G51FSE - Galactic War

Design Portfolio

Galactic War will be a 2D arcade shooting game with a theme based on space and spaceship battles. It is going to be designed and implemented using python/pygame.

Prototype

Game concept:

With a basic idea of game content in mind, we have looked at some popular 2D spaceship shooting games such as AttackWave and Galaxy Gunner. We have decided that our game will have a similar theme as we will incorporate a few basic principles from these games outlined above whereas there will also be additional features that will make our game stand apart from them. The game is going to be one player only which means that only one spaceship is being controlled by the player. The main objective of the game will be to obtain scores according to both the playtime and the number of enemies killed while the secondary objective will be to level up as playtime increases. The player controlled spaceship will be able to move freely on the screen, and the mouse will be the only device that makes the player’s ship move/shoot, this can ensure the simplicity of control. The player will have 3 lives to begin with, and there will be a health bar that shows status of the life. The game will end when the number of lives depletes.

Requirements Definition

Our task was to produce a 2D arcade game from scratch through design, prototyping, refinement, implementation, testing, and evaluation stages. The game that we are going to create should be creative and should aim at people of all ages.

Requirements Specification

* **Functional Requirements**

1. The player ship shall be controlled by mouse

1.1 The ship will always face towards the cursor

1.2 The ship will accelerate towards the cursor when the right mouse button is held down, and stops accelerating when it reaches a set velocity limit

1.3 The ship will decelerate when the right mouse button is let go

1.4 The ship will stop moving when its velocity reaches zero

1.5 The ship will shoot bullets continuously when the left mouse button is held down, unless the auto-shoot option is selected

1.6 The ship will stop shooting when the player lets go of the left button of the mouse

1. The bullets shall be released by both player’s ship and enemies' ships

2.1 A bullet colliding with a spaceship(enemies’ or player’s) will cause the spaceship to lose certain amount of health

2.2 The bullets will disappear after they collide with other elements

2.3 The bullets will be removed when they reach the edges of the window

2.4 The player will be able to choose between click-and-shoot mode and auto-shoot mode

1. The enemies’ spaceships shall travel around the screen

3.1 There will be several types of ships

3.2 The speed of the ships will depend on their type

3.3 The ships may fly towards the player’s ship or fly according to set paths

3.4 The ships will be destroyed when their health reach zero

3.5 The ships will be destroyed when they collide with player’s ship

3.6 The ships will disappear and get removed when they are destroyed

1. Asteroids shall fly into the screen from random directions

4.1 Asteroids will come in different sizes

4.2 The speed of the asteroids will depend on their size

4.3 Asteroids may travel in straight lines or curved paths

4.4 Asteroids may fly towards the player’s ship

4.5 Asteroids will cause the player to lose one life when they collide

4.6 Asteroids will be destroyed when their health reach zero or when they collide with other elements

4.7 Asteroids will disappear and get removed when they are destroyed

4.8 Enemies’ ships will be destroyed if they collide with asteroids, however the player will not gain score from this

1. There shall be a health bar that keeps a track of the player’s ship’s status

5.1 The colour of the health bar may change depending on the ship’s health

5.2 The length of the bar will decrease when ever player’s ship loses health

5.3 The length of the bar will deplete completely when the ship collides with any elements other than the bullets

5.4 The amount of lives will decrease by one every time the ship’s health reaches zero

5.5 The game will be over when the number of lives reaches zero

1. There shall be a scoring system

6.1 The score will increase continuously as the playtime increases

6.2 The score will also increase every time an element in the game is destroyed by the player

6.3 The level of difficulty will increase every time a certain benchmark of playtime is reached

1. Sounds shall be played in the game

7.1 Sound effects will be played every time an element is destroyed

7.2 Background music may be playing throughout the game

7.3 Sound effects will be played when the spaceships shot

1. There shall be a local leaderboard to show the player’s highscore and the best level achieved
2. The player might want to have an option in the game which will allow connection to a social network

* **Non-Function Requirements**

1.2 The game must be compatible with Windows operating system, and it may be compatible with other major operating systems

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