

PLAYER 1



HIGHSCORE 2500



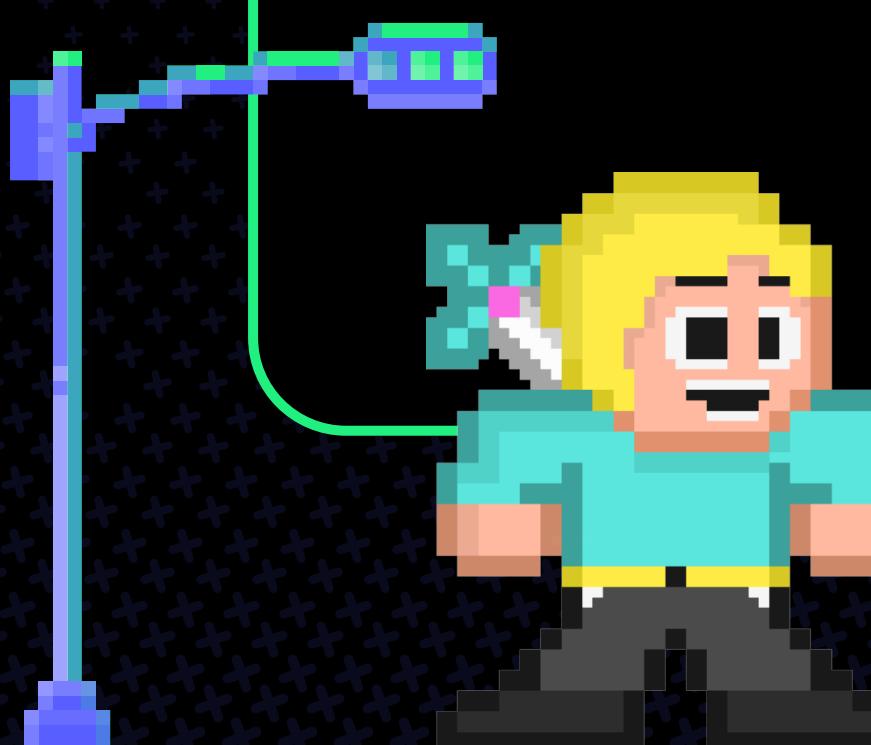
PLAYER 2

# ARCADE GAMES

START

MENU

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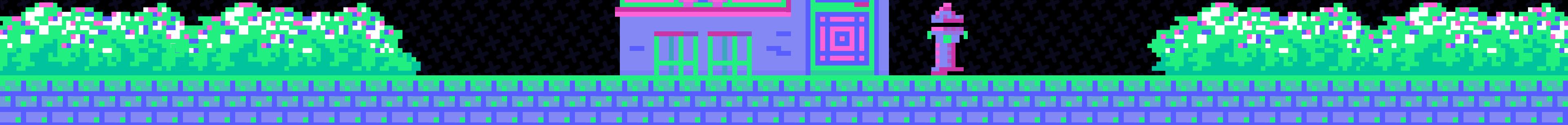
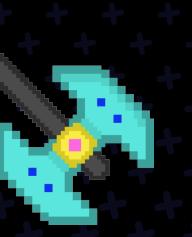
◆ TEAM 1 - ADAG, DY, GODINEZ

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BACK TO AGENDA PAGE

# SOFTWARE REQUIREMENTS SPECIFICATION



MENU

⚡ 01

♦ 07

★ 12



# PRODUCT OVERVIEW

◀ BACK

SELECT GAME

BomberMan



PLAY

PacMan



PLAY

Space Invaders



PLAY

- ◆ ARCADE GAMES IS AN OFFLINE, MULTI-GAME PC APPLICATION THAT COMBINES THREE VINTAGE ARCADE GAMES—SPACE INVADERS, BOMBERMAN, AND PAC-MAN—INTO A SINGLE PLATFORM

MENU



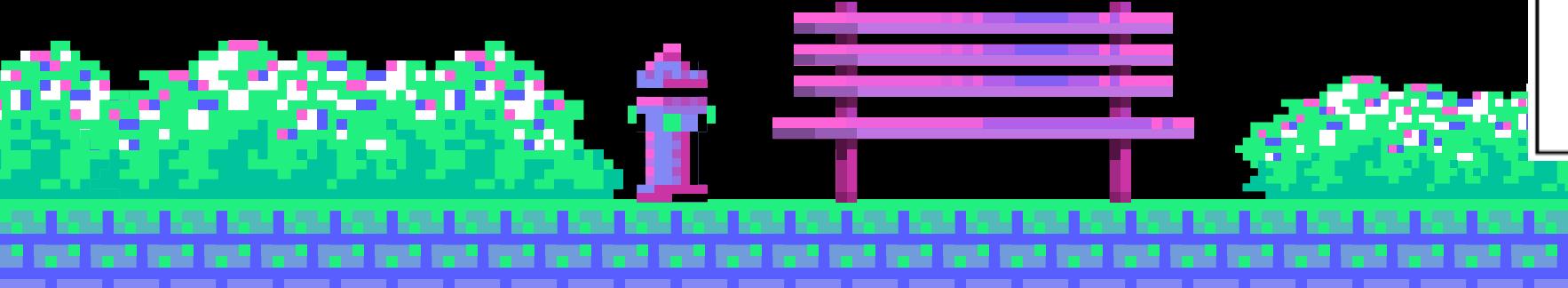
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07

12

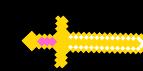
# SOLC MODEL: AGILE USER STORIES

- We followed the Agile methodology for flexibility and continuous improvement.
- Frequent meetings with our client helped us adjust features based on feedback.
- Development was done incrementally, adding one game and feature set at a time.
- Deliverables were tested and refined after each iteration.



User Stories	
Features	Stories
Compiled System of Entertaining Games	<p>As a gamer, I want the games to have a win-lose condition so that playing the games feels exciting.</p> <p>As a gamer, I want to have an assortment of games to choose from so that using the system does not feel repetitive.</p> <p>As a gamer, I want to be able to replay any game so that I can keep playing for as long as I want.</p> <p>As a gamer, I want the game instructions to be displayed whenever I play a game so that I understand the objectives of the game and how to play it.</p> <p>As a gamer, I want the games to have power-ups so that I feel motivated when playing the game.</p>
Main menu navigation	<p>As a gamer, I want to be able to select from the variety of games in the main menu so that I can accessibly make choices.</p> <p>As a gamer, I want to be able to adjust game options from the main menu so that I can play games however I find comfortable.</p> <p>As a gamer, I want to be able to view the game leaderboards from the main menu so that I can see all the player scores in one place.</p>
Leaderboard System	<p>As a gamer, I want to beat highscores to feel a rush of satisfaction.</p> <p>As a gamer, I want to be at the top of the leaderboards so that people will recognize my skill.</p> <p>As a gamer, I want to compete with other local players' highscores.</p>
Presence of audio	<p>As a gamer, I want to listen to background music that matches each game's theme so that I feel more immersed in the gameplay.</p> <p>As a gamer, I want to hear sound effects from actions like bomb explosions, shooting projectiles, and eating ghosts so that the game feels more interactive and responsive.</p> <p>As a gamer, I want an option to mute or adjust the volume settings so that I can control the loudness of the game's audio.</p>
Games are visually appealing	<p>As a gamer, I want the game visuals to complement the game itself so that I can feel immersed in it while playing.</p> <p>As a gamer, I want the game visuals to be necessary and meaningful so that I can effectively process what is happening in the game visually.</p>
Pause the game while playing	<p>As a gamer, I want to pause the game so that I can temporarily stop playing to do other things.</p> <p>As a gamer, I want to be able to resume the game from the pause menu so that I can play it at the pace I want.</p> <p>As a gamer, I want to be able to restart the game from the pause menu so that I can replay the game whenever I want.</p> <p>As a gamer, I want to be able to quit to the main menu from the pause screen so that I can stop playing when I do not feel like it.</p>

