Galway Mayo Institute of Technology, Dublin Rd Campus

BSc in Software Development

Mobile Applications Development 3 Design Document

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October 15, 2020

Contents

Chapter 1

Project Overview

1.0.1 Introduction

Welcome my name is Tomás O'Malley (G00361128@gmit.ie) I am a final year Software Development student studying @ Galway Mayo Institute of Technology . Here I will be documenting the obstactles , game design etc to my ment for myis the Design 4th Year endless runner for the Module Mobile Applications 3. The game I have decided to create will be named " Coffee Run" and based around the beloved bevarge coffee.

1.0.2 Objectives

To create a concrete/precise write up to develope a 3D Video Game using Unity

Game Requirements

1. The game must be created using c-sharp scripts using the Unty 3D Enviroment

2. The game must have a control system e.g WASD keys combination and or Gesture based for mobile Devices.

3. The game must have a graphical front end for the user to interact with e.g menus systems.

4. The game must involve a protagonist character and enemies/targets throughout the gameplay.

5. The game must include power ups to reward the player.

6. The game have a multiplayer functionality to be played as both a single player and multiplayer experience.

1.0.3 Setting

1. The year is 2020 you follow a the main character "Joe" a cup of coffee who must dodge all of his biggest threats , cups of ice coffee , tea and soft drinks.The game is a fast paced 3D endless runner where joe caffeine meter points increase by collecting rewards such as coffee cups . The Game has Three worlds (1)Espresso : You are dodging hitting trains (2) latte : you are late to work and you must carefully make it back swiftly on the motorway and (3)Nightcap : Dark night and lost of treats lurk and congrigate in the shadows beware !

Chapter 2

Game Philosophy

2.0.1 Types of Games

1. 3D Rail Shooter

  - A rail shooter is a type of action-based video game. In a rail shooter the
    player control is limited to directing where to fire a virtual gun or move their
    avatar around the screen; the player does not control the path their avatar
    takes from the start to the end (although they may be able to pause that
    movement).Examples of 3D Rail Shooter - StarFox 64 on nintendo 64.

   – Above is a snapshot of the classic rail shooter starfox

2. - 3D Endless Runner

  - An Endless Runner is characterized as an action game, linear in design with
    no end, without pauses or breaks for rest and no stages or changing levels. It
    has one continuous level. The game difficulty starts slow and easy.Examples of
    Endless Runners include Temple run available on the Ios Platform.

- Above is a snapshot of the classic endless runner Temple Run

3. Traditional Board Game

   - Board games are traditionally a subset of tabletop games that involve counters or pieces moved or placed on a pre-marked surface or "board", according to a set of rules. In common parlance, however, a board game need not necessarily contain a physical board.

   - Above is a snapshot of the traditional board game Chess

- The Game I have chose to base my project off of is the classic iOS game "Temple run" as outlined above in (1).I opted to use the clone and tweak approach to create a fuller game for modern users.The Game will be named "Coffee Run" referring to the endless movement of the main character who is a a cup of coffee.The game will be aimed for PC users with peripheals such as keyboard , mouse etc.
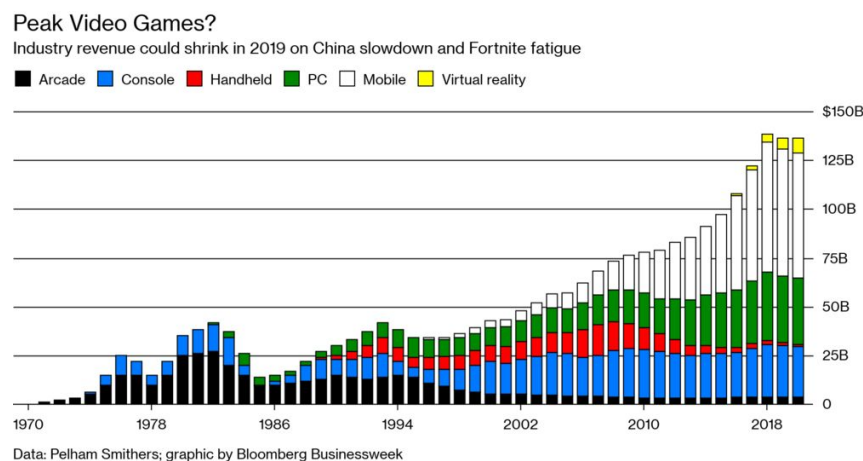
Chapter 3

