and prevent security vulnerabilities across your code base.

Welcome to the new dashboard. Get closer to the stuff you care about most.

Explore repositories

AirtestProject/Airtest

UI Automation Framework for Games and Apps

Python 3.1k

koreader/koreader

An ebook reader application supporting PDF, DjVu, EPUB, FB2 and many more formats, running on Cervantes, Kindle, Kobo, PocketBook and Android devices

Lua 5.3k

deltachat/deltachat-desktop

Email-based secure instant messaging for Desktop.

JavaScript 232

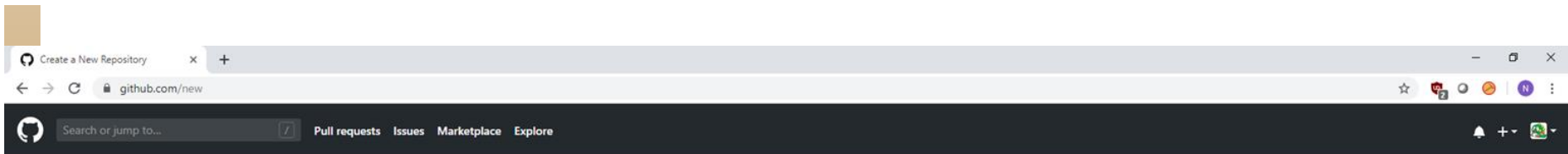
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Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner

Repository name *

Gatorbite

Great repository names are short and memorable. Need inspiration? How about symmetrical-potato?

Description (optional)

☒ Public

Anyone can see this repository. You choose who can commit.

☐ Private

You choose who can see and commit to this repository.

Skip this step if you're importing an existing repository.

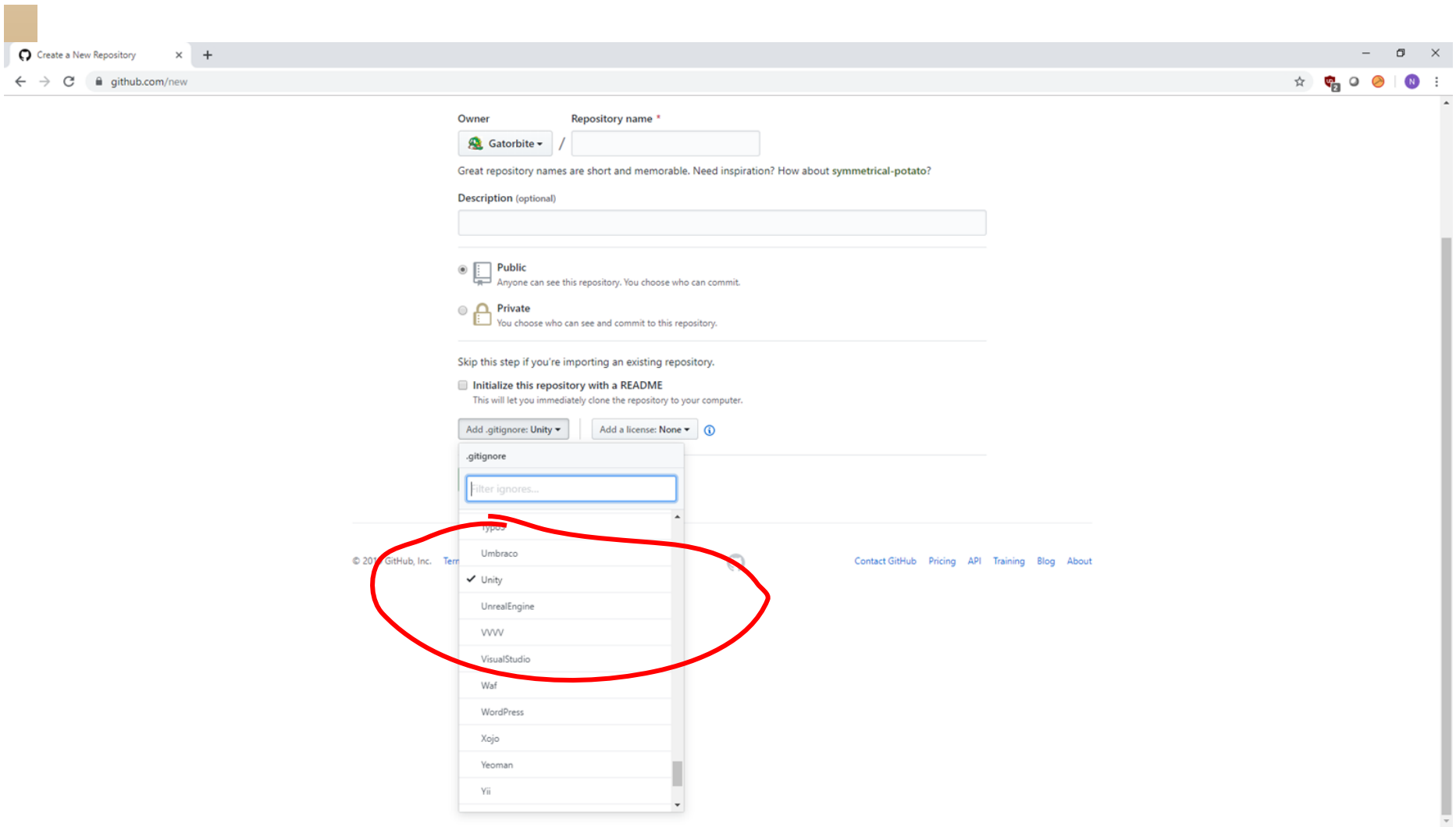
☒ Initialize this repository with a README

