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MSD 6.1B

Abstract

[Draw your reader in with an engaging abstract. It is typically a short summary of the document.   
When you’re ready to add your content, just click here and start typing.]

Assignment 2 – Runner Game

Object Oriented Programming

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## Section 1 – Game Design

1. Prepare a Game Design Document, which outlines the following: (see the downloaded documents in the downloads folder)
   1. Game Title and Description
   * Game title for the game is Runner. The game concept of this game is to create a player that needs to collect coins as much as possible in a few seconds and while facing the obstacles without touching them so the player lives and health won’t decrease and the player will end up losing. Throughout the game, the player is going to face obstacles, the player needs to run away from the obstacles which they will consists of different strengths. If the player hit a coin, the score will increase. At the end of the game, the game will show the player how much score and high score does the player have. To be able to move the main character who is a man, the user need to click on the four-arrow key of the keyboard which are the top, bottom, left and right keys and the user need to click on the space bar to make the man jumper higher to collect as many coins as possible in a few seconds because a timer will be applied to the game.
   1. Choose and describe a Game Type (Single Screen, Platformer, Scroller, Side-Scroller, Adventure)
   * The genre of this game is going to be a running and jumping game which is going to be developed for computer devices. It is going to be a 2D platformer game which is intended for kids who are six years old and more.
   1. Game Loop
      1. What will the player be doing in your game?
      2. ii. How will they do it?
      3. iii. How does the player progress through the game?
      4. iv. How is the narrative delivered?
   2. Scope
      1. How long is the game?
      2. How many levels are there?
      3. What is the average play time?
      4. What are the objectives?
      5. How many playable characters?
   3. Art Style / Assets
      1. Include a description of your art style and supplement with art concepts or inspirational concepts. Describe your style for the environment, characters, UI, etc. You can also link to a different area/scene it lives in.

## Section 2 – Functionality Requirements

Design one Animation using state machine system.

Diagram

Description automatically generated

Graphical user interface

Description automatically generated

## 3.4 Research and describe Exception Handling

In Object-Oriented Programming, exception handling is a dominant mechanism for centralized processing of issues and unusual situations which let the exceptions to be thrown and caught. This type of mechanism is controlled by the Common Language Runtime (CLR) which changes the procedure-oriented method or error handling in which each method or function returns a code that suggests a successful execution or an issue. Exception handling will answer to the exceptions when the program starts running. The exception will occur when the unpredictable event appears that it needs certain processing. For instance, a developer will produce an abnormal input, when the method is trying to attempt an answer to divide by zero or else a file system error is experienced throughout the write or read a file.

<https://www.tutorialspoint.com/csharp/csharp_exception_handling.htm>

<https://www.computerhope.com/jargon/e/exception-handling.htm>

## Section 4 – The Final Game

4.1 Design a class diagram to describe your OOP application.

4.3 Write a short report detailing:

a. The code design pattern and OOP concepts used in your game.

OOP concepts that I used were access modifiers, inheritance, polymorphism, abstract class and the getters and setters. Certain access modifiers were implemented to be public, private and protected. Public, so that I can call and amend certain attributes from other scripts, for instance public static float XMin() from the GameData script to the Player script, so the player will not exceed the camera x and y positions.

b. Suggestions for improvement.

To improve my game, I could make the player move his legs while he is moving on the grass, and while he is jumping to collect the coins, I could make him jumping position instead of running. Another improvement could be that while the background is scrolling and the player is moving and jumping, I could create a script which it will take care of the grass, so as soon the last grass is showing, I could keep looping and showing the grass automatically throughout the game and could add more enemies with different health. If the player touches an enemy, a health bar will be shown with and the health of the health bar will be decreased according to the enemy’s health. I could add more levels, by making them more difficult. I could add a menu with different players, so the user can choose which player the user wants to play with. Also, I can make the game 2 versus 2, so two users can play their main characters, while the other two users can play as the enemies.