GDBS/SVBS Midterm Project Overview

Goal

These courses are designed to familiarize students with the **development process** by implementing and completing a multiple month game project as a team.

Who are we

Program Director:
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Department Chair:
Thomas Graham
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CD of AHI:
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CD of PP2:
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Lab Specialist:
Robert Martinez
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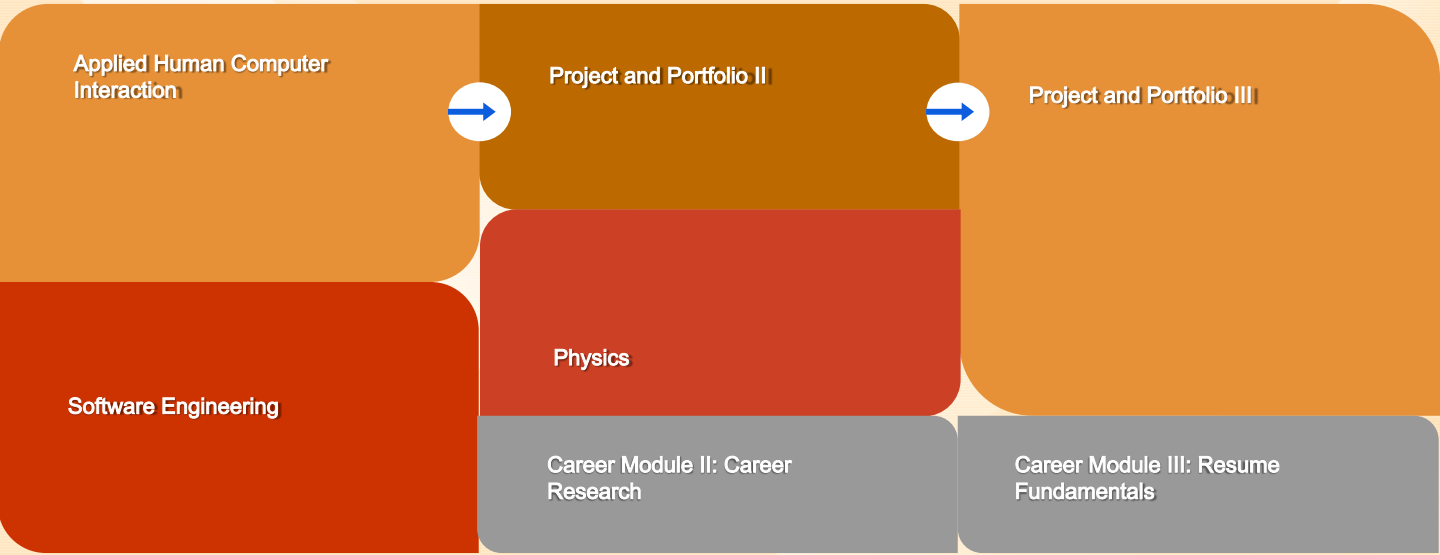
Full Midterm Project Process



Full Midterm Project Process

Applied Human Computer Interaction | Project and Portfolio III | Project and Portfolio III

- Pre Production
  - Design Document
  - Product Backlog
- AHI Topics
  - Nielsen's heuristics
  - Usability
  - UX
- Core Functionality
  - Critical game systems
  - Interface and UI creation
- First Use/Playable
  - Playable complete Experience
  - Fun factor
- Alpha
  - Full Functionality
  - Example Content
- Beta
  - Content complete
  - Balancing
- Finalizing
  - QA process
  - Presentation

Project Expectations

The game we are making

Game Expectations

- All games must have at least 15 minutes of engaging and varied play
  - Most have far more than 15
- Must contain at least one single player mode
- Must support a secondary platform
  - WebGL version exported to a webpage or published to a web portal

    or
  - Playable on tablet or phone
- At the end of the project teams will have to present their games at the FPS Expo
  - First Thursday of the month after PP3 11am-1pm

The game we are making

Medium/Indy scoped game

- Game similar to game from NES, SNES/Genesis era, or mobile and web platforms game tend to work best
- Focus on functionality over assets

The game we are making

Design a game with your capabilities in mind

- Heavily story driven game
  - Someone one the team should be a writer
- 3D Animation heavy game
  - Someone on the team should be able to animate
- Game with 50 unique levels
  - Someone on the team should have the skills of a level designer

Developer Expectations

Expectations: Problem Solving

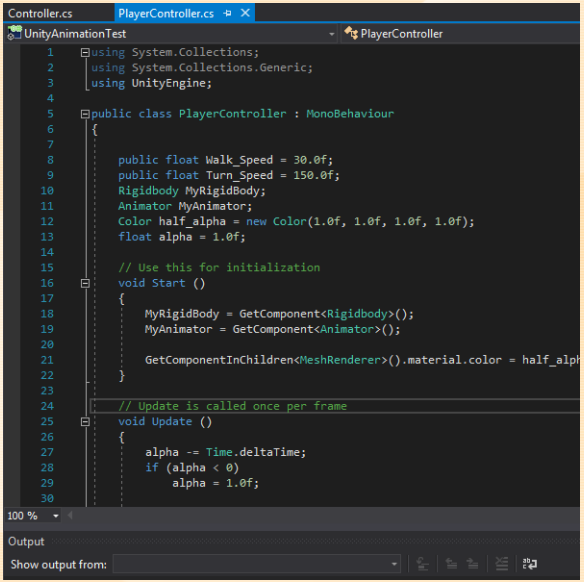
Put less importance on knowing things ahead of time.

- The job IS problem solving
  - On the job, you learn things just-in-time.
  - You must be able to figure out solutions on your own.
  - Unity Documentation is surprisingly good

Expectations: Be a developer

We will be doing a lot of different jobs

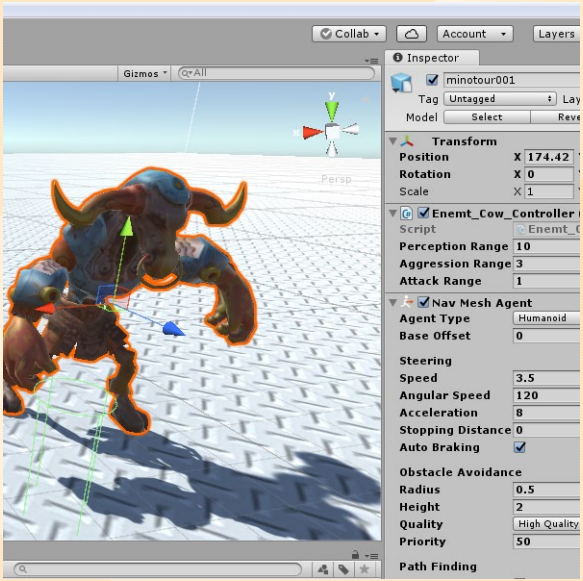
- Programmer
  - Creating functionality
  - Researching the engine
  - Fixing bugs



Expectations: Be a developer

We will be doing a lot of different jobs

- Designer
  - Defining mechanics
  - Level designs
  - Balancing



Expectations: Be a developer

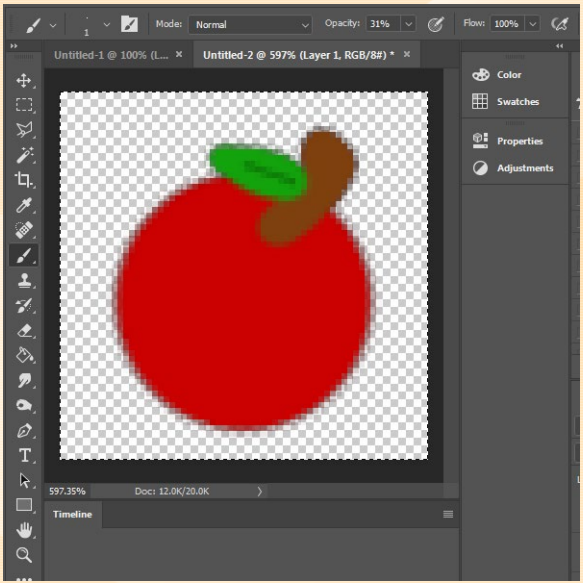
We will be doing a lot of different jobs

