Pac-man 2022

Genre: Arcade, Retro

Project Summary

Immersive Studios is currently developing a prototype for the classic arcade game 'Pac-man'. The game aims to bring the classic game to a modern audience through a contemporary interpretation of its mechanics.

Objectives

The aim of the game is for the player to attain the highest score they can. The player controls Pac-man and guides him through the environment, with the objective of consuming all of the pellets in the level. While navigating the environment the player also needs to preserve their lives by avoiding four artificial intelligence controlled ghosts. If the player loses all their lives, they lose the game.

Supplied Resources

The "Pac-man2022" Unity Package provides all the scripts required to implement the core functionality. You will need to generate or source all other assets such as 3D models, sprites, and any other required assets. Assets sourced from a third party must be published under the CC-0 'public domain' copyright license.

Gameplay

Core Mechanics

Pac-man

There are three primary mechanics involved in the functionality of the player's avatar – the character controls, the camera controller, and the health/life system.

Pac-man is capable of moving in four directions, with the player controlling the character's movement. The main camera will look at and follow Pac-man's position from an offset 'third-person' perspective. The speed of the camera will need to be aligned with the speed of Pac-man's movement in order to ensure that the character is always visible by the camera.

The player is given a specified number of hit points/lives which define how many times they will respawn in the game before they lose the game. For a short period after the player has spawned back into the game after being eaten by a ghost, they will be invulnerable. If the player gets eaten again after having lost all available lives, the game is over.

Ghosts (AI)

Four ghosts controlled by artificial intelligence search for Pac-man through the environment – Blinky, Clyde, Inky, & Pinky. Each ghost has a unique behavior pattern that determines how they attempt to find Pac-man. When a Power Pellet is consumed all ghosts will temporarily be vulnerable to being eaten by Pac-man, and will flee his position until the Power Pellet buff expires. When a ghost is

eaten by Pac-man, it will return to the AI starting bounds at an increased speed before spawning back into the game and resuming its standard behavior pattern. The appearance of each ghost will change while they are in the flee state or in the spawning state.

Blinky will always try to move to Pac-man's current position.

Clyde will transition between the chase and flee states at randomly timed intervals.

Inky & Pinky will always try to move to a position that is slightly offset from Pac-man's current position.

Game Manager

The Game Manager is responsible for monitoring the player's score as well as the overall state of the game. There are two ways for the player to score points – by eating pellets and ghosts. There are three types of pellets – regular pellets, power pellets, and bonus items.

Regular pellets are worth a single **(1)** point and are placed throughout the level.

Power pellets are worth a single **(1)** point, are placed in each corner of the level, and will temporarily grant a buff to Pac-man. The buff from a power-pellet causes all four ghosts to enter the flee state, and while the buff is active Pac-man is capable of eating the ghosts for five **(5)** points each.

Bonus items are worth fifty **(50)** points and will spawn at a specific point in the environment once the player has consumed one quarter **(¼)**, one half **(½)**, and three quarters **(¾)** of the total pellets in the level. A bonus item will only spawn if there is not already one that is active in the level.

When all pellets have been consumed or Pac-man dies with the player lacking any remaining lives, a user-interface panel is displayed that provides the user with two options – restart the game, or quit to the desktop.

Specifications

Platform

The game is to be developed for desktop computers (PC) that run on the Windows operating system.

Visuals

3D Models

The following gameplay assets will require an appropriately textured 3D model. Animations are not required but can be integrated as desired.

- **Characters**
  - *Pac-man*
  - *Blinky*
  - *Clyde*
  - *Inky*
  - *Pinky*
- **Items**
  - *Regular pellet*
  - *Power pellet*
  - *Bonus item*

User-Interface

The user-interface should be constructed so that it maintains a full high-definition resolution (1920x1080) between varying screen sizes. The following assets will be required for the user-interface.

- An icon image to represent a single player life.
- A font for the textual elements of the UI.

Audio

Audio assets for the following gameplay events will be required. You may also source an appropriate music track to play on loop.

- Picking up a regular pellet.
- Picking up a power pellet.
- Picking up a bonus item.
- Eating a vulnerable ghost.
- Pac-man being eaten by a ghost.

Control Scheme

Game Mechanic	***Keyboard Mapping***
Move Pac-man North	W *or* Up Arrow Key
Move Pac-man South	S *or* Down Arrow Key
Move Pac-man East	A *or* Left Arrow Key
Move Pac-man West	D *or* Right Arrow Key

Unique Gameplay

The following list details a range of unique optional mechanics/gameplay elements that have not yet been implemented into the project. It is a requirement that you implement ***at least one*** of the following unique gameplay mechanics.

Mechanic	***Description***
Mini map	A permanently visible small UI element that provides an overhead view of the level within a certain radius of the player.
Overview map	A UI element that is toggled on or off, overlaying the screen space that provides an overhead view of the entire level.
World interaction (doors)	Doors that can be placed throughout the level that the player must interact with to open. Doors should automatically open for ghosts, and automatically close once a character has moved through them.