Lab Deliverables

Contents

Objective

The objective of these lab deliverables is to help prepare you for and help you understand what it's like making a game with other people.

Feedback and Final Grading

For many reading this document this may be your first team project. To help you understand this process when a deliverable is due feedback will be given and time provided to correct the deliverable based on that feedback. Here is the general schedule for deliverables, which may be different based on holidays, breaks or other circumstances:

Day 2 – Start work on Loops and Interactions deliverable

Day 3 – Feedback for Loops and Interactions. Start work on first Unity Research topic.

Day 5 – Final grade for Loops and Interactions. Feedback for first Unity Research topic. Start work on second Unity Research topic.

Day 7 –Feedback for both Unity Research topics. This means first topic gets two rounds of feedback.

Day 8 – Final grade for both Unity Research topics.

You will want to aim for completing a deliverable when feedback is given however final grades won't be "locked-in" until after that feedback to allow corrections and more opportunity to learn from this process.

Recommendations and Preparations

Here is a list of things that will help you prepare for the tasks ahead of you.

- **Write down everything** – Keep notepad / Evernote / Google Docs open and note everything. You will never hold in your internal memory all the things that need to be done or kept track of. Learn to use external memory
- **Sort your time out** – Use a calendar, Siri, post it notes, whatever. Balance the tasks and your life
- **Observe your environment** – Take note of those that can get stuff done. How do they do it? As long as they don't go about by cheating, it may be worth stealing how they do the things they do.
- **People with experience, you are not the dictator of the group** – You have wisdom to impart; which is hard to do when everyone thinks you are a dick.
- **All the stuff learned in Software Engineering isn't just for a grade** – Pay attention, take notes on it, be ready to explain why and when it is good to use it and where. Especially for your game.
- **Things will change** – There is potential that every Course Director involved in the midterm will influence or even outright change parts of the project. That's alright.
- **Remember the scope of the project** – You will not be spending the next 3 months creating your own unique epic interactive experience. The focus of this midterm is not to reinvent the wheel.

Software Engineering Concepts of Most Use

Day 7

2D basics - Game Objects, Screen and world space, Collision, Version control, Scripting, Layers, Camera, UI canvas, Scenes.

Day 8

2D animation - Animation, Events, Finite State Machine (FSM), Transitions, Sprites, Prefabs, Camera Animation, FSM sub states, Audio, Caching components and object pools

Day 9

Messages and Events - SendMessage(), Delegates, Design Patterns (Focus on Mediator and Observer), Parallelism - Invoke & Coroutines

Design Pillars

Your first plan/architecture for your game will not be optimal but that's okay. Just the act of planning/architecting is critical for the success of your team's game. This will take time and discipline to accomplish. Some that have experience with this may feel that it is unnecessary for you, but this isn't about you. This is about the team. Take some time and work with your team to come up with 3 to 5 elements/emotions that the game is trying to explore and make the player feel. These design pillars will be the main focus for all the design decisions you make for the game. Write these pillars down in a place that's easily referenced, you will need them.

Additional Reference: Click this link to open Gamasutra article

Loops and Interactions

With your design pillars in mind, think about all the events involved in your game. The things / activities the user does, the things the computer makes happen either in response or in spite of the player's activities. Separate these ideas based on time.

Primary Game Loops

What do you want the player or other entities of the game to achieve on a second to second basis? Focus most efforts here. Bottom up approach.

Secondary Game Loops

Minute to minute. Systems outside of and that feed into the primary loop would be here. Looking for depth as opposed to breadth.

Tertiary Game Loops

Hour to hour. The why we keep coming back. Think about these only after you spent time on the others.

Object Interactions

Think about how all the objects in the game interact with each other and the resolutions of those interactions. Compile these interactions and their results into a grid. Be concise in your descriptions but detailed enough to understand what is happening. Refrain from using game specific lingo.

Example

https://docs.google.com/spreadsheets/d/1dR7F6utKXpBalzIoeM00qr7doMG74hlH8ZFY612p6jc/edit?usp=sharing

Have someone on the team make a copy of this spreadsheet and share it with the team so you can all edit it together. Post the share link to the #deliverables text channel on the team's discord as well so it can be viewed by your instructors.