- Producer
  - Defining expectations
  - Writing and following a Scheduling

Expectations: Be a developer

We will be doing a lot of different jobs

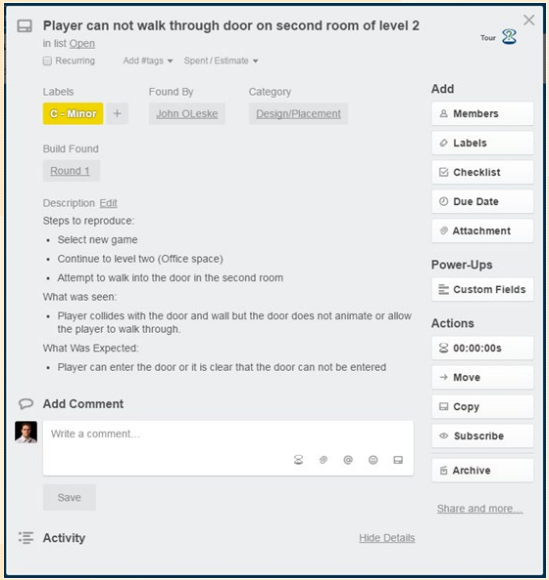
- Artist
  - Adding assets to product
  - Creating simple assets



Expectations: Be a developer

We will be doing a lot of different jobs

- Quality Assurance Tester
  - Testing and reporting bug



Expectations: Team work

Work with each other

- Have a set schedule
  - Not just during Lecture/Lab
  - Set a schedule for everyone to work TOGETHER.
  - You will always get more done as a group

Expectations: Communication

Communication will be a challenge

- Mandatory schedule
  - CDs will see you 1 or 2 times a week
  - That isn't enough to keep communication open
- Keep in contact with us
  - If something breaks, tell us
  - If there are issues with finding art, tell us
  - If something awesome changes in the project, tell us

Our Availability

FS3B 304
Monday-Thursday
9am-5pm

Either Rod Moye or JohnOLeskeis running midterm project

Teams are always welcome and encouraged to come work.

Project Policies

Academic honesty

"Projects/Assignments: Students are expected to be honest and produce their own projects/assignments according to the specifications of their Course Director. **They must work solely on their projects/assignments unless otherwise noted by this Course Director.** Work submitted by our students is assumed to be a student's own thoughts, idea, and words. Discovery of the contrary will result in immediate consequences. **For group projects, all students whose names are submitted with the project are responsible for the content and will be subject to disciplinary action should plagiarism be discovered.**"

...

"Plagiarism Defined (as in Webster's Dictionary):

1 to steal and pass off the ideas or words of another as one's own
2 use a created production without crediting the source
3 to commit literary theft
4 **present, as new and original, an idea or product derived from an existing source**"

- Student Manual, page 17

Academic honesty: Midterm Specifics

Code/Functionality

- All functionality in the final product must be created by a student team member
- Any functionality not included in the unity installation must be authored by a student team member
  - Scripts
  - Prefabs
  - Scenes
  - If it can be made in unity you are expected to make it
- You may not use the unity asset store to add functionality to the project

Academic honesty: Midterm Specifics

Assets

- Assets authored by non student team members may be used as long as there are legal rights to use the assets
  - Textures/sprites
  - Audio/sfx/music
  - Models/meshes
  - Animations

- Any assets used that was not created by a student team member must be have their source credited in the game's credits

Academic honesty: Levels

- Level 1
  (0 score on the assignment and month's professionalism, conduct probation, and suspension):
  - Directly copying work from another source and submitting 1 it as one's own.
  - Submitting work completed by another individual or student as one's own.
  - …
- Level 2
  (0 score on the assignment and month's professionalism, and conduct probation):
  - Completing any work for another student that fulfills an academic requirement.
  - Knowingly furnishing false information to an instructor or any other representative of the University.
  - Repeated violations that fall under the Levels 3 or 4 headings.
- Level 3
  (0 score on the assignment and month's professionalism):
  - Submitting work that was turned in from another course or a previous attempt at this course without prior approval from the course instructor.
  - Significant omission or misuse of citation and/or references in course work.
  - In group work, including one's name to "tag along" on work of other team members in which he/she did not significantly contribute.
- Level 4
  (0 score on the month's professionalism):
  - In group work, allowing a team member to include his/her name to "tag along" on the work of other team members despite having not significantly contributed to that work.

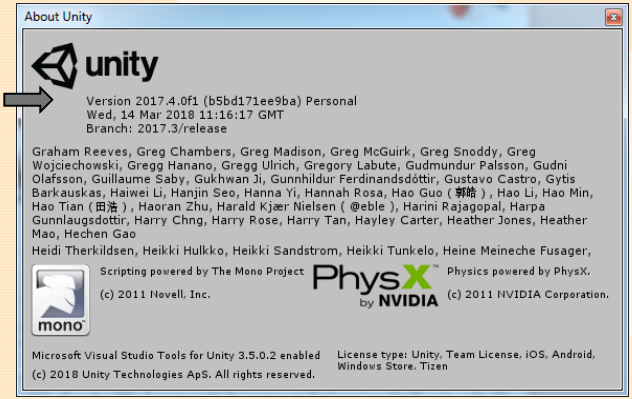
Tools

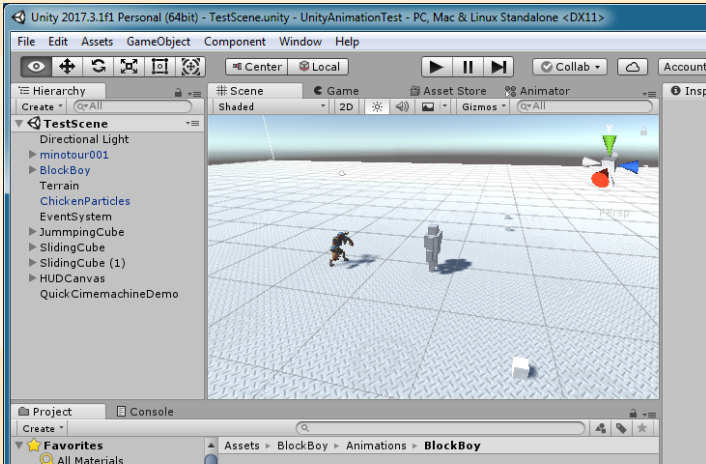
Unity3D

Unity3d.com

- Our dev environment
- Scripting in c#

- Ensure each team member is using the same version

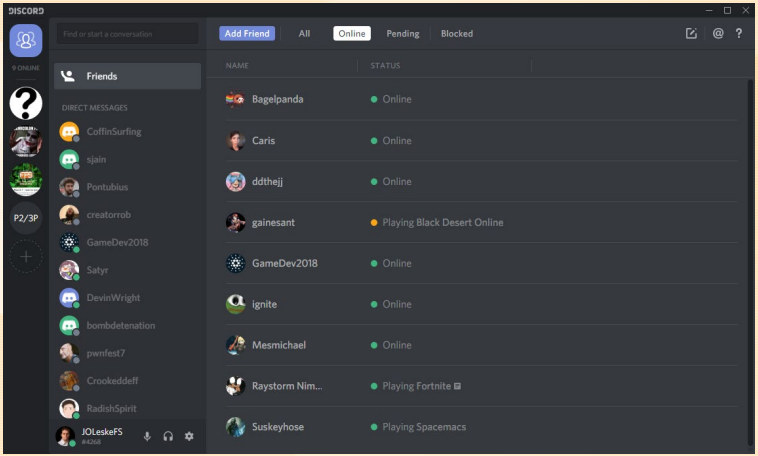




Discord

discordapp.com

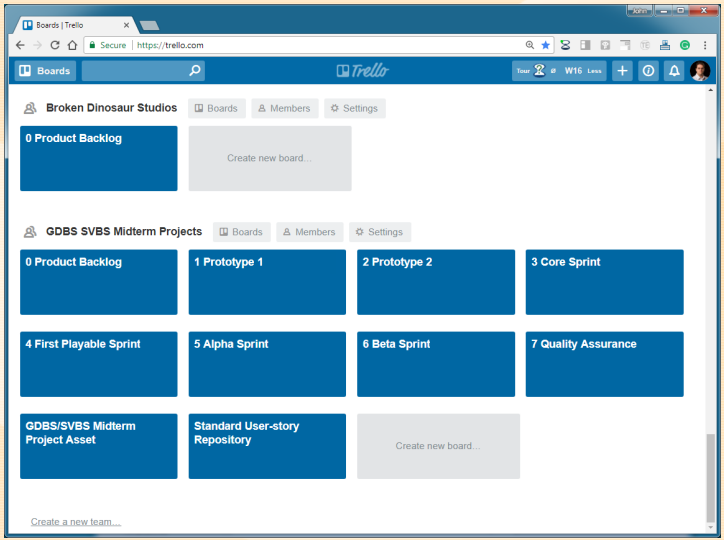
- Keep communication open while working remotely
- Share files that are not part of the project