MENU



01



07



12



# SOLC MODEL: AGILE

## SPRINT TIMELINE AND DELIVERABLES

PRE-SPRINT: Initial Planning, Functional and Non-functional Requirements, Diagramming

### SPRINT 1 (weeks 1-4): BASIC GAME MECHANICS

- Character Movement
- Map and Entity Design
- Game Specific Features (ex: Bombs, Shooting, Pellets)

### SPRINT 2 (weeks 5-6): ADDITIONAL FEATURES

- Power Ups
- Enemy Sprites
- Win-Lose Conditions
- Music and Sound Effects

### SPRINT 3 (weeks 7-10): USER INTERFACE AND SYSTEM NAVIGATION

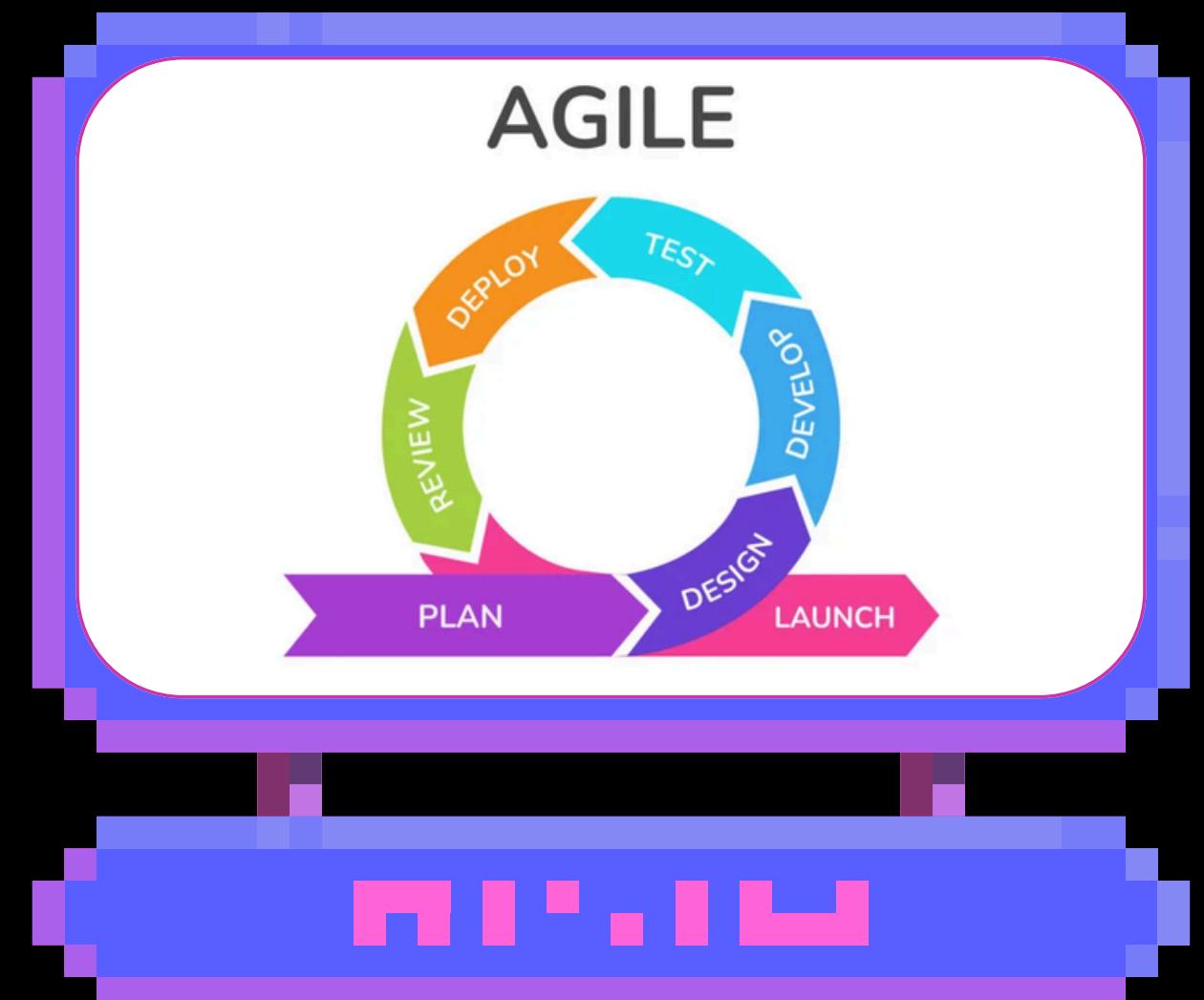
- Main Menu Screen
- In-Game Heads-Up Display (HUD)
- Leaderboard Ranking and Player Score Calculation

### SPRINT 4 (weeks 11-12): SETTINGS AND CUSTOMIZATIONS

- Volume and Audio Settings
- Control Key Mappings View

### SPRINT 5 (week 13): COMPLETE COMPIRATION

- All-In-One Compiled Game System



MENU



# FUNCTORIAL REQUIREMENTS



## CORE GAMEPLAY MECHANICS

Each arcade game has unique but clearly defined game rules and objectives. Includes player controls, game loops, enemy behavior, and level progression –ensuring each title retains its classic gameplay feel.

## LEADERBOARD SYSTEM

Tracks and ranks player scores for each game, enhancing competitiveness and replayability. After each game over, users enter their name and see their ranking. Top 20 scores are displayed per game.