This will let you immediately clone the repository to your computer.

Add .gitignore: None

Add license: None

Create repository

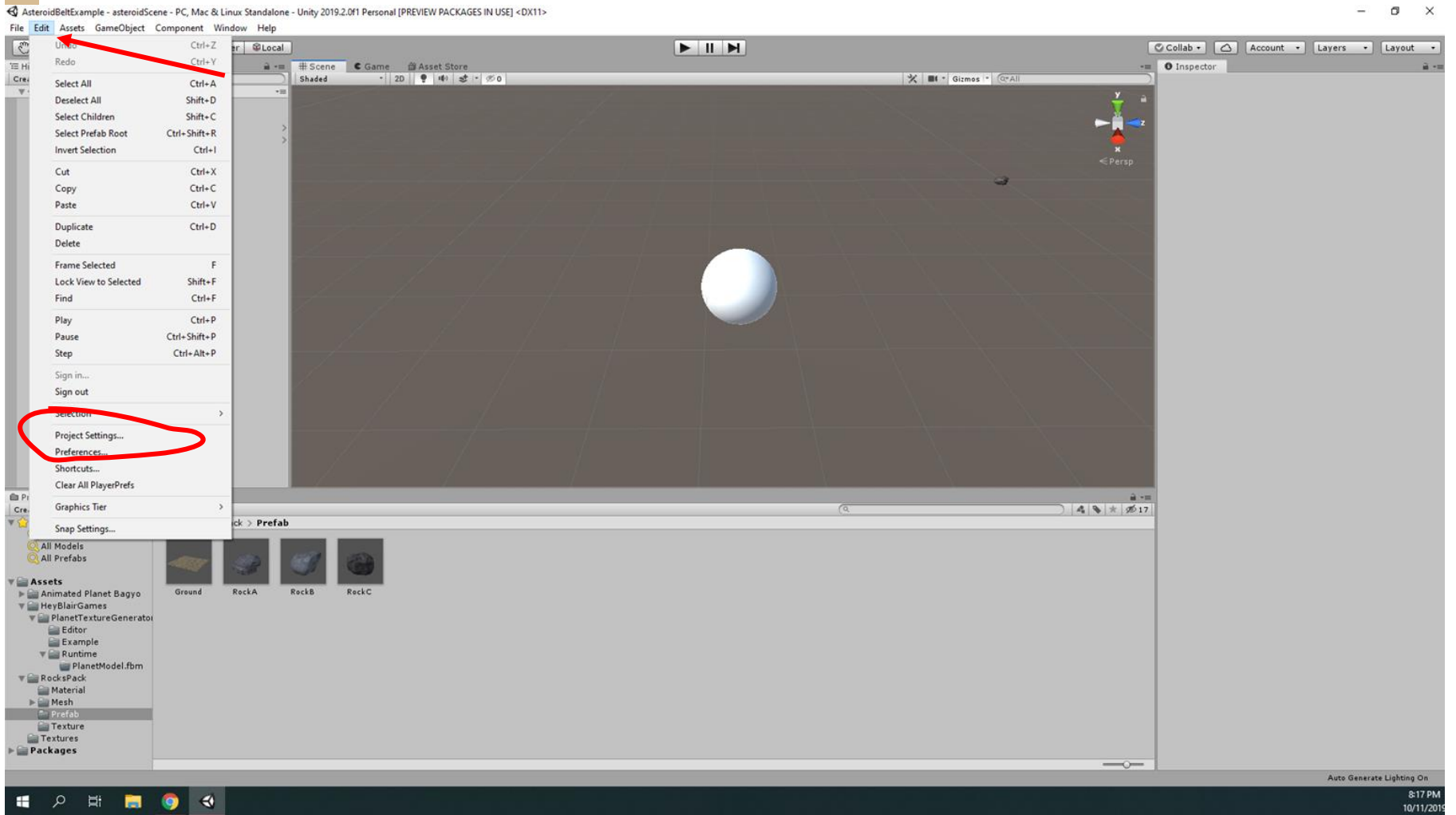


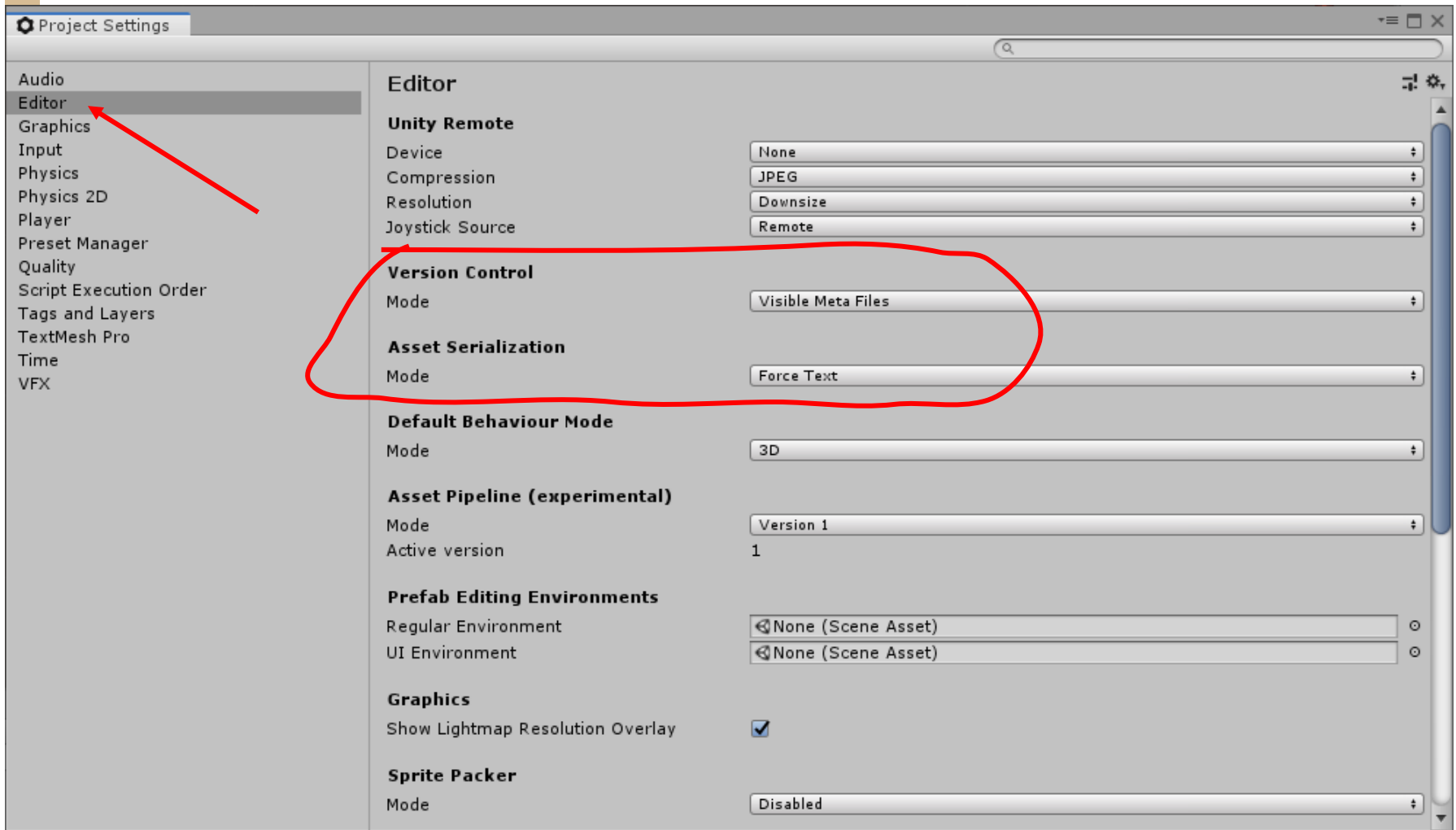
Unity Specific Issues

- Assets in unity have a hidden .meta file
- It stores the unique ID of the asset. Renaming or moving the asset to a different folder will not change its ID
- This file, if not included, will break all references to the asset in the scene

Unity Specific Issues

- Unity, by default, will save large files in binary form (such as scene files)
- Git is not able to track these binary files well without special tools
- Solving the meta file issue and the binary file issue is easy and are in the same spot