Trello

trello.com

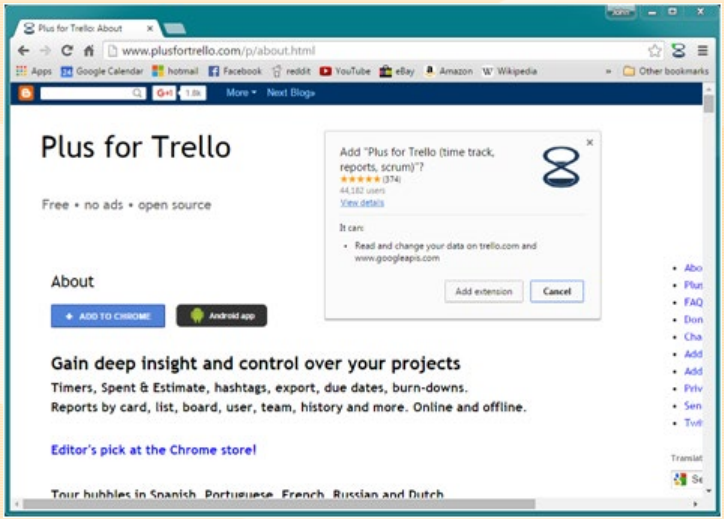
- This will be both our design space and our task management system



Chrome and plus for trello plugin

plusfortrello.com

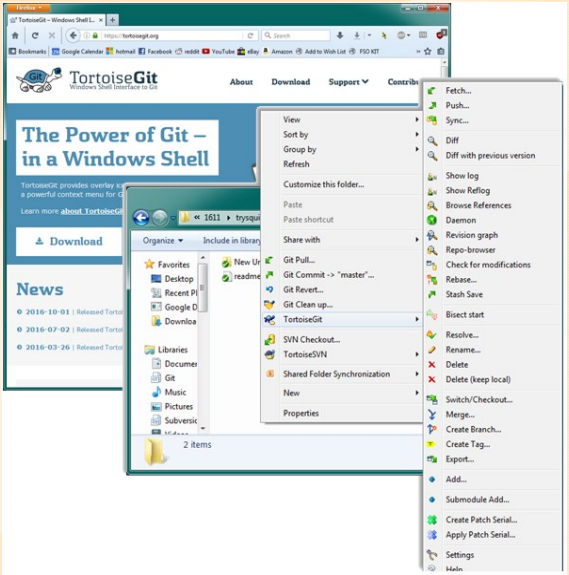
- Will need chrome for plus fortrello plug in



TortoiseGit

tortoisegit.org

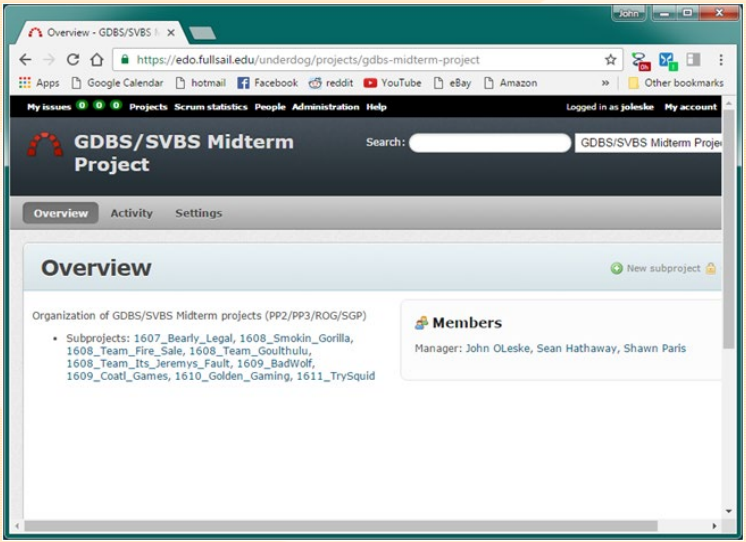
- We will be using git for our versioning system



Underdog

edo.fullsail.edu/underdog

- Git server will be provided with underdog
- Allows for versioning when not on campus
- Uses same credentials used for sidekick



Install or confirm

- Unity
  (unity3d.com)
  Everyone on same version
- TortoiseGit
  (tortoisegit.org)
- Git framework
  (git-scm.com)
- Discord
  (discordapp.com)
- Trello
  (trello.com)
  Accounts created
- Chrome
  (google.com/chrome)
- Plus for trello plugin
  (plusfortrello.com)
  Sync method set to “Trello card comments”
- Underdog
  (edo.fullsail.edu/underdog)
  Accounts confirmed

<Activity> Form Teams

Form your team

- 3-5 students per team
- Will be working with each other for months

Collect the info

- Team
  - Team name
  - Discord channel
  - Invite me to the server (JohnOLeskeFS#4268)
- For each team member
  - Full name
  - Trello username
    - (The one in the parenthesis next to your full name on the webpage)
  - Underdog username
  - Discord username
  - Email

Design

Design your game

Having an idea is your responsibility

- We will help teach you what to do with that idea once you have it
  - Documenting it
  - Properly understanding its scope
  - Putting it through production

The purpose of Pre production

Pre-production is harder than production

- Pre production
  - Make decisions on the product
  - Prove the validity of those decisions with rapid iteration of prototypes
  - Throw out what doesn't work and keep what does
  - Document the full scope based on the above
- Production
  - Make the rest of game based on the above
- As hard as preproduction is, it’s even harder to do while you’re also in production
  - And more expensive in the long run

<Activity> Discuss game ideas

Think of a game

- Discuss as a team what kind of game you would like to develop
- I will be setting up servers and documents for all of the teams

Trello

Trello

Trello is our task management platform

- Brainstorm features
  - Create new card for each feature to be added to the game
  - Each player action, character, enemy, item, weapon, power up, game mode…
  - Don't forget about dependencies

Trello

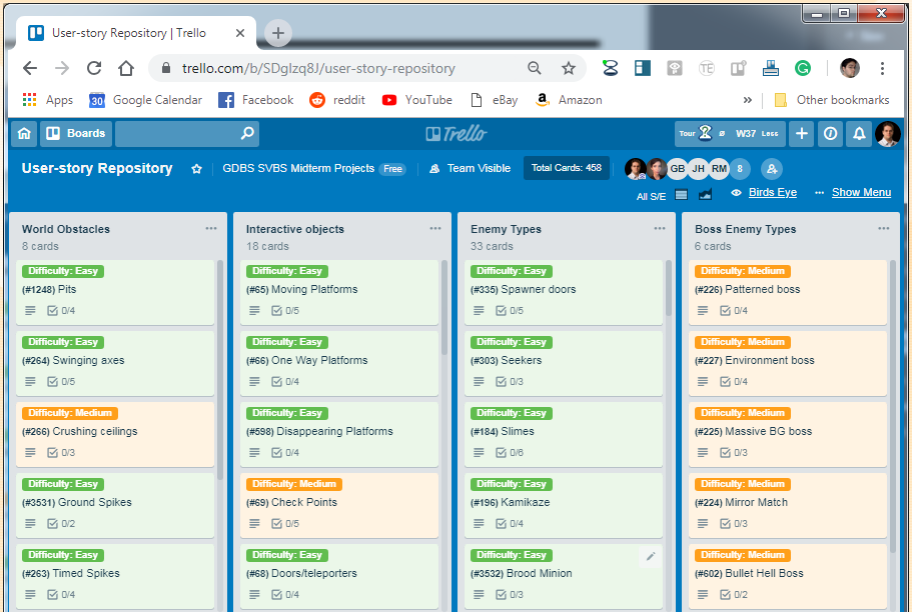
Trello is our task management platform

- Our team's Trello boards
- "0a Core Product Backlog"
  - Contains all items and features required to create the product's vertical slice (first use/playable)
- "0b Extended Product Backlog"
  - Contains all the wish list, would be cool to have, stretch goals… of the product