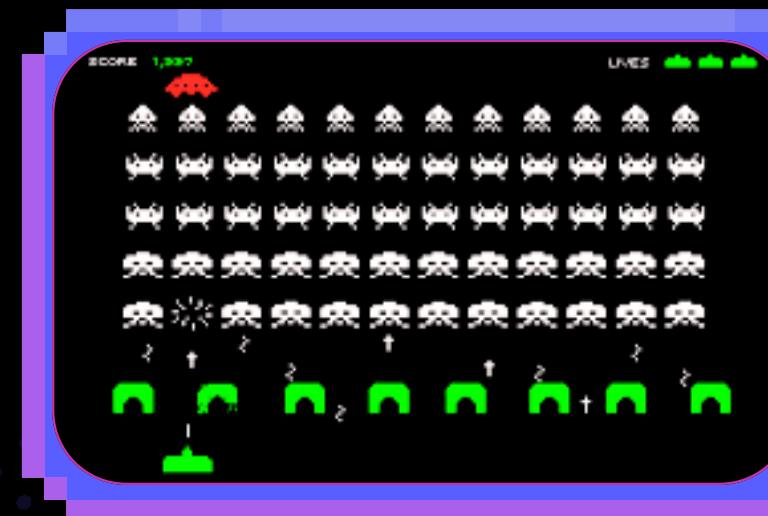
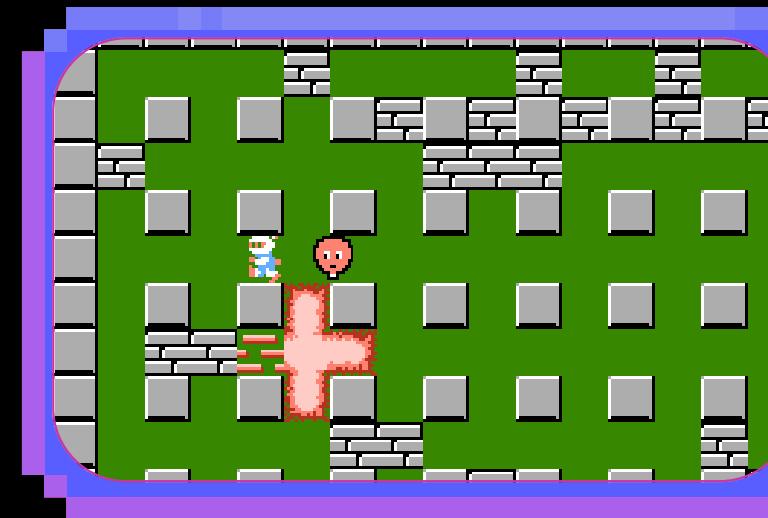
## AUDIO SETTINGS & CONTROL MAPPING

Players can adjust the master volume for sound effects and background music via a slider, with the option to toggle music on/off. The system also displays the default keyboard controls for each game

MENU



# NON-FUNCTIONAL REQUIREMENTS



## ◆ MAINTAINABILITY & SCALABILITY

Modular architecture allows easy updates and addition of future games. Includes logs for debugging and supports large score databases without performance degradation

## ◆ PERFORMANCE

Responsive gameplay at 60 FPS with minimal input lag (<100ms). Quick startup time (under 3s) and fast leaderboard updates (<1s) for a smooth gaming experience.

## ◆ USABILITY & RELIABILITY

Simple GUI design with intuitive interactions and help prompts. Supports customizable controls and has built-in testing for stability across multiple edge cases.

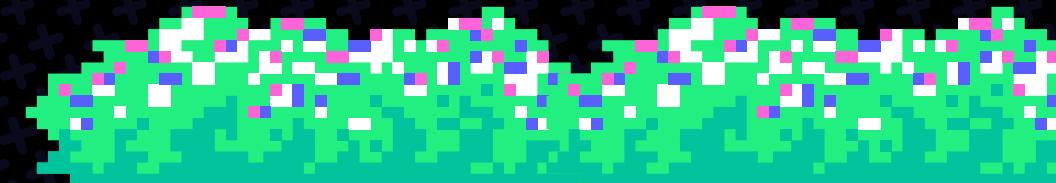
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BACK TO AGENDA PAGE



# SOFTWARE DESIGN DOCUMENT

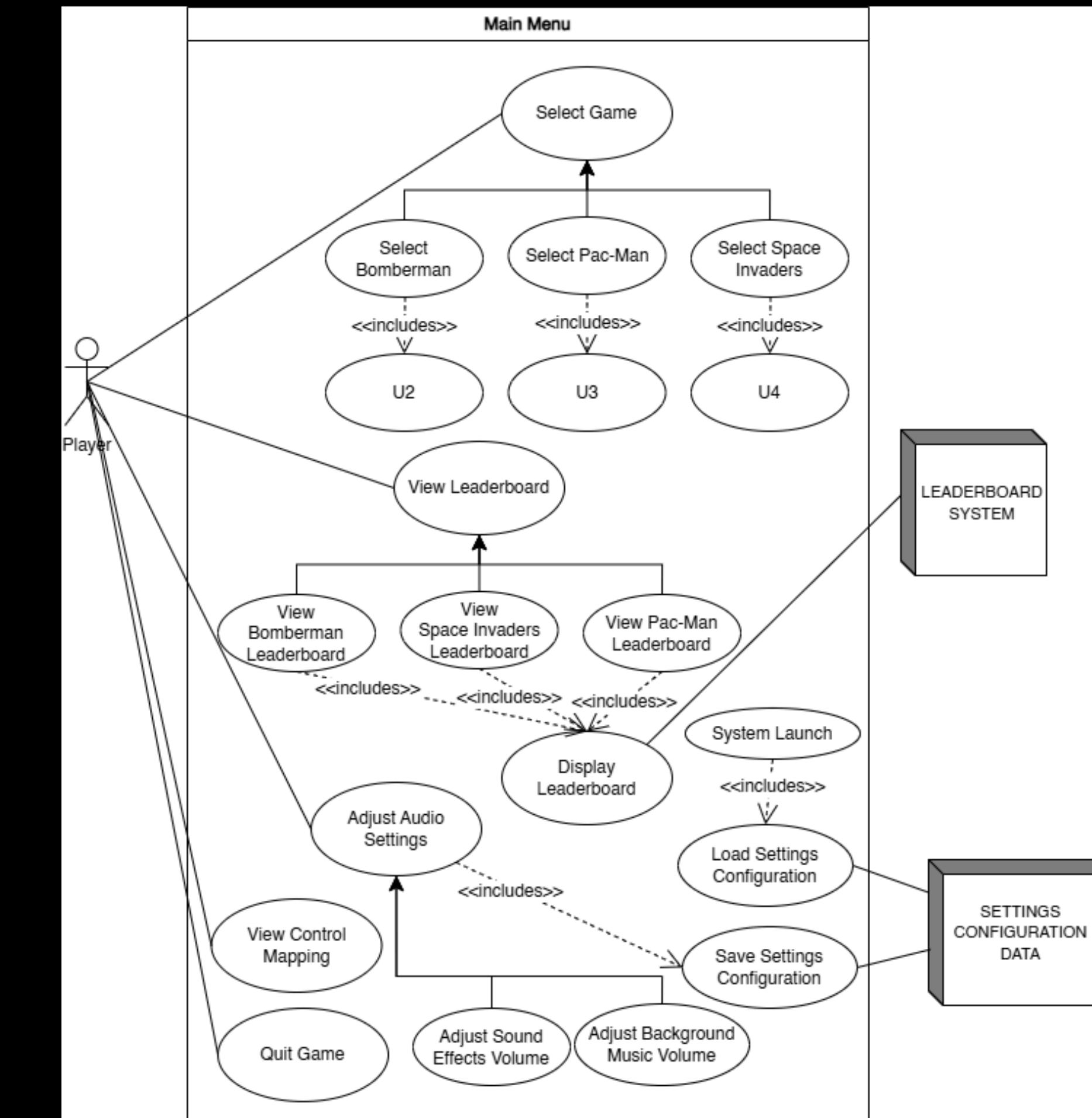


# USE CASE 1

## MAIN MENU

This main menu use case diagram outlines a simple game selection and leaderboard system. The menu allows users to:

