Project Definition Document

Computer Science with Games Technology

First-Person Shooter implementing Key Game Design Principles

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*\_insert consultant name\_*

The project was proposed by me.

Word count = \_\_\_

**Problem to be solved:**

For my project, I want to develop a first-person shooter game that will incorporate key game design principles. Alongside the game, I want to create a short paper going into detail about each principle, addressing topics such as why is the principle important, good and bad examples of the principle in popular games, how a game designer could implement it into their game and how I have implemented it into my game.

Some of the principles I will cover include Challenge, Goals, Constraint, Reward, Punishment, Flow, Feedback and Storytelling.

I will find the existing knowledge about game design in “The Psychology of Games” course on Udemy by Pixelcademy (Udemy, n. d.), “Level Up! The Guide to Great Video Game Design” (Rogers, 2014) and “Games, Design and Play: A Detailed Approach to Iterative Game Design” (Macklin and Sharp, 2016)

The existing technical knowledge required to make a game in Unity I will find on the “Unity Learn” website, specifically, the Junior Programmer Pathway (Unity Learn, 2020) and “Game Coding Complete” (Mcshaffry, 2013)

**Project Objectives:**

Main Objective:

To create a well-rounded first-person shooter in Unity incorporating at least 1 example of each game design principle mentioned and produce a write-up going in depth about each principle used.

Write-up Specific objectives:

1. Produce a write-up of at least the following principles:
   1. Challenge
   2. Goals
   3. Constraint
   4. Reward
   5. Punishment
   6. Flow
   7. Feedback
   8. Storytelling
2. For each principle I will have a section for:
   1. The necessity of the principle in games
   2. Good and bad examples of the principle
   3. Potential ways to implement the principle into games
   4. How I have implemented the principle in my game

Game-Specific Objectives:

1. Objectives for the Player:
   1. The player should be able to:
      1. walk, run, jump and crouch
      2. Shoot
      3. take damage by being hit by an enemy
      4. take fall damage/
      5. shoot a variety of guns
      6. pick up guns
      7. use throwables
      8. utilise a weapon wheel
      9. pick up more ammo
   2. The player should:
      1. slow down temporarily after taking damage
      2. aim down sights with the gun
2. Objectives for Map Design:
   1. The map should have:
      1. 3 traversable buildings
      2. a 4th building, inaccessible but occupied by enemy snipers
      3. loot chests
      4. 4 different types of enemies including the main boss
      5. at least 2 hidden secrets, rewarding players who explore
3. Objectives for Enemies:
   1. There should be 4 types of enemies
   2. The small enemy should:
      1. be easy to kill
      2. unintelligent
      3. utilise small weapons
   3. The medium enemy should:
      1. have the same health as the player
      2. should be slower than the player
      3. try to use cover occasionally
   4. The strong enemy should:
      1. have more health than the player
      2. should be quick
      3. should be able to use a wide range of weapons
      4. should be intelligent and always use cover
   5. The boss should:
      1. have at least 4 different attacks
      2. have 2000 health
      3. get more aggressive the lower its health gets
4. Objectives for Progression:
   1. The player should:
      1. receive xp for every kill
      2. receive xp for every chest opened
      3. potentially level up 5 times
      4. level up based on xp earned
      5. receive unlocks after every level
5. Objectives for Visuals:
   1. There should be a:
      1. visual hitmaker when the player shoots an enemy
      2. visible difference in the hitmaker when the player hits a headshot
      3. visual displayed when either a player or enemy fires their weapon
      4. visual to inform the player they have levelled up
      5. visual for throwable explosions
6. Objectives for Loot:
   1. There should be:
      1. a chance of ammo being dropped when an enemy dies
      2. a chance of a weapon being dropped when an enemy dies
   2. The chests should:
      1. drop some ammo as standard
      2. drop additional items such as health packs or ammo refills occasionally on chance
7. Objectives for HUD:
   1. The HUD should:
      1. display the player’s level
      2. display the ammo of the current gun
      3. display a mini-map of where the player is
      4. display a compass
      5. display a crosshair for the player’s gun, the crosshair should change based on the gun
      6. disappear when the player aims down sights with the gun
8. Objectives for Audio:
   1. The music should change with each building and fit the theme of the building
   2. There should be:
      1. a sound effect for each gun firing
      2. a sound effect for hitmakers
      3. a slightly different hitmaker sound when a player hits a headshot
      4. an audio queue when the player takes damage
      5. There should be an audio queue to inform the player they have levelled up
      6. spontaneous noise from the enemies as if they’re talking
      7. footstep audio for the player and enemies
      8. The footstep audio should be silenced if the player is crouching
      9. player character voice clips to help the player navigate the world and understand the story
      10. audio for throwable explosions
9. Objectives for the overall game?
   1. The game should:
      1. checkpoint the player after completing every floor in a building
      2. revert to these checkpoints when a player dies
      3. be able to be saved by a player
      4. be able to record high scores based on how much xp the player earned and store it in a table
      5. be able to record the fastest times players completed the game and store that in a table
      6. be able to be paused at any time
      7. have achievements that the player can unlock through completing things in-game
      8. display the set of controls to the player
      9. have a start menu and an end card