Trello

By lecture 2 our trello boards should look something like this

- Shoot for 100-150 items/features across the 2 boards

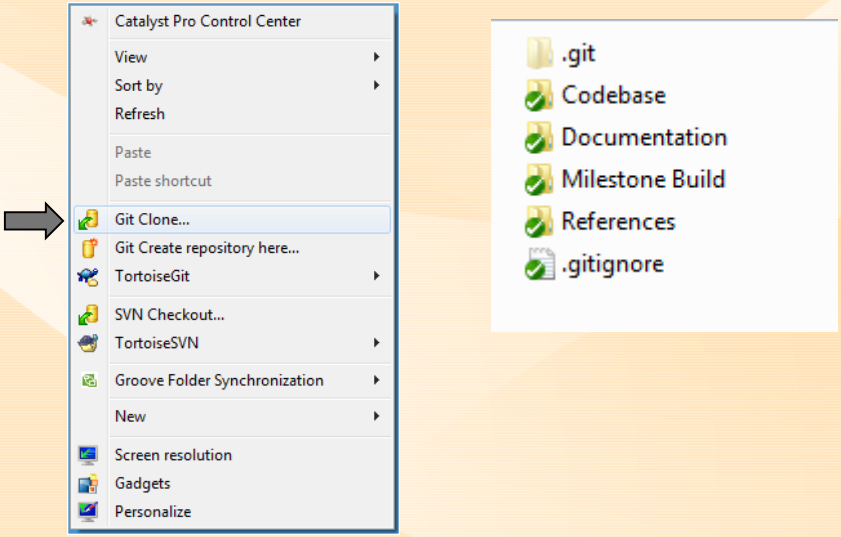


Activities

<Activity> Clone the project folder

Clone the repo

- After the clone the project folder should look like this

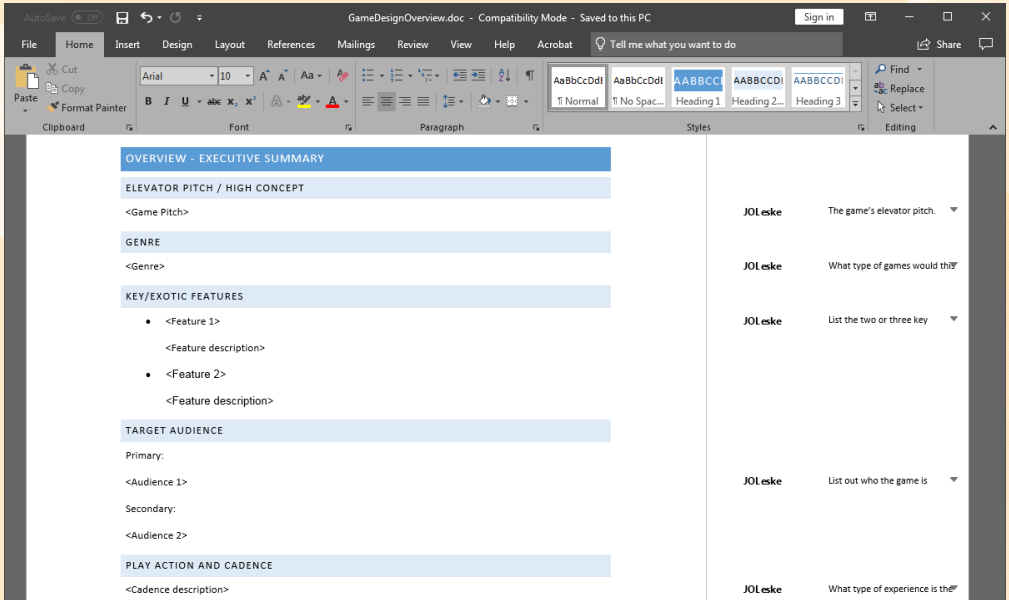


The Design Document

Design Document

Agree on the core design

- Template document has been provided for you.
  - In your repository's documentation folder



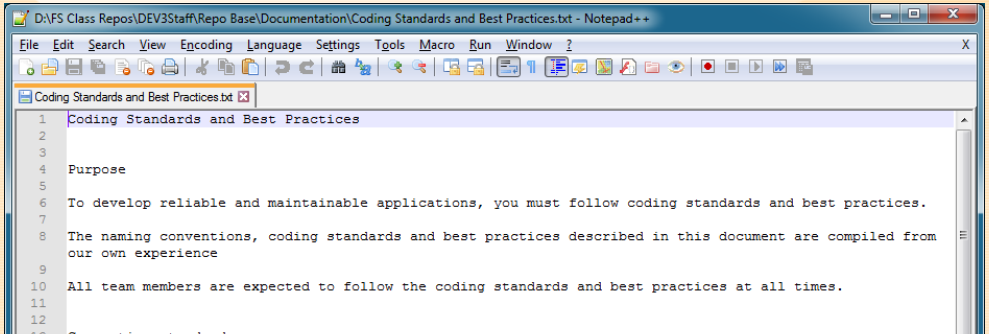
Coding Standards and Best Practices

Coding Standards and Best Practices

Make sure the entire team agrees to a standard when it comes to

- Commenting
- Naming conventions
- File Formatting
- Indentation and Spacing
- General Programming practices

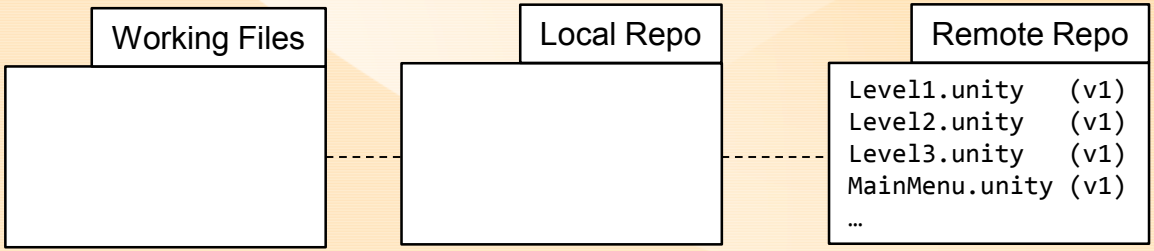
- Template document has been provided for you.
  - In your repository's documentation folder



Version Control

Basics

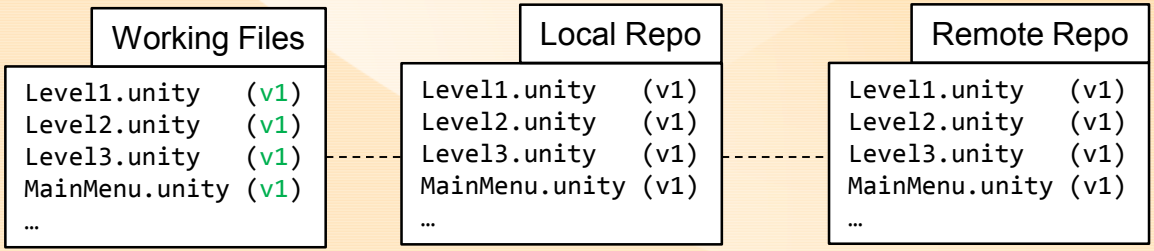
- Understand the system behind the interface
  - Three main sections to pay attention to
    - Working files
    - Local Repository
    - Remote repository



Clone

Contributors need to clone the repository to start working on the shared files.