- Choose between three classic games (Bomberman, Pac-Man, Space Invaders)
- View individual leaderboards for each game
- Adjust audio settings and view control mappings
- Quit the game



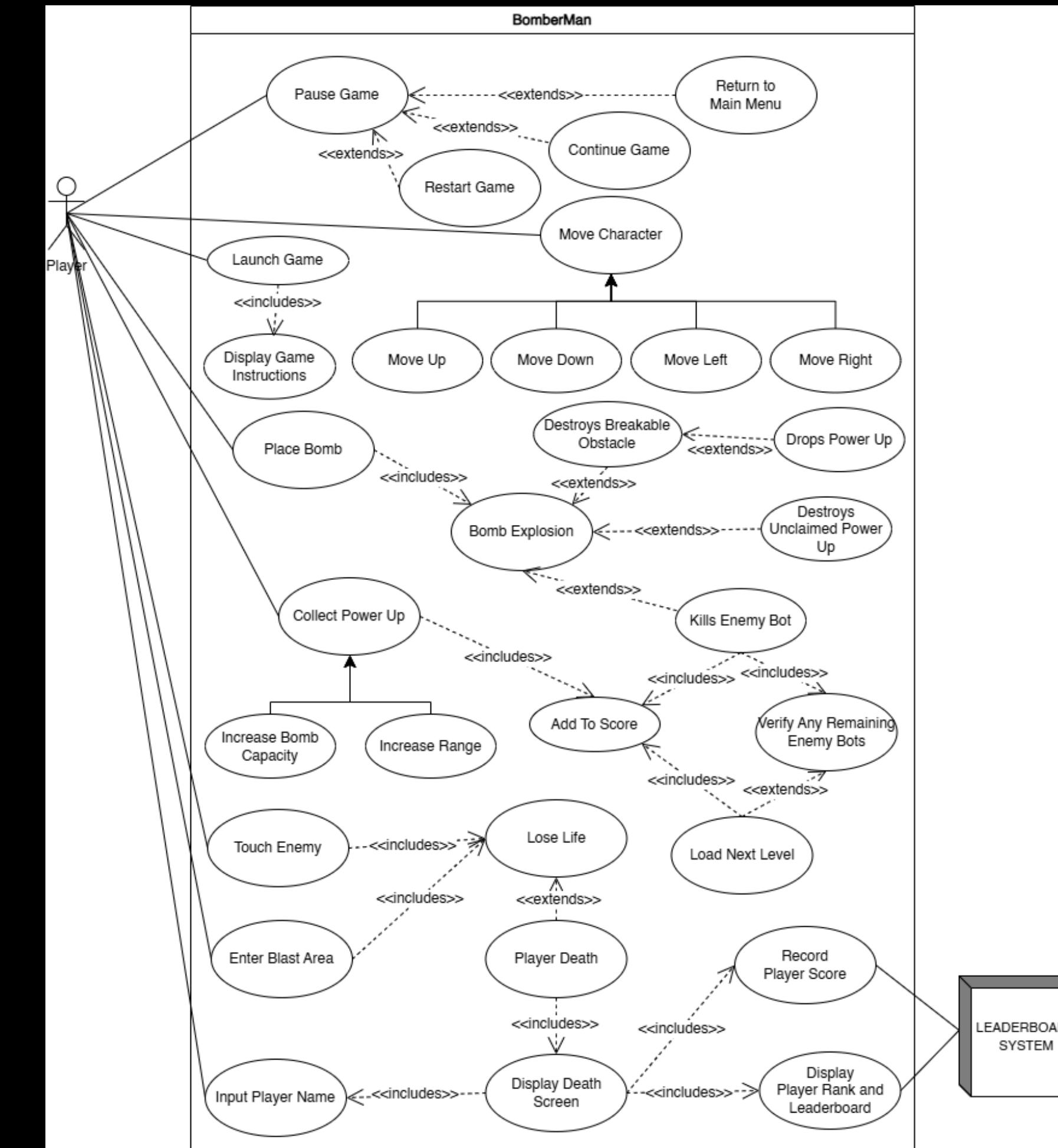
## USE CASE 2

### BOMBERMAN

This Bomberman use case diagram describes the core gameplay mechanics and player interactions.

The system allows players to:

- Control their character using directional inputs (Up, Down, Left, Right)
- Place bombs to destroy obstacles and defeat enemies
- Collect power-ups to enhance abilities, such as increasing bomb capacity
- Progress through levels by eliminating enemies and surviving blast zones
- Lose lives when caught by enemies or in explosions, leading to game over after all lives lost
- Record scores with player names for leaderboard ranking