Build approach:

40% build:

Build a fully functioning game in the Unity engine alongside a partially complete write-up of some of the game design principles involved

Specific game objectives to complete for this level:

1ai, 1aii, 1aiii, 1avii, 1bii, 2ai, 2aiv, 3, 5aiii, 7aiii, 7aiv, 7av, 8a, 8bi, 8bvii, 9ai, 9aii, 9aiii, 9avi, 9aviii, 9aix, 5av, 8bx

60% build:

Build a very well-rounded and enjoyable game incorporating most of the game design principles

Specific game objectives to complete for this level:

1aiv, 1av, 1avi, 1aix, 2aii, 2av, 4ai, 4aii, 4aiii, 4aiv, 4av, 5ai, 6ai, 6aii, 7ai, 7avi, 8biii, 8biv, 8bix, 9aiv, 2aiii, 6bi

80% build:

Incorporate 10-15 game design principles and build a clean and enjoyable game alongside a comprehensive write-up of the principles used.

Specific game objectives to complete for this level:

1aviii, 1bi, 5aii, 5aiv, 6bii, 7aii, 8biii, 8bv, 8bvi, 8bviii, 9av, 9vii,

Project Beneficiaries:

The main beneficiary of this project is me. I hope to create a game and write-up that I am very proud of to put on my portfolio for potential employers to see.

Another beneficiary of the project could be other game designers or people in the games industry who could potentially use my write-up to help them design their games or build upon my work and further develop either the game or the write-up.

Plan:

\*Insert Gantt Chart Here\*

* Add write-up to gantt chart
* Add pre-production to gantt chart
* Refine gantt chart
* Before inserting gantt chart talk about using Unity to develop game, unity asset store, unity online tutorials

Project Risks:

Risks to my project have been evaluated in the following risk chart:

\*Insert Risk chart here\*

As I am designing a video game I do not believe there are any risks to others that my project can cause.

Ethics Checklist:

References:

* Udemy. (n.d.). *The Psychology of Games - Secrets of Good Game Design.* [online] Available at: https://www.udemy.com/course/the-psychology-of-games-secrets-of-good-game-design/ [Accessed 30 Jan. 2023].
* Rogers, S. (2014). *Level up : the guide to great video game design*. Chichester: Wiley.
* Macklin, C. and Sharp, J. (2016). *Games, design and play : a detailed approach to iterative game design*. Boston, Ma ; San Francisco, Ca: Addison-Wesley.
* Unity Learn. (2020). *Unity Learn*. [online] Available at: <https://learn.unity.com/>.
* Mcshaffry, M. (2013). *Game coding complete*. Boston, Ma: Course Technology, Cengage Learning.