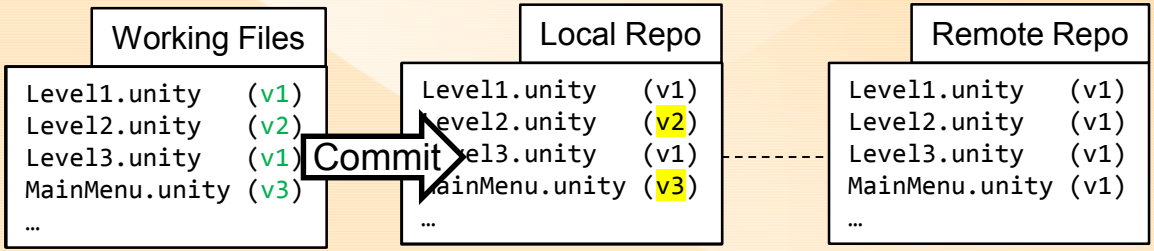
- Get a bring remote repository into the local repository
- Populate working files from local repository



Commit

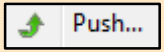
Once changes to the files has been made that work need to be committed

- Commit saves the changes to the local repository
- Once committed there is a timestamp of the files that can always be returned to

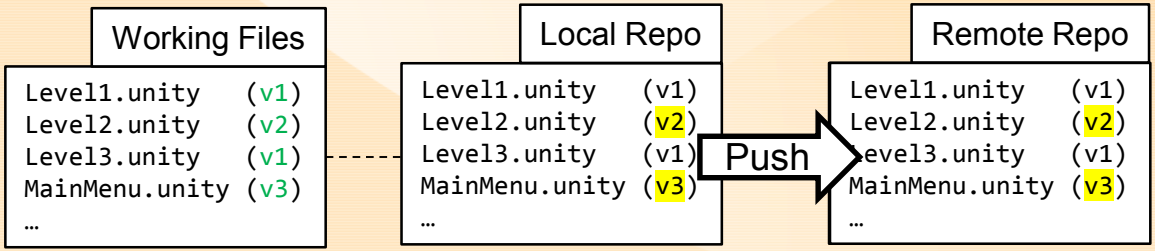


Push

Push integrate changes onto the remote repository



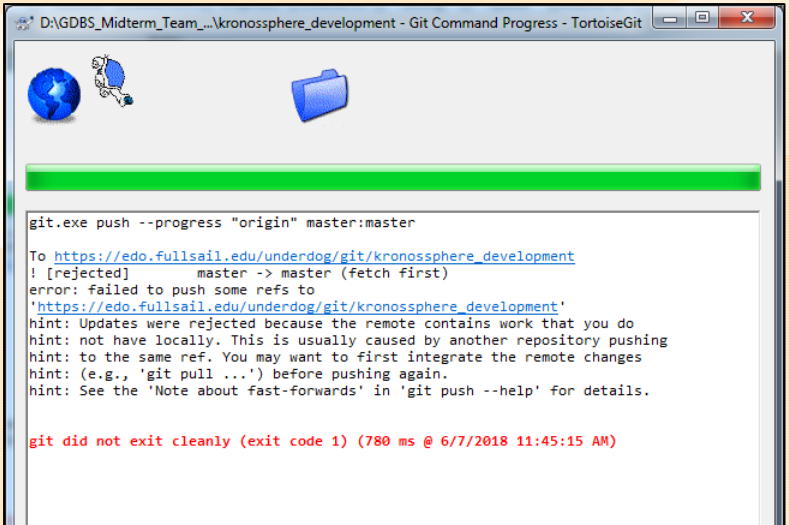
- Non committed work does not get pushed
- If a file hasn't been added it doesn't get committed



Push: Changes on remote error

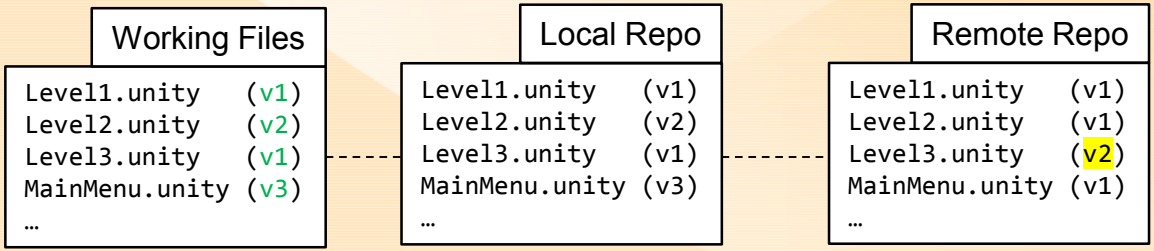
"error: failed to push some refs to…
hint: updates were rejected because the remote contains work that you do not have locally"

(Read all of the error message, not just the red text)



Push

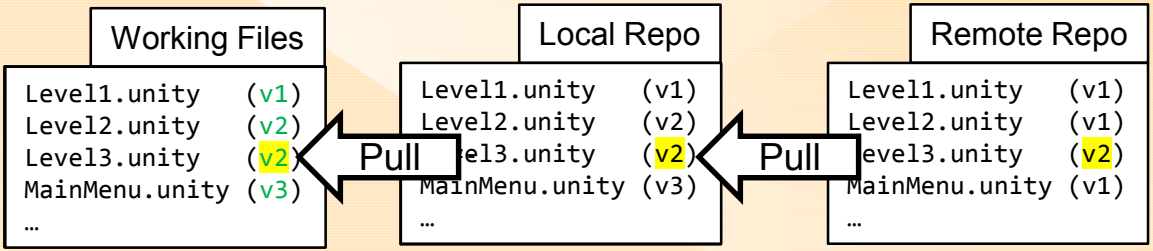
You can’t push if there are changes on the remote server that you do not have on your local



Pull

Pull changes from the remote and integrate them onto your build

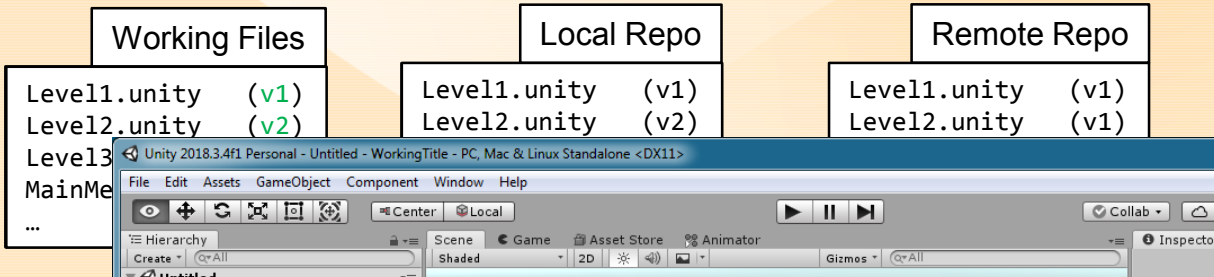
- Changes get integrated into the local repo
- If integration is good the working files change to match



Pull

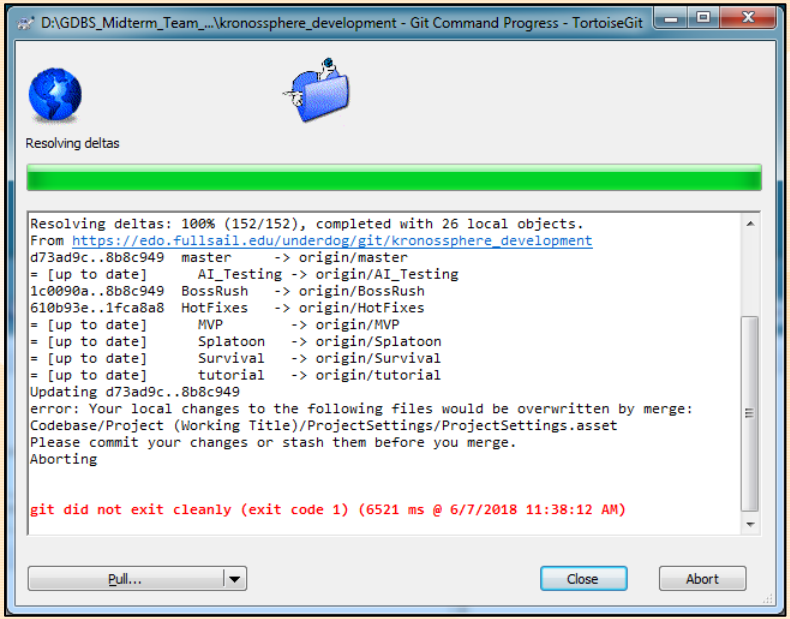
Do not pull with unity open

- Unity is always updating and recompiling based on changes in the files
- If you pull with unity open unity and there is an error unity will attempt to recompile with the error and break



Pull: Uncommitted work error

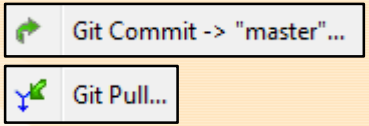
"error: Your local changes to the following files would be overwritten by merge… please commit your changes or stash them before you merge."