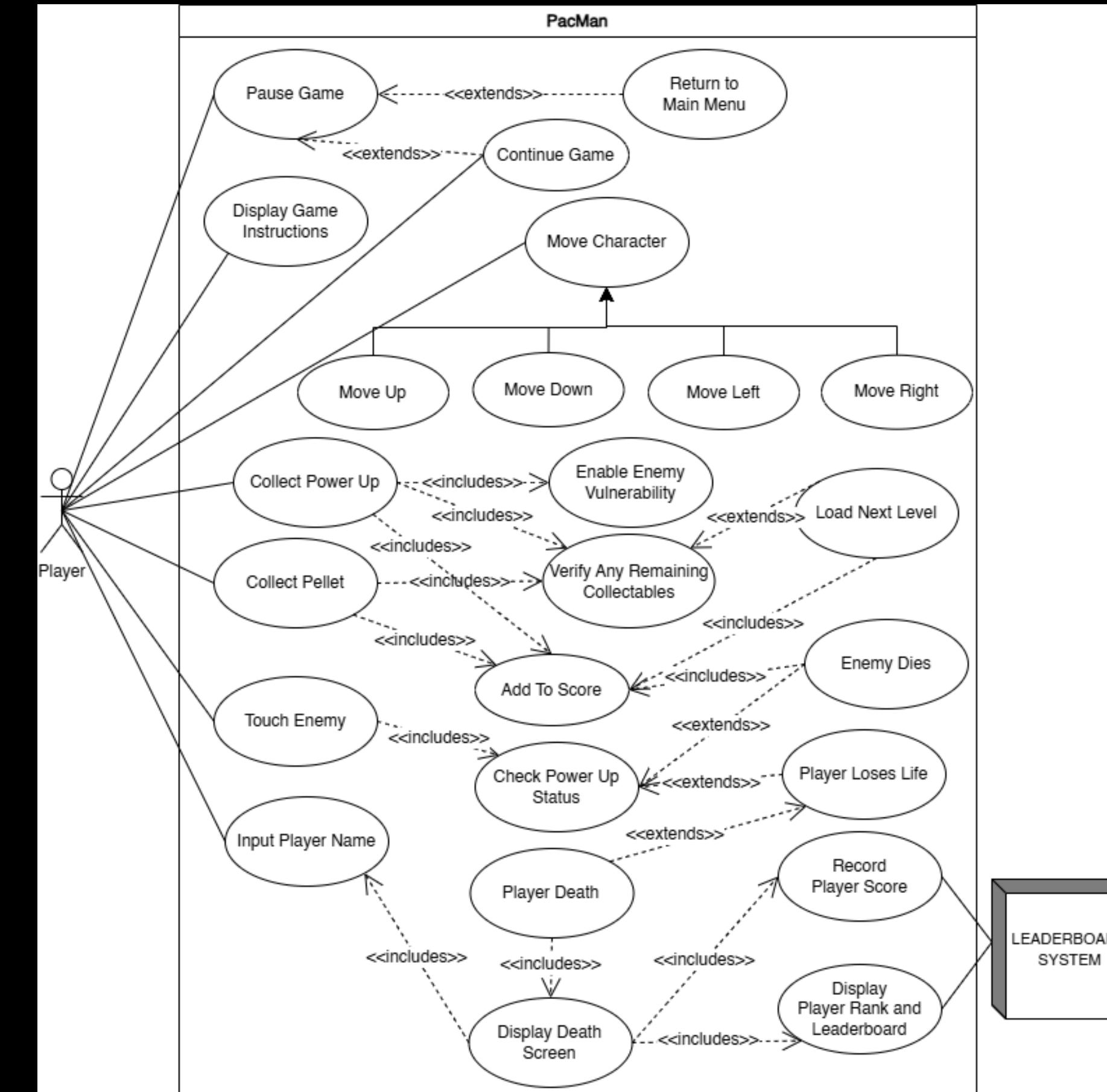
# USE CASE 8

## PACMAN

This PacMan use case diagram outlines the classic arcade gameplay mechanics and player interactions.

The system allows players to:

- Control Pac-Man using directional inputs (Up, Down, Left, Right)
- Pause the game, with options to return to the main menu or continue playing
- Collect pellets to progress and verify if any remain on the map
- Gain power-ups that temporarily make enemies vulnerable
- Lose lives when touching enemies (unless they are vulnerable)
- Track scores, with player names recorded for leaderboard ranking
- View game over screens upon losing all lives