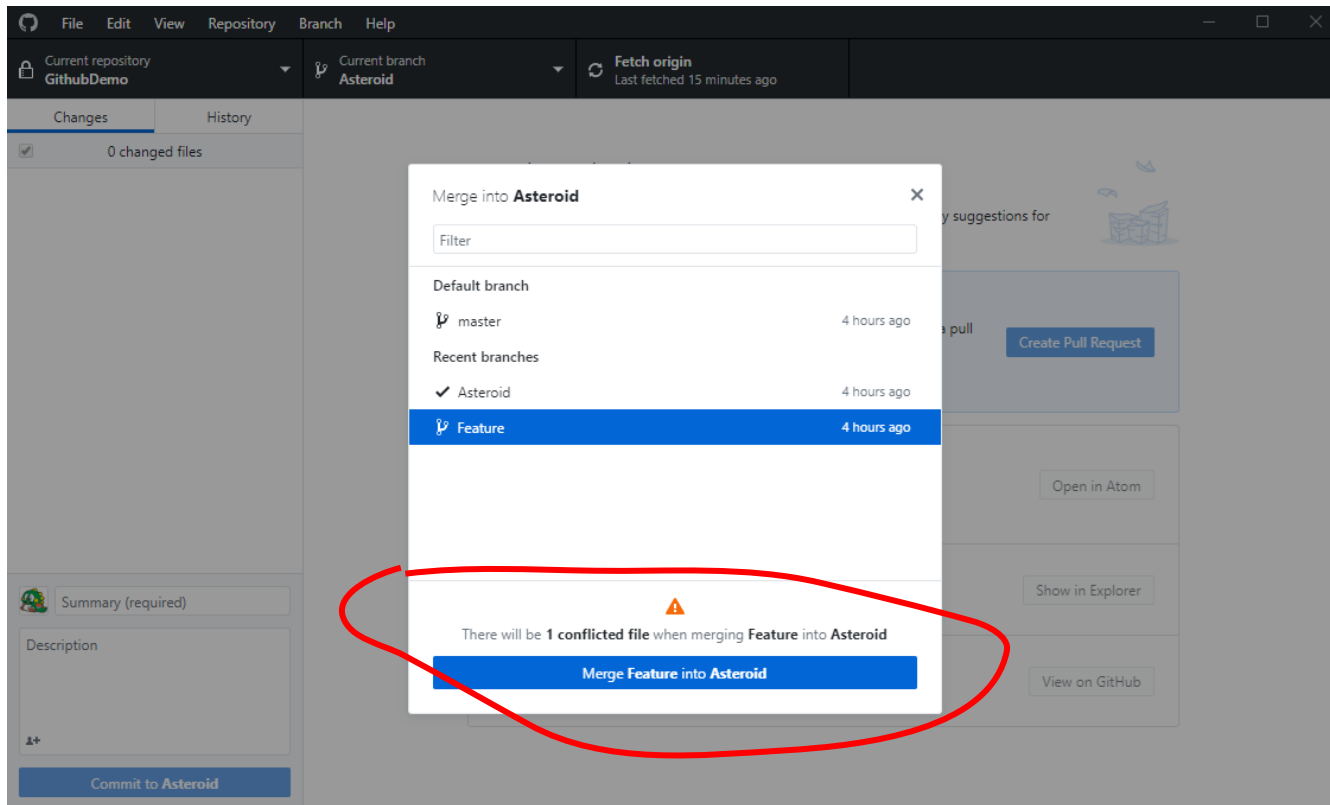




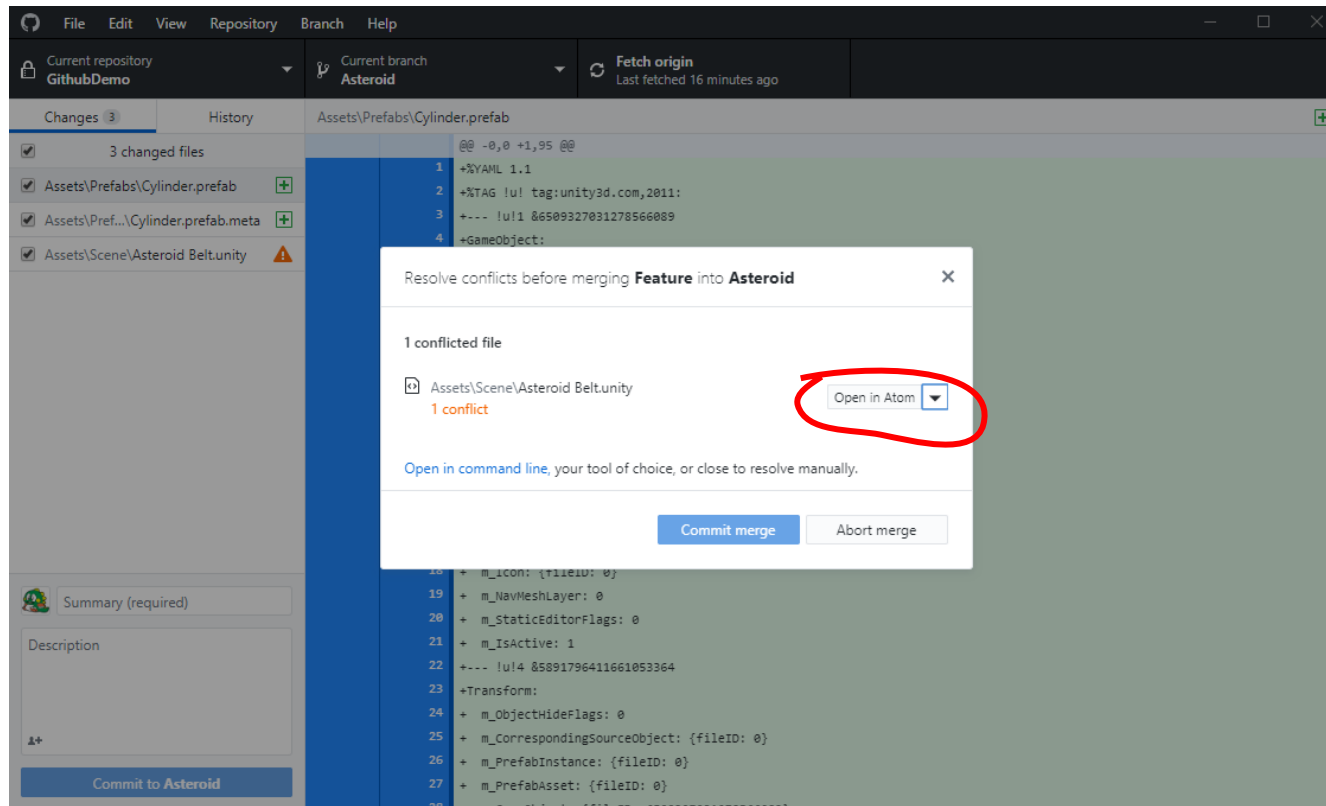
Solving Merge Conflicts

- Even if you follow all best practices, merge conflicts will happen.
- These will happen frequently during the course of development and are nothing to be afraid of.
- If you have a merge/diff tool (Atom recommended), they are very easy to manage
- Scene files will cause the majority of your merge conflicts

Merge Conflicts



Merge Conflicts



Asteroid Belt.unity — C:\Users\fishel\Documents\Github\GithubDemo\Assets\Scene — Atom

File Edit View Selection Find Packages Help

Welcome GuideAsteroid Belt.unity

```
436 value: 0.98991203
437 objectReference: {fileID: 0}
438 - target: {fileID: 4575490621420714142, guid: 216e237e6713a1644bc0ae07950b69df,
439   type: 3}
440 propertyPath: m_RootOrder
441 value: 3
442 objectReference: {fileID: 0}