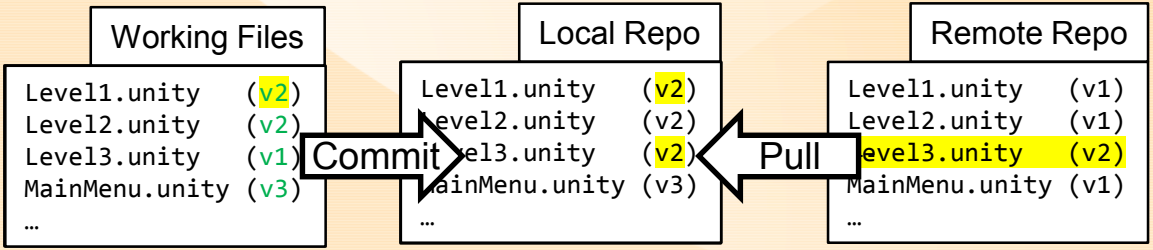


Uncommitted work error

Resolution

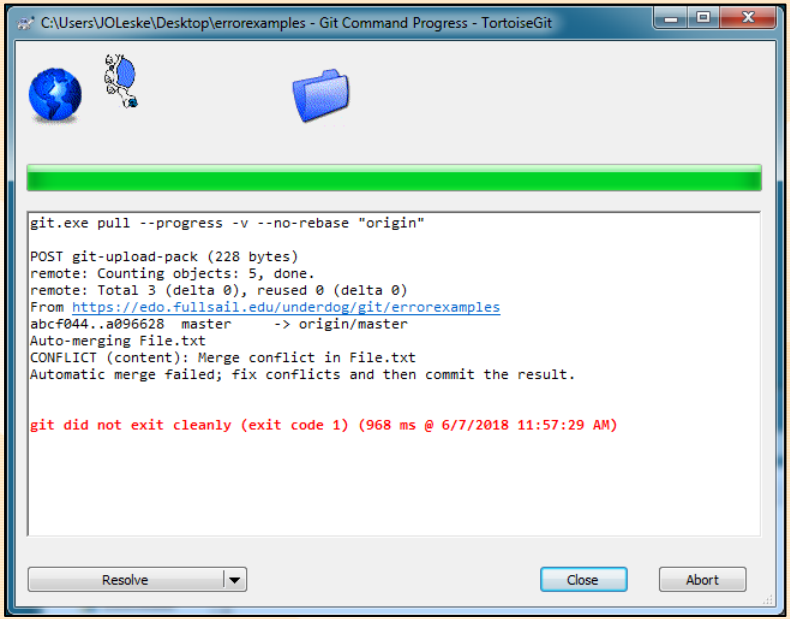
- Once you commit your changes you can pull and get the remote changes





Conflict

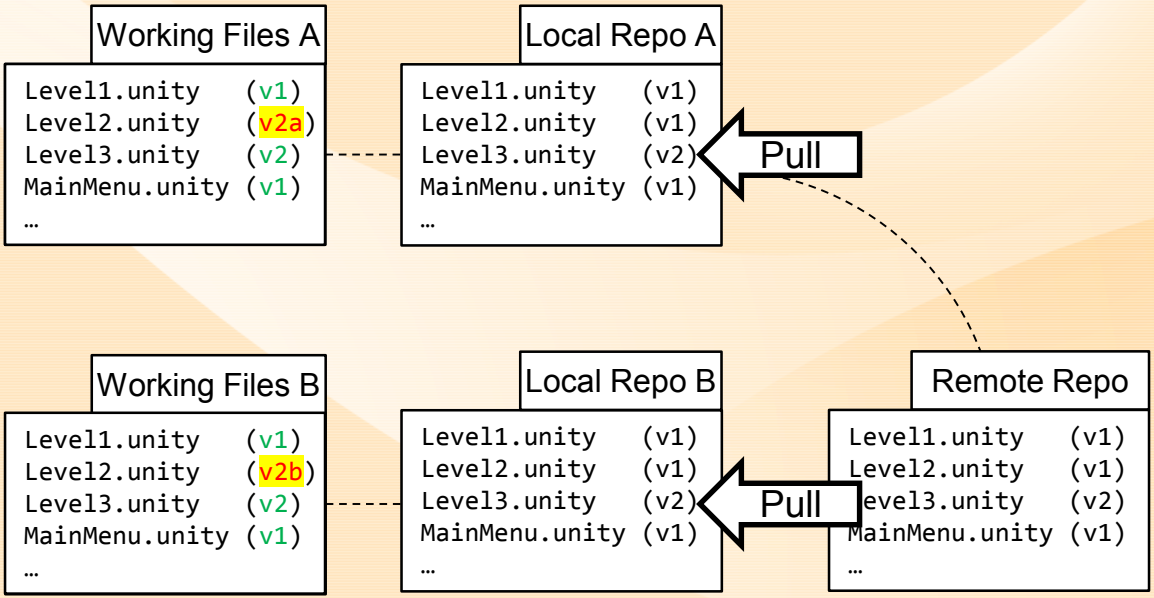
"Automatic merge failed: fix conflicts and then commit the results"



Conflict

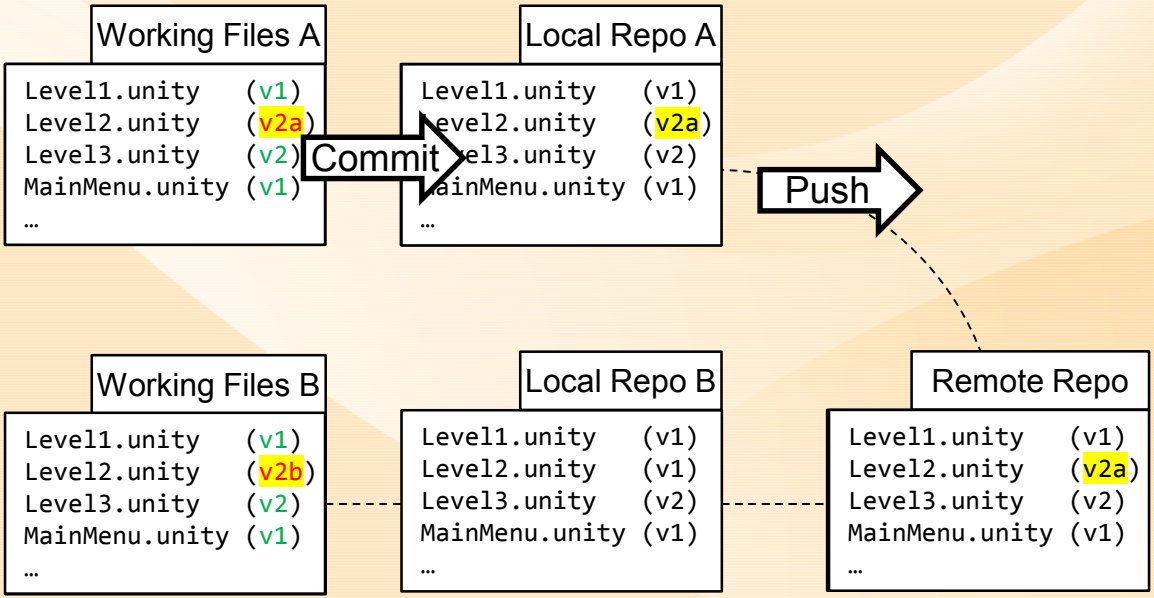
Conflicts are created when 2 pull and then modify the same file