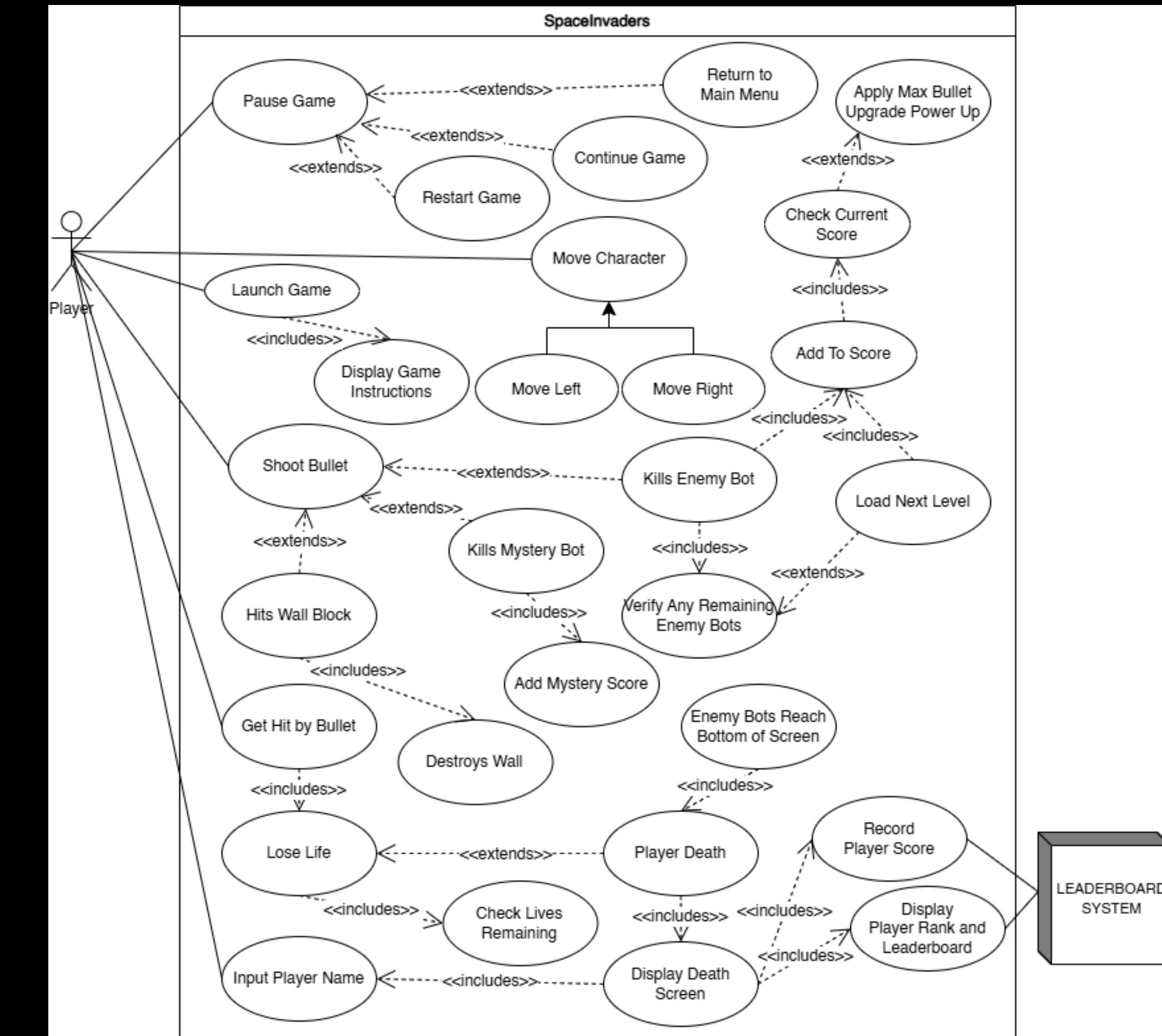


# USE CASE 4

## SPACE INVADERS

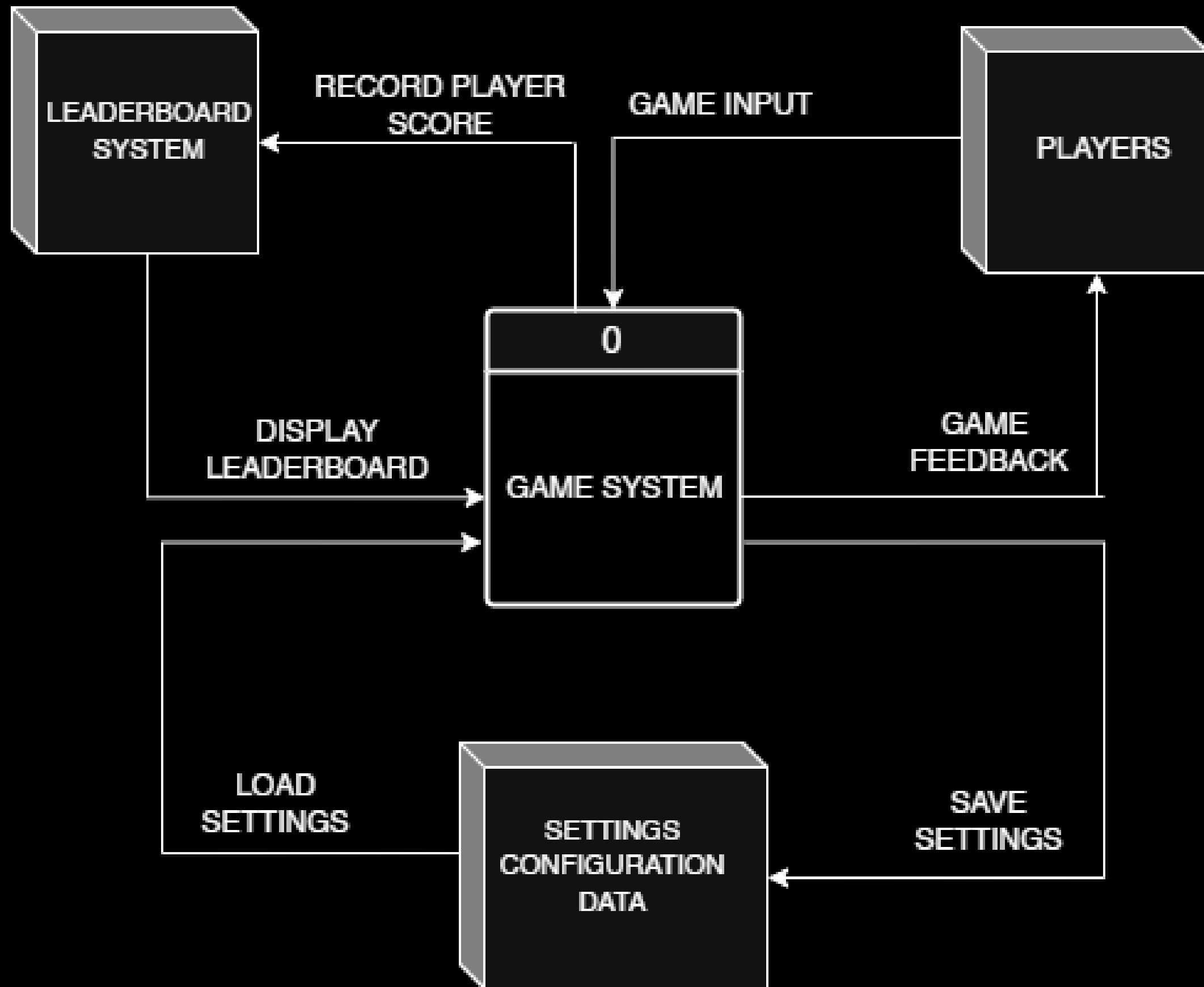
This Space Invaders use case diagram captures the essential gameplay elements of the classic arcade shooter. The system enables players to:

- Control their ship by moving left and right
- Fire bullets to eliminate enemy bots
- Pause the game, with options to return to the main menu or resume play
- Progress through levels by defeating enemies before they reach the bottom
- Lose lives when hit by enemy fire or if enemies breach defenses
- Track scores, with player names recorded for leaderboard ranking
- Experience power-ups that enhance player abilities