Introduction to 3D Gaming

3.0.1 Video Games

1. - Video Games Background

- Video Games are everywhere and are one of the core types of entertainment for people.We now live in a world where a person can access hundreds of thousands of games for free online and the hardware can fit in the palm of your hand.People want to be immmersed in a world they control.Underneath is a chart displaying the revenue of video games from 1970-2020

Peak Video Games?
Industry revenue could shrink in 2019 on China slowdown and Fortnite fatigue

■ Arcade ■ Console ■ Handheld ■ PC □ Mobile ■ Virtual reality

Data: Pelham Smithers; graphic by Bloomberg Businessweek

- Above is a Bloomberg chart of the revenue generated from video games

2. Multiplayer and Lan Gameplay

- A multiplayer video game is a video game in which more than one person can play in the same game environment at the same time, either locally (e.g. New Super Mario Bros. Wii) or online over the internet (e.g. World of Warcraft, Call Of Duty).
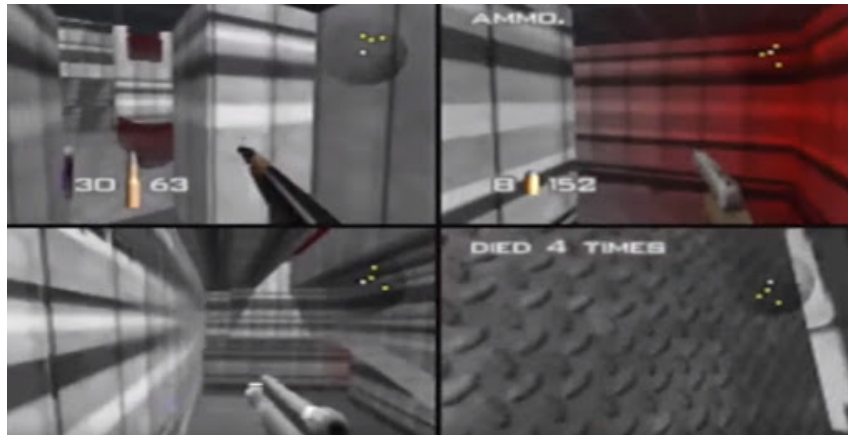
- Above is a snapshot of the classic game 007 : Golden Eye in Multiplayer Mode

3. 3D Gaming Hall of Fame

   - Doom was the first 3D FPS shooter games to be released.It was released December 10 , 1993 by Jihn Romero and a team of four other progammers. John is now a resident of Galway City and continues to create games. Doom was a huge success and a massive breakthrough for 3D graphics and set a standard for whats to be expected from fps shooters and soundtracks.

   - Above is a snapshot of the classic 3D game Doom December 10 , 1993

Chapter 4

Front End

4.0.1 Graphical User Interface

1. Splash Screen

   - Splash screens are typically used by particularly large applications to notify the user that the program is in the process of loading. They provide feedback that a lengthy process is underway. Occasionally, a progress bar within the splash screen indicates the loading progress. A splash screen disappears when the application's main window appears. Splash screens may be added for a period of time and then replaced anew.The Splash screen displays the developers name and the studio icon.

2. Pause System

   - The user will be prompted by an opening menu and can access the side menu from pressing the (P) key at any time during gameplay.The user will be given four options at the pause menu

     (a) Resume : User can continue
     (b) Options : User can change the sounds and brightness settings
     (c) Quit : User can quit the game and return to the main
     (d) Save : User can save the game

   - The user has access to all these options throughout game. These options are the minimum requirements in a menu system.E.g Games such as super Mario Brothers use these menu systems.

3. Main Game

   - Once the user the enters passes the splash screen they will be prompted by the main menu screen.Sketches outlined in Chapter 7 The Game.The main menu displays all options to the user before proceding.The user uses the WASD keyset to progress.

     (a) Single Player : Loads the single player
     (b) Multi Player : Loads game for two players
     (c) Quit : Exits the game back to the Desktop Screen
   (d) High Scores : Displays the high Scores of the users Gam

Chapter 5

Control Mechanisms

5.0.1 WASD Control Mechanismn

The Player will control their movement through the use of the WASD keys. I found this is the mostcommon movement keyset from research online and from my experience of Computer gaming.I found this is the movement keyset for right handed People.WASD was also a standard used in the 1970s for video games like wizardy and allowed for the number pad to be free for additional controls.I decided that the fire action will be mapped to the space bar as it is too the most common approach . Controls for the Player Object are as follows W-Jump , A-Left , S-Duck , D-Right , Spacebar-Fire bullet and P to pause the game session.