These two Devs already have a conflict though they don't necessarily know it



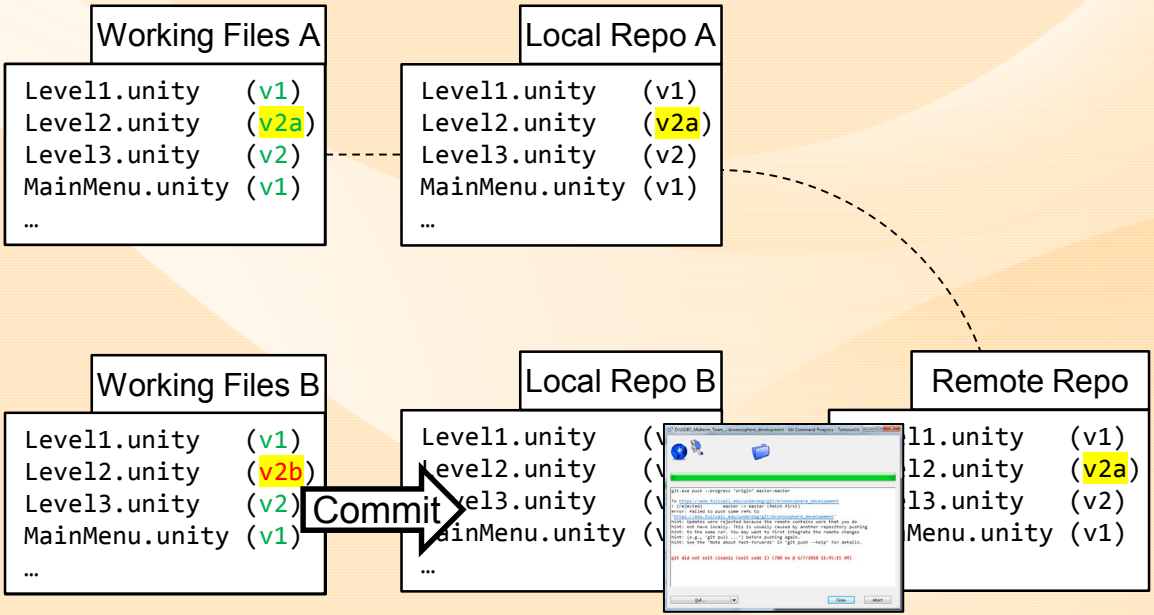
Conflict

The first dev will be able to commit and push with no error



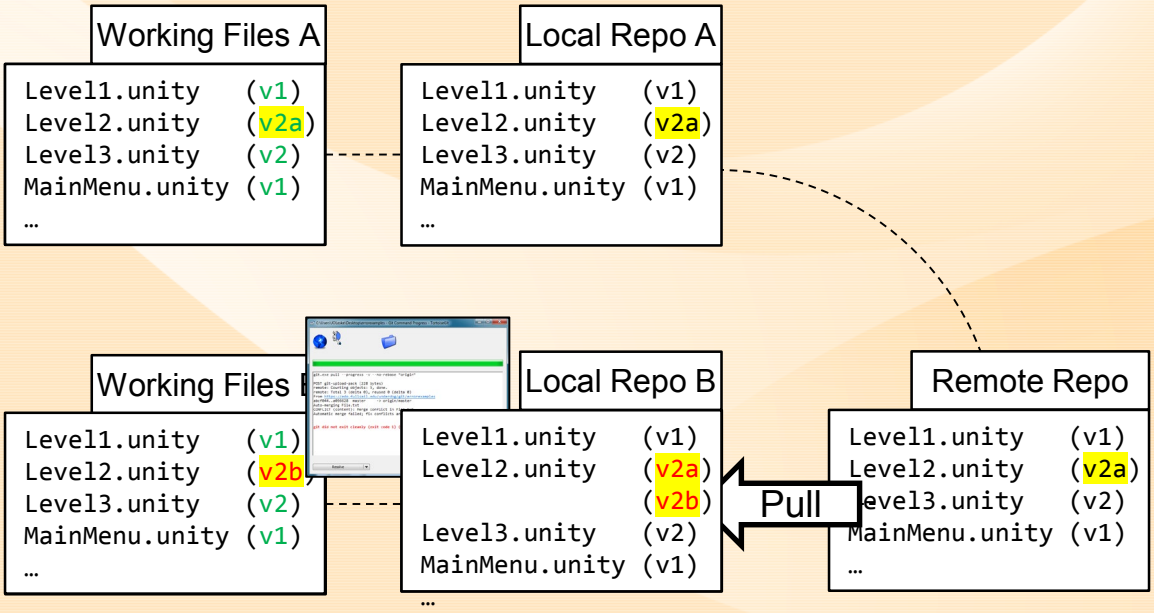
Conflict

The second dev will be able to commit but will be blocked by the "`remote contains work that you do not have`" error



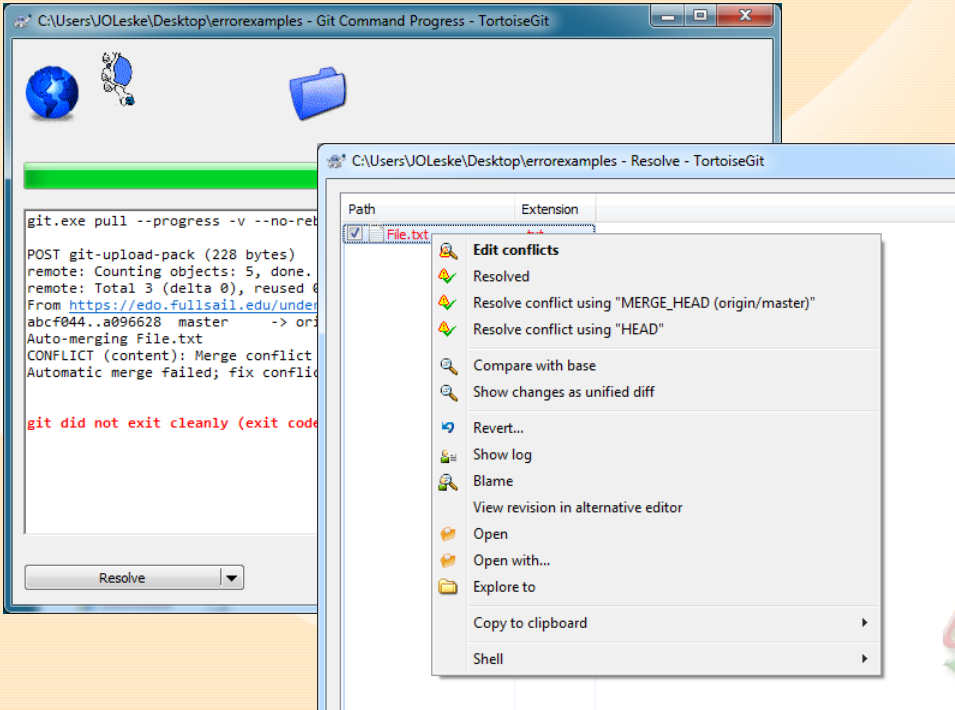
Conflict

When the second dev pulls to fix the first error they will then get the "`conflict`" error because git doesn't know what to do with the changes from DevA and DevB since the both changes the same file



Conflict

There are 4 main options to resolve a conflicted file

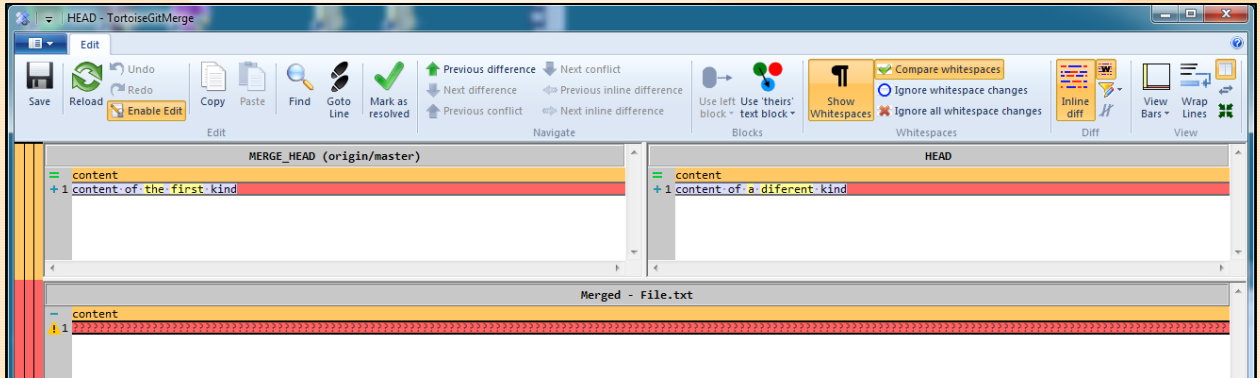


Conflict: Resolution

Edit Conflicts

- A merge tool can be used to pick and choose between lines and choose what in each should be saved