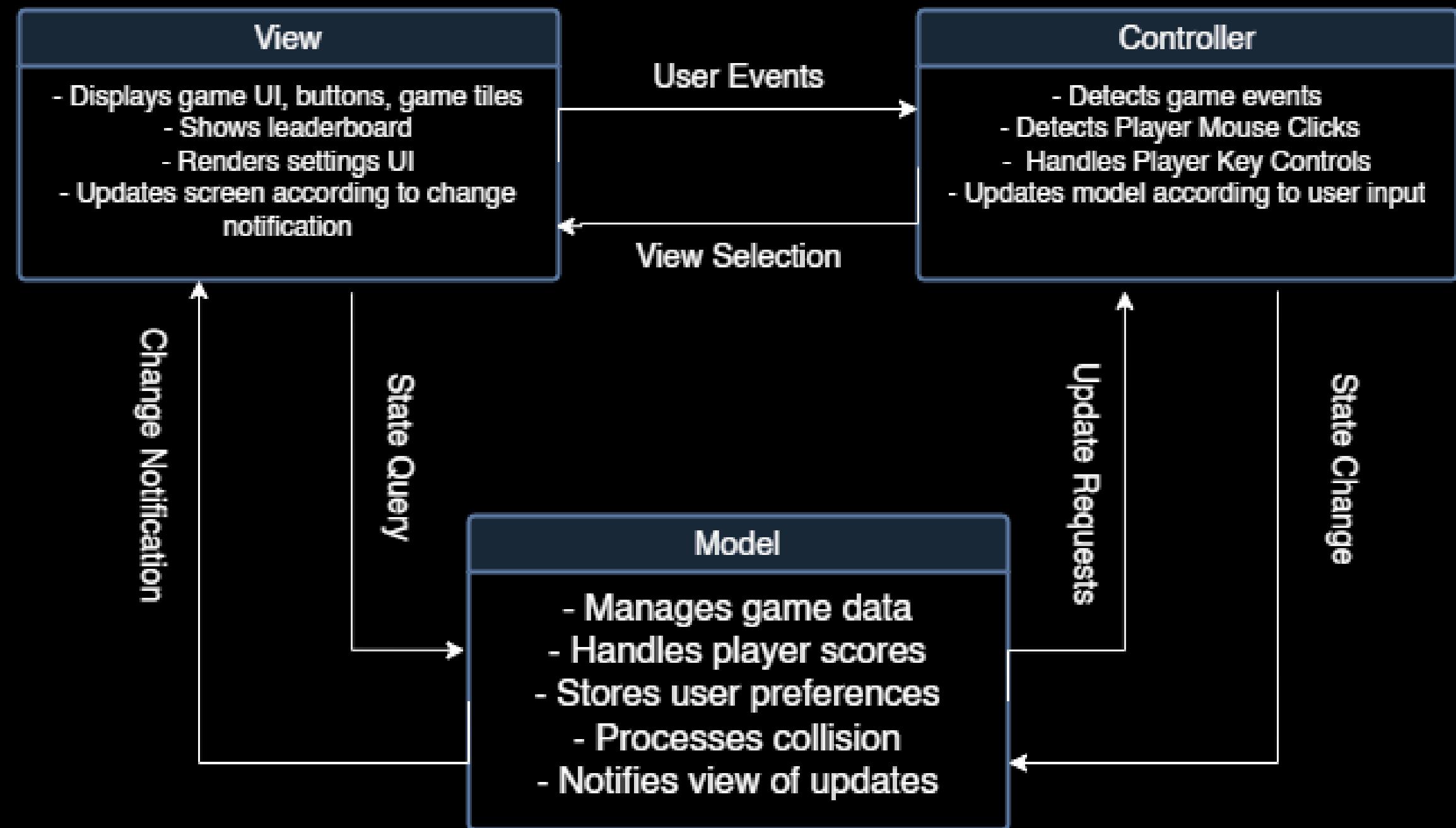
## CONTEXT DiAGRAM

- ### EXTERNAL ENTITIES
- Players
  - Leaderboard System
  - Settings Config



# ARCHiTECTURAL DESIGN

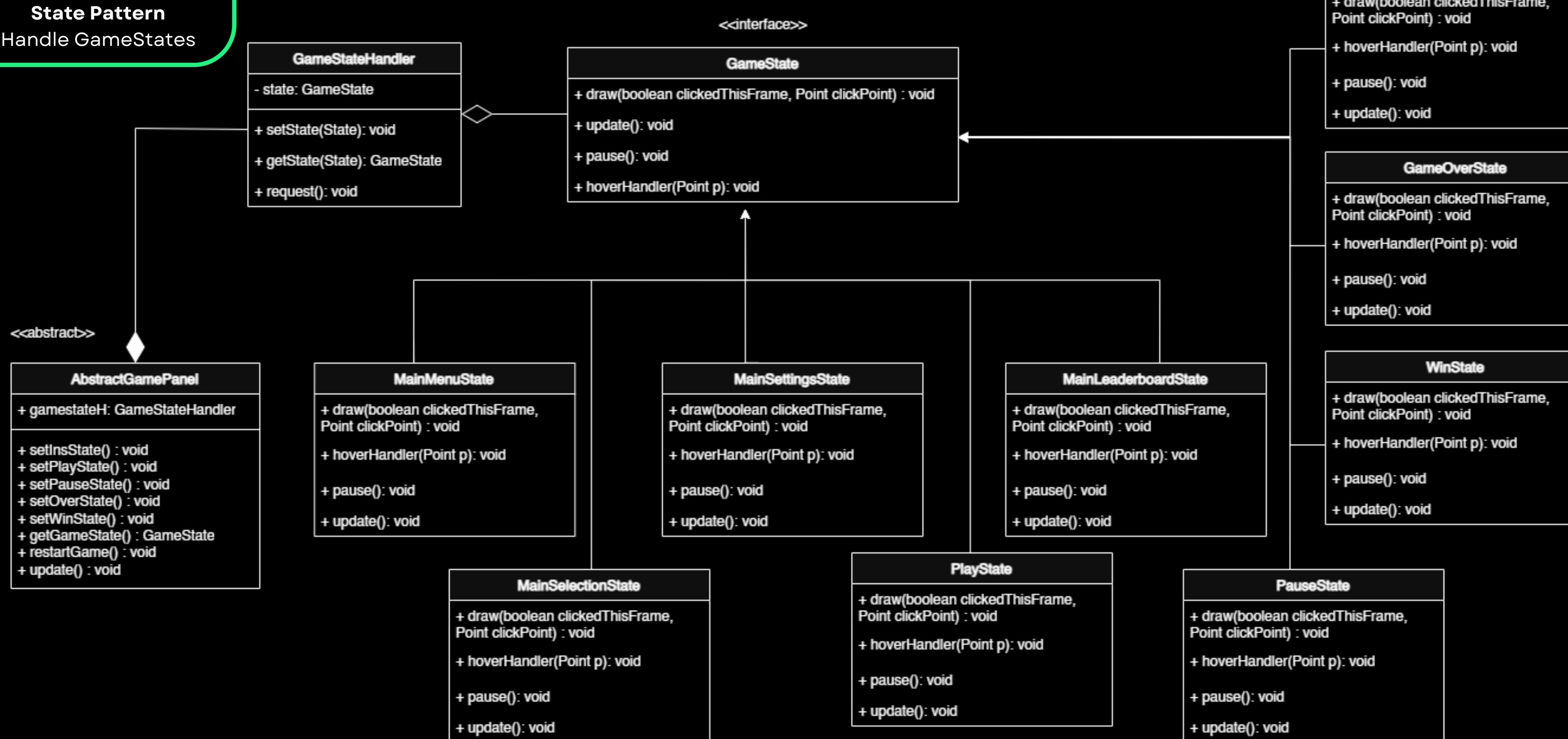
## Model-View-Controller (MVC) Pattern



# DESIGN PATTERN

## State Pattern

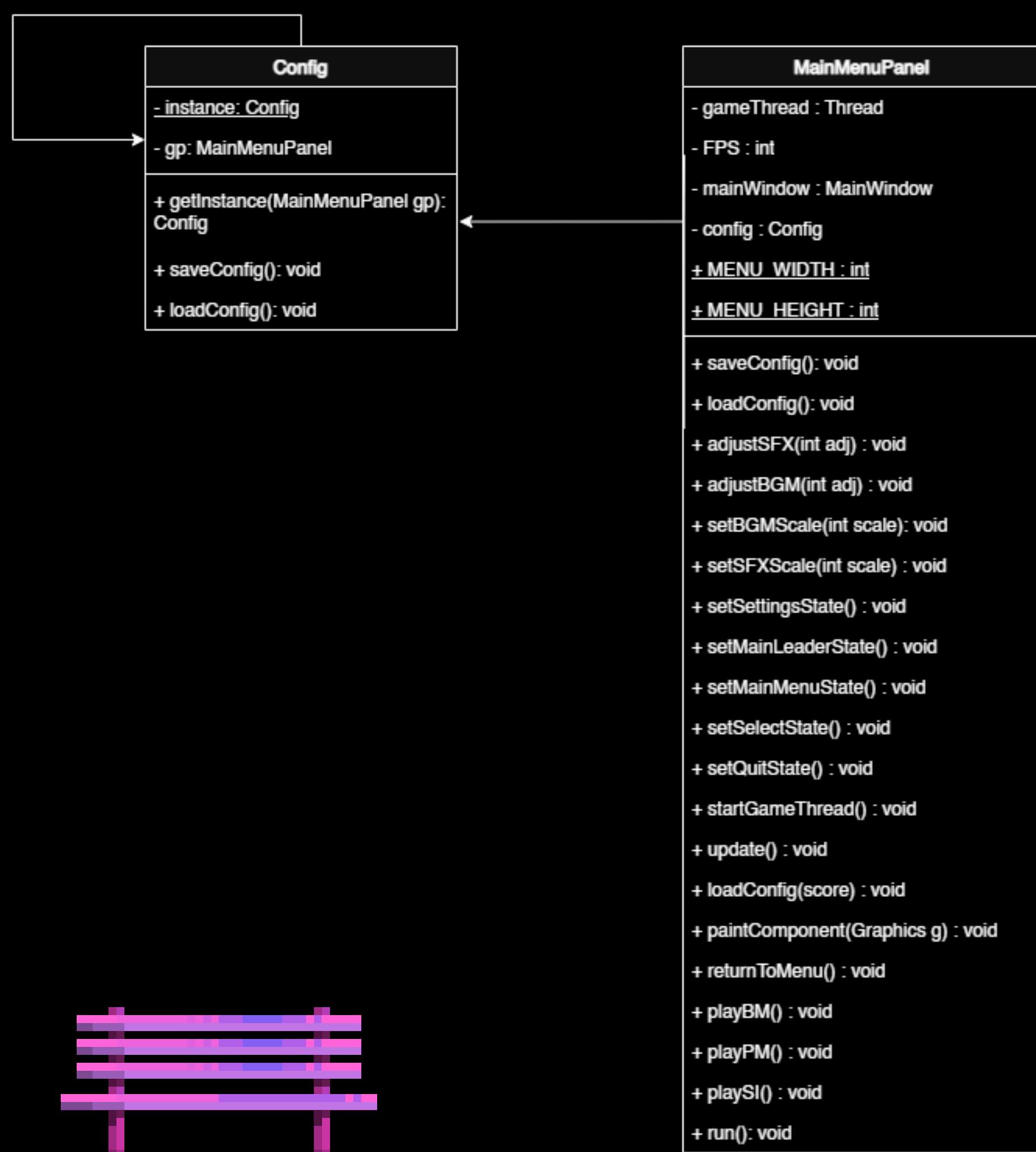
Handle GameStates



**DESIGN  
PATTERN**

**Singleton Pattern**

Ensures only one instance of the Config class is called to provide a single access point to the saved settings configurations