1. Button Combinations

   - (W) - When the W key is triggered the player will jump upwards and play a short animation
   - (A) - When the A key is triggered the player will move left and a short animation will play to immerse the player
   - (S) - When the S key is triggered the player will duck downwards and a short animatiopn will play
   - (D) - When the D key is triggered the player will
   - (SPACEBAR) - When the space bar is triggered the fire button will be triggered and a bullet object will be shot
   - (P) - When the P key is triggered the game will come to a hault and the player will be prompted with a puase menu
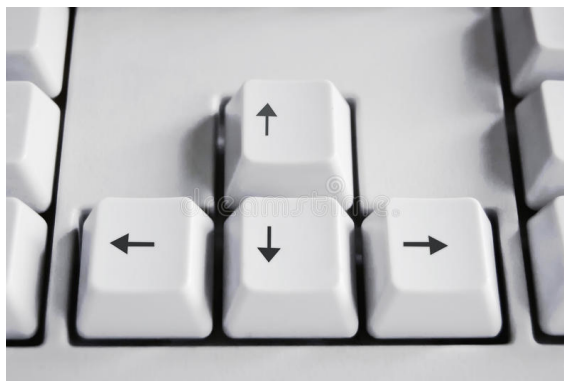
   - Above is a snapshot of the WASD keyset found on keyboards

Chapter 6

Software

6.0.1 Development Tools

1. Unity Engine

   - Unity is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at Apple Inc.'s Worldwide Developers Conference as a Mac OS X-exclusive game engine. As of 2018, the engine had been extended to support more than 25 platforms.

2. LaTex Document Editor

   - LaTeX, stylized within the system as LaTeX, is a software system for document preparation. When writing, the writer uses plain text as opposed to the formatted text found in "What You See Is What You Get" word processors like Microsoft Word, LibreOffice Writer and Apple Pages

3. Windows 10 Operating System

   - Windows 10 is a series of operating systems developed by Microsoft and released as part of its Windows NT family of operating systems. It is the successor to Windows 8.1, released nearly two years earlier, and was released to manufacturing on July 15, 2015, and broadly released for the general public on

4. Script Editor TextMate

   - TextMate is a general-purpose GUI text editor for macOS created by Allan Odgaard. TextMate features declarative customizations, tabs for open documents, recordable macros, folding sections, snippets, shell integration, and an extensible bundle system.

5. GitHub Version Control

   - GitHub, Inc. is an American multinational corporation that provides hosting for software development and version control using Git. It offers the distributed version control and source code management functionality of Git, plus its own features.

6. Image Editor

   - GIMP is a free and open-source raster graphics editor used for image manipulation and image editing, free-form drawing, transcoding between different image file formats, and more specialized tasks. GIMP is released under GPLv3+ license and is available for Linux, macOS, and Microsoft Windows.

Chapter 7

The Game

7.0.1   In Game

Chapter 8

Game Characters

8.0.1 Models

1. Player

    - The player Design

8.0.2 Enemies/Targets

- The Emenmy System

Chapter 9

Level Design

9.0.1 Art Direction

1. Game World

   - The game holds 3 different levels .
     (a) Espresso : Set in a busy streets
     (b) Latte : Set on a busy road full of obstacles
     (c) Nightcap : Set in a dark night enviroment

2. SoundTrack

   - The soundboard used in game is sampled from

9.0.2 Difficulty

- Difficulty plays a huge role in the 3D endless runner. The user will experience a faster paced game with more obstacles as the more point they run.

Chapter 10

Reward System

10.0.1 Player Collectables

1. Health Booster

    - Player Health Booster

  s

2. - invincibilty Booster

    - invincibilty Booster

3. - Points Mulitplyer

    - The points multiplayer

10.0.2 Power Ups

Chapter 11

References

11.0.1 Sources

- Underneath are the references used throughout my Design document for my Mobile Applications Development.

1. Rail Shooter Description

2. Endless Runner Description

3. Traditional board game Description

4. Video Game revenue Statistics

5. Mutiplayer Game Description

6. Splash Screen Definition

7. Unity Game Engine Description

8. Latex Editor Description

9. Windows 10 description

10. TextMate Editor

11. GitHub Description

12. GIMP Sprite Editor Description