Rubric / Grading Breakdown

Loops - up to 50 points

- 5 points – At least 12 secondary loops
- 10 points – At least 20 primary loops
- 15 points - Loop is in the correct section
- 20 points - Every loop has an understandable description

Interactions - up to 50 points

- 10 points - All game interactive objects are catalogued
- 20 points - Description of audio/visual feedback before/during/after interaction
- 20 points - Game logic is detailed for and from the point of view of the specific interacting object

Submission

The only thing needed to submit this deliverable is to provide the share link to the spreadsheet in the discord's #deliverables channel.

Unity Research Experiments

Goal

A common complaint of students in this class is that they do not have enough time to learn the tools being used in the project. In order to mitigate this, as a team use Unity to build a series of experiments focused around the project's mechanics, interactions, and all the things that happen on screen or under the hood. This will provide the advantages of learning how to use Unity, learn the effort needed to complete features, and allow you to grok the project.

Each team member must research two of a loop, interaction, or risk of the project (reference your previous deliverable for options if needed). The chosen topics of the research **must** include one of the following: **movement, collision, a timer, input, or feedback (audio/visual)**. Researching more than two interactions is highly encouraged but not required.

Unity Projects

Each team member must create an entirely separate Unity project for their research. Place the project within a folder with the team member's name inside the Research folder of the team's repository. Do not do this research inside your "sandbox" scene of the mid-term project. This is mainly to help facilitate grading, but it is also to separate assets that will not be used in the mid-term project. **It is very possible that you will not end up using the results of your research in the mid-term project and that is okay.** The main point is to learn all you can about using unity and your topic of research as quickly as possible and in the end, what you learn may determine if features are cut or changed from the initial design.

Trello Cards

Once you have chosen your topics of research create a Trello card for each experiment on the 0c Architecture & Research board. The Trello card should have the following information:

1. A title and description that explains the scope of the research in a couple sentences.
2. At least three statements that will serve as unit tests to determine when the research has been completed. During the research process you should mark these tests as completed when you feel you have sufficiently shown them in your unity project.
3. Comments are to be added for additional information for the research such as required user input (what keys/buttons to press to see something happen) or actions needed by the user to see the results of the research. Also if you have failed to pass a unit test, make a comment on the card about what you learned from the process and what you will do in the future to mitigate the risk of failure in the mid-term project

Here is a link to an example card: https://trello.com/b/jEccrRsW/research-card-example
You will not be graded on whether you succeed in passing your unit tests or not but on the content of the card, the unity project and what you have learned.

Ignore Presentation, Focus on Learning

When creating your experiments, it is very important that you don't waste time with things not relevant to the research. **Do not** spend time looking for assets to make this experiment look better. Only use the minimum assets needed (You can get quite far with just colored cubes). This project is not about implementing a feature into your game but researching *how* to implement a feature. You are not going to use the content of this experiment in your game so do not spend any time on its presentation. Focus on the functionality or you will be wasting time. If you finish researching something early use the extra time you gained to research more topics! These experiments are all about quantity and not quality; leave the quality for the actual game.

You are welcome to reference tutorials online when researching but you must not use tutorial scripts, prefabs, and/or scenes in your experiments. Your experiments must be created from scratch. You are also free to discuss your research with your team members. **However, any scripts in your research project MUST be written by you or you will receive a zero for all research topics!**

The following rubric is for one research project. Each student is required to have two research topics by the last day of class.

Rubric / Grading Breakdown

Trello - up to 50 points

- Title and description that summarizes the research and its scope
- Checklist of multiple test cases proving the experiment is complete
- Comment(s) providing additional information if needed as well as covering what was learned and risk mitigation for failed unit tests

Experiment - up to 50 points

- Interactive experiment in Unity demonstrates all tests case attempts

Minimum two research topics per team member; a Trello card must exist for each

Submission

Submission for this deliverable is at least two Trello cards per team member (one for each research topic) on the teams 0c Architecture & Research Trello board and a unity project per team member containing all experiments of that team member. These unity projects will be on the team's repository in folders identifying each team member.