443 - target: {fileID: 4575490621420714142, guid: 216e237e6713a1644bc0ae07950b69df,
444   type: 3}
445 propertyPath: m_LocalEulerAnglesHint.x
446 value: -4.1520004
447 objectReference: {fileID: 0}
448 - target: {fileID: 4575490621420714142, guid: 216e237e6713a1644bc0ae07950b69df,
449   type: 3}
450 propertyPath: m_LocalEulerAnglesHint.y
451 value: -4.4830003
452 objectReference: {fileID: 0}
453 - target: {fileID: 4575490621420714142, guid: 216e237e6713a1644bc0ae07950b69df,
454   type: 3}
455 propertyPath: m_LocalEulerAnglesHint.z
456 value: -14.9470005
457 objectReference: {fileID: 0}
458 - target: {fileID: 4575490621420714139, guid: 216e237e6713a1644bc0ae07950b69df,
459   type: 3}
460 propertyPath: m_Materials.Array.data[0]
461 value:
462 objectReference: {fileID: 2100000, guid: 3c05e5da78c98464b9dfe89ce338f127, type: 2}
463 - target: {fileID: 4575490621420714143, guid: 216e237e6713a1644bc0ae07950b69df,
464   type: 3}
465 propertyPath: cubePrefab
466 value:
467 <<<<<< HEAD
468 objectReference: {fileID: 100000, guid: ac8cd8e6320ae3e4b927387f08c24c7e, type: 3}
469 *****
470 objectReference: {fileID: 6509327031278566089, guid: 25e119293233f3f49a4b08a2e1157941,
471   type: 3}
472 >>>>>> Feature
473 m_RemovedComponents: []
474 m_SourcePrefab: {fileID: 100100000, guid: 216e237e6713a1644bc0ae07950b69df, type: 3}
475
```

Use me our changes

Use me their changes

C:\Users\fishel\Documents\Github\GithubDemo\Assets\Scene\Asteroid Belt.unity 1:1 CRLF UTF-8 Plain Text Asteroid Fetch GitHub Git (4)

Useful Tools

- [UnityHub](#) - Helps when you work with multiple projects that all use different versions of unity
- [GitHub Desktop](#) - GUI version of git (very easy to use)
- [Atom](#) - Merge/Diff tool
- [GitLFS](#) - Enables github to store large files on the remote. Must use command line git to enable