Learning Aim B - C – Design and develop a computer game to meet client requirements

**Introduction**

As part of my project, I will be discussing the design and development of my game. I will explain how each component of the game works. The aim of this project is to design and develop a game which can be played by anyone who has access to a computer. I will also show what improvements could be made as well as some that I considered as a result of feedback from my colleagues

**Time Management and Gantt Chart**

Here is the list of components that make up the base of the game.

* + **Bird Flight**
  + **Scrolling Background**
  + **Obstacle Placement**
  + **Collision Detection**
  + **Death**
  + **Character Creation**

To make sure that I keep focussed and efficient I created a Gantt chart which separates each stage of development into separate tasks and the number of hours spent on the task determines the priority.

**Gantt Chart will go here.**

|  |  |  |
| --- | --- | --- |
| **Possible Tests** | **Expected Outcome** | **Actual Outcome** |
| Pygame been imported? |  |  |
| Are the window dimensions a sensible size. |  |  |
| Images loaded in properly. |  |  |
| Controls mapped to the correct buttons. |  |  |
| Collision detection working properly |  |  |
|  |  |  |
|  |  |  |

**Test Plan**

1. Has Pygame been imported?
2. Window dimensions are a sensible size?
3. Images loaded properly
4. Controls working
5. Score counter functioning properly
6. Collision detection
7. Music plays when the game starts and stops when game ends.

**(More will be added here)**

After each test is done, there should be an explanation of the expected outcome and actual outcome. As well as the action taken to fix the problem.

**Game Overview**

The game I want to create is a 2D automated side scroller like Flappy Bird. The objective of the game is to get past as many obstacles as possible and pick up as many collectibles which will increase your score counter.

Due to the game being endless there is no win condition the only way to “win” would be to get the highest score as you possibly can. The lose condition would be taken hits from the obstacles which block the path.

**Designs**

**Mechanics of the game**

For the score counter to increase the avatar must pass through a pair of pipes of varying heights. After a collectable item is obtained depending on the size of the bonus it will increase the counter by that amount.

The controls of the game are simple. The space bar is used to increase the height of the bird by a certain number of pixels. Leaving the input will cause the bird to drop.

When an obstacle is hit, the game cuts and will have to be ran again. To improve on that I will have to create a start/pause menu which run the game loop again if the player dies.

**Show hand-drawn designs of the game here**

**Bird Flight**

Bird Flight works by using the cosine function to get a nice curved path which the bird will travel along. Within the first few frames of the climb the bird won’t travel high up the y-axis but over time the bird will reach its maximum height

Explain the basic mechanics of the game – e.g Controls, how does the score counter increase. Aim for the game.

What inspired me to design the game the way I did.

**Suitable Platforms for the game**

\*PCs are going to be the main platform of my game due to how easy it is to distrn

PCs and Laptops – easy distribution, low system requirements to run the game

Explain why you haven’t considered other platforms such as a console. E.g. - game is too basic to require the power of the console.

**Software used to develop the game**

To develop my game, I used the programming language python alongside the gaming module pygame.

I picked this language due to me already having a grasp of it and how relatively easy it is to use. However, with python alone developing the game would have been a difficult task so I used the pygame module.

Pygame is a separate piece of software which allows the development of games in Python to be more efficient.

* Python and Pygame Module.

Explain the positives and negatives of me using Python and how using pygame made the process of developing the game easier.

**Performance of the game on the platform**

Explain how fast the game runs on PC, talk about any performance issues and optimisations which must be made to allow the game run efficiently.

**Review client requirements of the game**

Discuss how the game meets my target range of everybody – Talk about the simplicity of the game and how anyone can easily get started.

**Conclusion**

Explain how I got to my final product and how I considered all of the feedback to improve and optimise the game.

**General Algorithm of the game**

Write out how the game would run in basic steps.

**Code**

Copy and paste all code here.

**Errors to talk about**

Object Placement