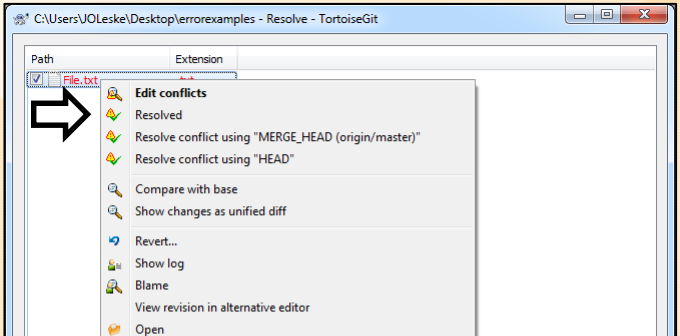
- Only works on text based files
  - Code
  - Text based assets



Conflict: Resolution

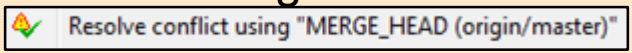
Resolved

- If the conflict is resolved manually without using the git interface they can simply be marked as resoled
- DO NOT do this unless you have actually fixed the conflict elsewhere

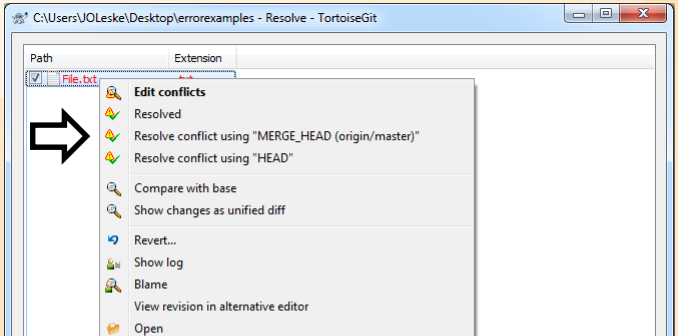


Conflict: Resolution

Resolve using “MERGE HEAD”



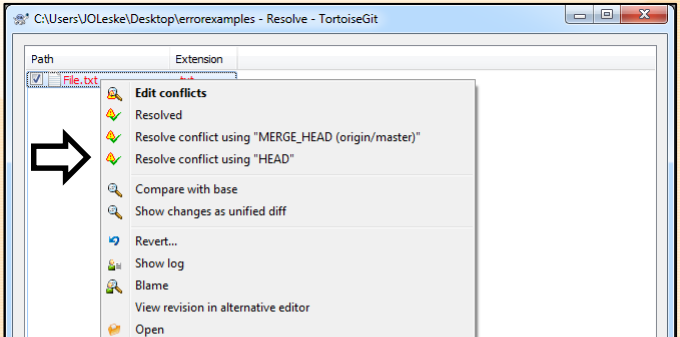
- Take all of my changes and throw them away to keep all the changes from the remote repo



Conflict: Resolution

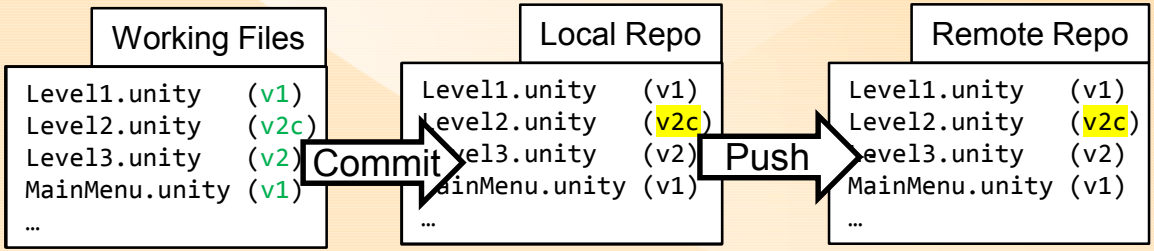
Resolve using “HEAD”

- Take all of the changes from the remote repo and throw them away to keep all of mine



Commit

After conflicts have been resolved you have to commit those changes



Tips: Avoid having to merge

- Don’t work on the same files at the same time
  - Binary files (non text) cannot be merged with Git
  - Don’t work in the same scene at the same time
  - Don’t work on the same prefabs at the same time
- Communicate and check in and check out assets that everyone contributes to
  - Scene files and Prefab files being the most common sources of conflicts

Tips: Use Sandbox Scenes

- Organize the shared scenes
  - Scene for each level
- Use sandboxes
  - Each person on the team needs their own work scene.
  - Complete as much work as you can and test in the sandbox
- Integrate into shared scenes
  - Only integrate after it has been tested to work on the sandbox scenes
  - Need to be sure only one person works on a scene at a time

Tips: Integrate Often

- Integrate to the remote server each time a task is complete
- The more time between pulls the more merge problems you can encounter

Tips: Do not bloat the server space

- Time is a resource
  - Don’t push giant packages of resources if you are only using 1 thing from it
  - Huge repos take longer to push and pull
- Can cause down time when things go wrong
  - The server space is shared with multiple projects across multiple degrees and file space is limited
  - When the server is out of space no one can push or pull until the server space is freed and reset manually

Tips: Learn from errors

If things go wrong learn why and fix the problem in your process

- TortoiseGit does give useful error messages but you have to read the whole thing
  - Not just the red text
  - There is also the error help doc and contacting me on discord in case you get stuck
- Git does work
  - Don’t blame the hammer when you hit your thumb

<Activity> Git crash course

Let's play with git on a team

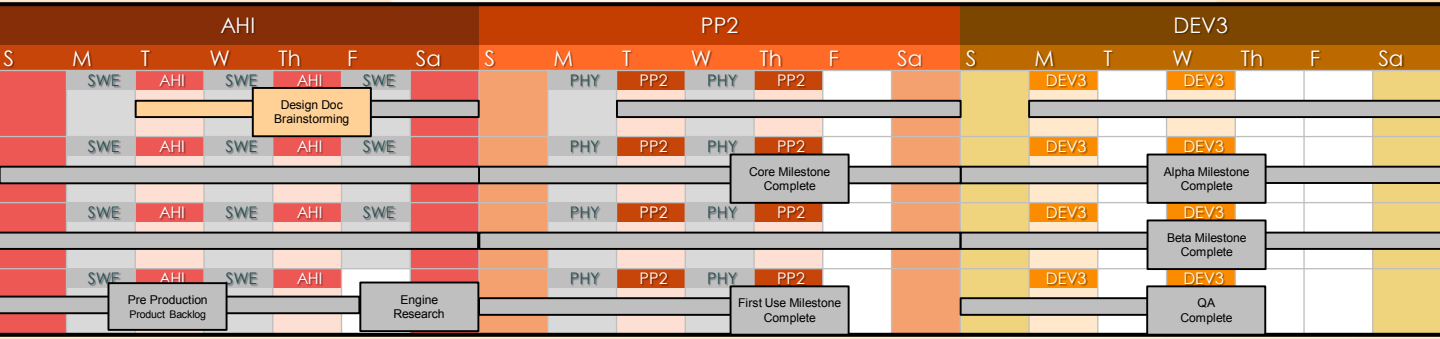
- Everyone create their own sandbox scene and sync until everyone has all changes
- Everyone modify the Coding Standards and Best Practices and sync until everyone has all changes
  - (text document)
- Everyone modify the design document and sync until everyone has all changes
  - (Binary file)
- You will get conflicts and errors
  - That's the point of the activity

Timeline as it stands

Plan

By Lecture 2

- Pre pro
  - Design Document filled out
  - Brainstorming features completed
  - Coding Standards and Best Practices agreed upon
  - Start research into unity engine
    - Code architecture brainstorming



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