New York University - Tisch School of the Arts
Code Lab 2
GAMES-GT 3??
Fall 2016
Instructor: Matt Parker madparker@nyu.edu

Introduction

Code Lab 2 is a continuation in exploring how to craft game with programming. In Code Lab, we examined how to make games in Unity. This class will be a workshop, building off of that knowledge, but focusing on learning how to work with code that is already written. Students will learn to work with a version control system, and work in depth with C#, Lua, and more.

Over the course of the class, students will be given several versions of existing games that are incomplete or have an obvious bug. They will learn to read the code, identify how to correct the issue with the game, and then eventually modify it to make their own new version of the game. These skills are essential to work with code from other developers, whether they are members of the same team, open source projects, or examples provided in tutorials and readings.

Code reviews, best practices, and productive means of communicating about how to approach shared code will also be covered.

Course takeaway

The course will enable students to:

· Deepen their working knowledge of Unity/C#.

· Understand the conceptual foundations of version control systems.

· Gain the ability to read and comprehend code.

· Gain an intro knowledge of Lua.

· Understand basics of how to approach new languages and technologies.

Pre-requisite:

Code Lab. Students should have sufficient interest in mathematics and logic to pursue serious study of these topics.

Grading and Assignments

Students will have weekly assignments. All readings and assignments are due at the beginning of the next class. There will also be a Final game project. Final projects will be presented to the class and a jury of game design professionals.

In-Class Assignments:	30%
Weekly Assignments:	40%
Final:	30%

Attendance

Attending and arriving on time to all class sessions is required and expected. This includes all labs, recitations, and critiques. If you will be missing a class due to illness, or unavoidable personal circumstances, you must notify your professor in advance via email for the absence to be excused.

See departmental guidelines for more information.

Week 1 -- Review and Intro to Game Tools

House Keeping (Go over Syllabus, Class Schedule, Intros, Course Overview, Sharing and Presenting work, etc)

Class communication (slack, emails, nyu classes, repo)

Updating Unity

Install GitKraken (Why GitKraken? SourceTree?)

Source Control Overview

Unity w/ Source Control

Using Github (why Github? why Git?)

Checking out a project using SourceTree

Review Unity tools (refactoring, debugger, code completion)

Committing and Pushing Code to Repos

Review of Inheritance
Begin First Assignment

Everyone together now

Assignment 1:
-review: http://docs.unity3d.com/Manual/ExternalVersionControlSystemSupport.html
-watch: https://www.youtube.com/watch?v=gl9bIJbW9Eg
-watch: https://unity3d.com/learn/tutorials/topics/cloud-build/creating-your-first-source-control-repository
-make a game with Unity using only the assets provided in the Warmup project

Week 2 – Match3

Review Homework
Check out "Match3" Sample Game from the class Repository
Run and examine issue with "Match3" program
In class code commenting exercise

Assignment 2:
-Identify and fix the bug in Match3 sample
-Come up with concept for one week Match3 Mod
-reading: PC Gamer: "The best total conversion mods ever"
http://www.pcgamer.com/the-best-total-conversion-mods-ever/

Week 3 – Match3 Mod

Present fixes to Match3
Discuss differences in approaches to identifying and correcting issues
Intro to Code Reviews
Discuss Debugging techniques (Logging and Debugger)

Present ideas for Match3 Mod

Begin developing Mod

Assignment 3:

-Implement Match3 Mod, play test, and iterate.

Week 4 – Black Jack

Present Match3 Mods

Discuss Mods'

Examine Version Control tools (comparisons, revisions, versions, etc.)

Join "Black Jack" Sample Game from repository

Run and examine issue with "Black Jack" program

Begin analyzing and correcting the issue

Assignment 4:

-Identify and fix the bug in Black Jack sample

-Come up with concept for one week Black Jack Mod

Week 5 – Pong Black Jack Mod

Present fixes to Black Jack

Discuss differences in approaches to identifying and correcting issues

Present ideas for Black Jack Mod

Begin developing Mod

Assignment 5:

-Implement Pong Mod, play test, and iterate.

Week 6 – A* (A Star)

Present BlackJack Mods

Discuss Mods

Show A* Star

Talk over A*

Depth first search vs Breadth first search

Assignment 6:

-Write A* Heuristics

Week 7 – A* (A Star) Game

Present A* Heuristics

Discuss Heuristics

Show A* Star

Present ideas for A* Mod

Assignment 6:

-Write A* Mod

Week 8 –Lua Love - Luabalt

What's Lua Love got to do with it?

How does Love work?

Looking at Lua and how it works

How to approach learning a new lang.

Assignment 8:

-Identify and fix the bug in Luabolt Sample

-Come up with concept for one week in Luabolt Mod

Week 9 – Luabolt Mod

Present Luabolt mods

Talk about the advantages and disadvantages of working with Lua

What was good about Lua?

What was good about Love?

Assignment 9:

-Implement Luabolt Mod, play test, and iterate.

Week 10 – Learn a new Language/Engine

Pick a new language or game engine to work with

Set it up on your machine

Learn to learn

Assignment 9:

-Learn new engine, prepare brief presentation on it

-Start 2 week game in new engine

Week 11 – Present new Language/Engine

Short presentation on new Language/Engines

What's the best way to learn it?

What's good, what's bad?

What game are you making?

Assignment 11

-Finish new Engine game

Week 12 – Present new Language/Engine Game

Present new engine game

Show code

Would you use it again?

Did it make affordances for new forms of expression?

Final Assignment:
-Start final Assignment

Week 13 – Final Project Development

In Class Development of Final Game

Assignment 13:
-Finish and Present Final Game

Week 14 – Final Game Presentations