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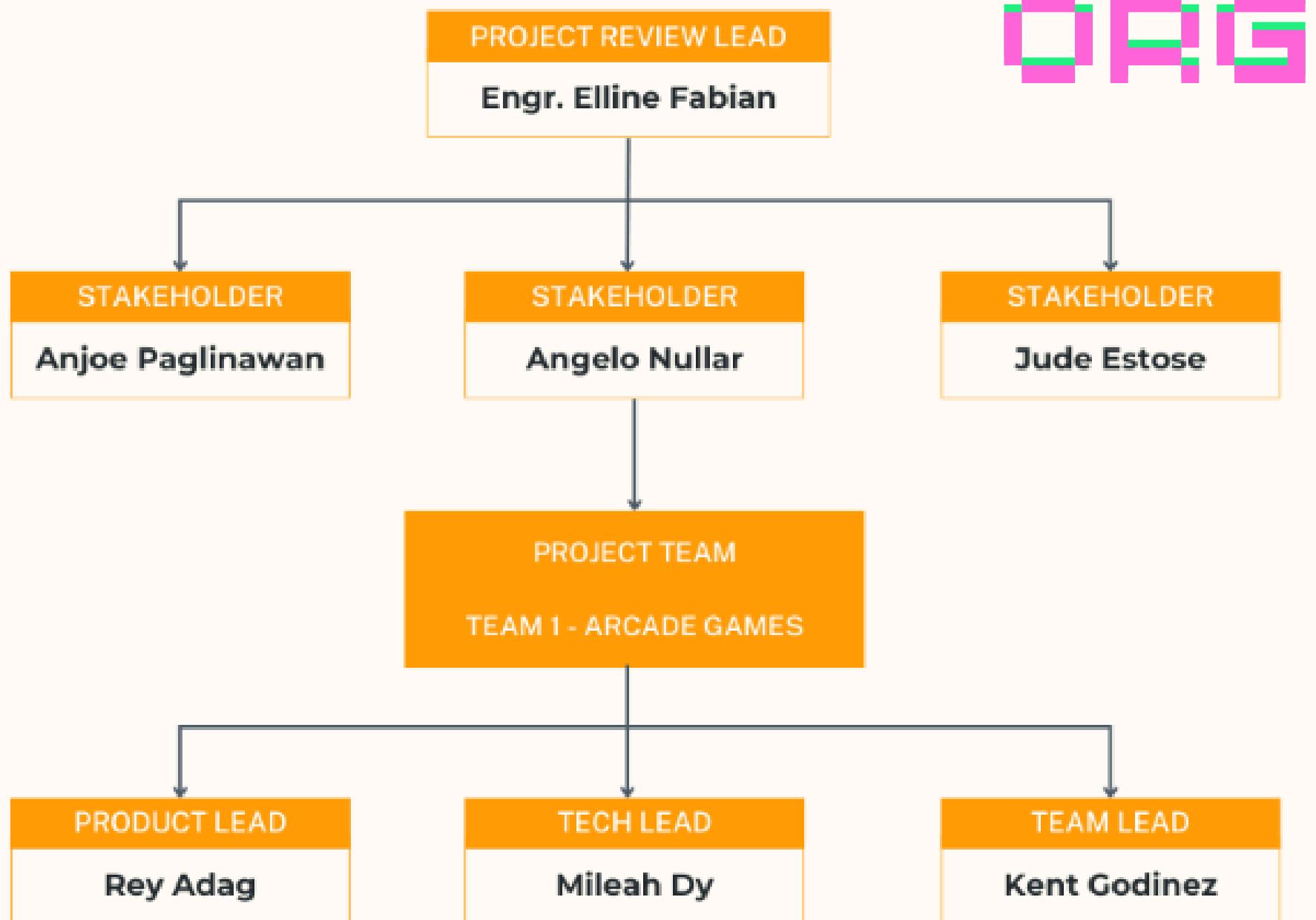


BACK TO AGENDA PAGE

# SOFTWARE PROJECT MANAGEMENT



## ORGANISATION CHART



# ORGANIZATIONAL STRUCTURE



# WORK

# PLAN



## REQUIREMENTS PLANNING.

SOFTWARE REQUIREMENTS AND PRODUCT OUTPUT DISCUSSION



## MAIN GAME DEVELOPMENT.

BOMBERMAN, PACMAN, SPACE INVADERS



## USER INTERFACE DESIGN.

INTEGRATE SYSTEM NAVIGATION, MAIN MENU, LEADERBOARD, AND SETTINGS



## TESTING AND DEBUGGING.

FIX BUGS AND REVISE SYSTEM

# WORKPLAN

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12



# WORKPLAN

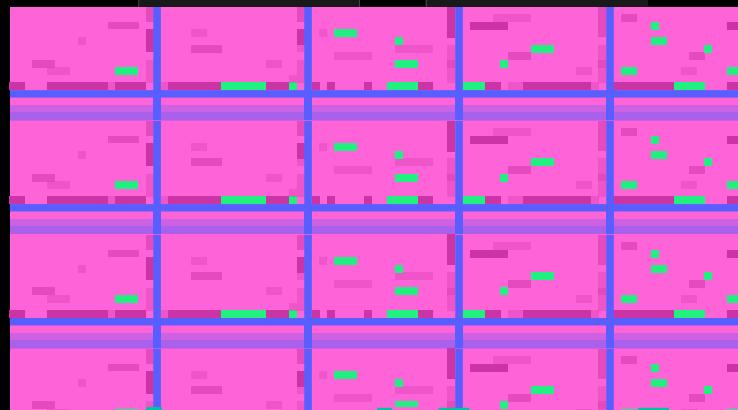
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PLAYER 1



### Materials or Equipments

Item #	Item Description	Quantity	Unit	Unit Price (PHP)	Costs (PHP)
1	All in one Desktop PC	3	per unit	Php35,000.00	Php105,000.00

Total

Php105,000.00

### Miscellaneous

Item #	Item Description	Quantity	Unit	Unit Price (PHP)	Costs (PHP)
1	Marketing	1	per year	Php5,000.00	Php5,000.00
2	Food Expenses	4	per month	Php25,200.00	Php100,800.00
3	Electricity	4	per month	Php5,000.00	Php20,000.00
4	Wifi	4	per month	Php3,000.00	Php12,000.00

Total

Php137,800.00

Contingency Costs (PHP)

Php48,560.00

Grand Total (PHP)

Php291,360.00

COST ESTIMATES

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BACK TO AGENDA PAGE



# GAME DEMO



MENU



THANK YOU!