Lab 1 – Building a Simple Arcade Game from Scratch

Aim:

This lab aims to teach you some basic project management skills, help you to refresh your concepts of Unity and introduce the importance of version control in game development projects.

Overview:

Your task is to build a simple arcade game from the 80s from scratch using Unity.

The game chosen for this activity is a variation of MASH

See more: <http://www.mobygames.com/game/mash>

Game Story:

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| --- | --- |
| Macintosh HD:Users:109803:Desktop:Screen Shot 2017-03-29 at 7.46.44 pm.png | You are a helicopter pilot. Your mission is to rescue all the injured soldiers on the field. To rescue them, simple hover over them. Your helicopter can only fit 3 soldiers at the time. Take injured soldiers to a hospital in batches. When all the soldiers are rescued, you win. Beware of the tall trees. Hitting a tree ends the game. Pressing the 'R' key resets the game |

Your Task:

You have to implement the following:

* Logic for moving the helicopter with the arrow keys
* The ability to pick up injured soldiers (subject to the restriction that only 3 soldiers can be taken at the time)
* The logic for emptying the helicopter when soldiers are taken to hospital.
* Detect collisions with trees (this ends the game)
* Update 'Soldiers in Helicopter' counter every time a soldier is picked up from the field
* Update 'Soldiers Rescued' and 'Soldiers in Helicopter' counters when soldiers are taken to hospital
* Display 'You Win' on screen when no soldiers are left on the field
* Display 'Game Over' when hitting a tree.
* Ability to reset the game at any time by hitting the 'R' key
* Sound effect when picking up a soldier.

Project Management and Planning:

You have to plan ahead and list the tasks that you will require to complete in order to build this game.

Note that the tasks listed in the previous section are just indicative and part of the specifications. You have to make your own list of tasks.

For each task, estimate how much you will require to complete it and record it in a P.E.R. Sheet (see example below)

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| --- | --- | --- |
|  | | |
| Plan - Estimate - Record (P.E.R.) Sheet | | |
| **Task** | **Estimated Time of Completion**  **(*minutes)*** | **Actual Time Spent**  ***(minutes)*** |
| 1 - Setup Scene in Unity | 10 | 10 |
| 2 – Adding Main Character Model | 5 | 10 |
| 3 – Writing Script for Main Character | 20 | 30 |
| **Total** | 35 | 50 |

As you build your game, keep track of your time and record how much time you actually spent on each task.

If you have to complete a task that you did not initially plan, simply add it to the list and record the time you spent on it.

Once you complete a task, commit these changes to a repository of your choice. This will help you to get the actual time spent on each of them.

At the end of this lab, compare the total estimated time versus the actual time spent on building your game.

Write a couple of sentences reflecting on this. Were your estimations accurate? Did you spend more time building this game than you planned? Did you spend less time? Why did this happen?

Resources:

Unity Version Control: BitBucket + SourceTree

<https://www.youtube.com/watch?v=g3AxTYNribE>

Original MASH Game on the Atari 2600

<https://www.youtube.com/watch?v=XxpJ2T1HOuA>

Deliverables:

* P.E.R. Sheet with the list of activities that you have completed showing estimated times and actual time spent on them
* A small paragraph reflecting on the differences between your estimations and time actually spent on these tasks
* Screenshot of your repository showing a ‘pull request’ for each task completed
* Working playable game that runs on Windows

Note 1: If your game does not run, you do not get any marks

Note 2: You game have to comply with the specifications listed above.

Note 3: Feel free to add new features ☺ - Be creative – This will give you a higher mark.

Note 4: Make a ZIP file with this template and the binaries of your game (don’t forget to include the \_data folder)

Marking Criteria:

|  |  |
| --- | --- |
|  | **Marks** |
| P.E.R Sheet | 20 |
| Reflection | 20 |
| Extra Features | 20 |
| Version Control | 20 |
| Working Game | 20 |
| Total | 100 |

Submission Details

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| --- | --- |
| Student Name | Jack Cooper |
| Student ID | 12876823 |
| Date | 19/03/2019 |

Plan Estimate Record Sheet

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| Dfl;kgjd;flkgjd;lfkj | | |
| P.E.R. Sheet | | |
| **Task** | **Estimated Time of Completion**  **(*minutes)*** | **Actual Time Spent**  ***(minutes)*** |
| Setup Project | 4 | 9.43 |
| Setup Scene manager | 2 | 1.2 |
| Player Controls | 30 | 36 |
| Tree Collisions | 10 | 7.54 |
| Soldier Logic | 20 | 25.23 |
| Hospital Logic | 15 | 16.32 |
| Game Over/Win Screen | 20 | 10.24 |
| Assets/sprites | 30 | 26.5 |
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Reflection:

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| **While a fair few tasks took around the estimated time or under, others took far longer than expected, bumping up the total development time significantly. Changes to how some mechanics work and bugs usually were the reason for the increased time.** |

Extra Feature(s):

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| --- |
| **Instead of just moving the helicopter with the wsad keys, the helicopter is a physics object and has forces and torque applied to it, making the game somewhat harder and more interesting.**  **Use space to thust upwards and a/d to control rotation of helicopter.** |

Version Control:

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| **I didn’t do this part right and didn’t create branches for each feature.**  **https://github.com/pog7776/MASHClone** |