

Uml report

Use case diagram design decisions

- The system has two primary actors
 - an unregistered user that is able to register and view the highscores
 - A Registered user who is able to play the game.
- The System has one secondary(external) actor
 - The database that holds the user information and highscores
- Both the login and register action need to verify the credentials of the users. This functionality is capture in a seperate use case that connects to the database.
- The move pacman functionality includes checking for collisions because this is mandatory for executing the game rules.
- Collision with unit is a generalization of the collisions with the different unit types. Each collision only differs in the action that should be taken upon collision.
- The six use cases that we describe are:
 1. Login
 2. Register
 3. Start game
 4. Move pacman
 5. Collision with unit
 6. View highscores

The verify credentials use case is captured in the other use cases and does not directly interact with the user that is why we chose to include it in the other use cases.

For the specific type of collision use cases we chose to describe them all in the generalized collision use case.

Use case descriptions

Use case 1

- **Use case:** 01 login
- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:** Login a registered user with given credentials.
- **Overview:** The user enters his/her username and password and presses the login button. The system validates the credentials by retrieving the saved information from the database. If the validation is successful the user will be redirected to the game's main menu. if the username or password is

incorrect the user is shown an appropriate error message

- **Cross References:** 03
- **Actors:** registered user.
- **Pre Conditions:**
 1. Username and password boxes are filled in
 2. The application has an active connection to the database.
- **Post Conditions:**
 - The user is send to the main menu

Use case 2

- **Use case:** 02 Register
- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:** Register an unregistered user.
- **Overview:** The user enters his/her username and password and presses the register button. The system checks if the password meets the requirements. If the password does not meet the requirements, the user is shown an error message. If the password meets the requirements the system checks if the username does not exists in the database. If the username exists the user is shown an error message. if the username does not exists, the credentials are saved to the database and the user is redirected to the main menu.
- **Cross References:**
- **Actors:** unregistered user.
- **Pre Conditions:**
 1. Username and password boxes are filled in
 2. The application has an active connection to the database.
- **Post Conditions:** The user is send to the main menu.

Use case 3

- **Use case:** 03 Start Game
- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:** Start a new game with the players, units and score in the correct state.
- **Overview:** The user presses the start button and the first level gets loaded with the player in the bottom of the screen and the ghosts in the middle of the screen. All paths in the game are filled up with pellets that need to be eaten before the player can proceed to the next level. pac man is able to move in all directions by key input of the user. The score gets initialized to 0 and displayed in the screen. The ghosts start moving around based on their logic.
- **Cross References:** 04 move pacman.
- **Actors:** Registered user
- **Pre Conditions:**
 1. The user is registered and logged in
 2. The application has an active connection to the database.
 3. Multiple text files are reserved characters are available to be parsed into a level.

- **Post Conditions:**

1. The game is loaded with all units in the correct position
2. score is initialized to 0 and displayed.
3. units are able to move.

Use case 4

- **Use case:** 04 Move pacman
- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:** The user is able to control pacman with keys as input.
- **Overview:** When the user input a key, the system detects the key stroke and checks if it's a reserved key. If the key is not recognized the pac man unit does not move. If the key is registered to pause the game, the game gets paused. If the key is recognized as a direction, the system checks if there is a collision with another for that location. If a collision is detected the system starts the appropriate sequence of actions. If no collisions are detected the pacman unit is moved unto that location.
- **Cross References:**
- **Actors:** Registered user
- **Pre Conditions:**
 1. The user is registered and logged in
 2. The game is started and the pacman unit is placed onto the level.
- **Post Conditions:**

1. Once a key is pressed the associated location coordinates are updated in the desired direction.

Use case 5

- **Use case:** 05 Collision with unit.
- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:**
- **Overview:** The player moves pacman unto a location that is occupied by another unit. If the other unit is a pellet, the pellet gets deleted. If the other unit is a wall, pac man is unable to move onto the location. If the other unit is a ghost, pac man dies and the game is over.
- **Cross References:**
- **Actors:** Registered user
- **Pre Conditions:**
 1. The game is started
- **Post Conditions:**
 1. The pacman unit is moved unto the position.

Use case 6

- **Use case:** 06 View Highscores.

- **Author:** Jason Bloom, Shubhankar Darbari
- **Date:** 26-11-2019
- **Purpose:** All users can view a list of the top 10 scores in the database.
- **Overview:** The user enters the start screen of the game and clicks the highscores button. The user gets redirected to the highscore page and the database recovers the top 10 highscores of which the username and score will be shown. If the database fails to load the highscores, an error message will be shown. If the database has less than 10 highscores only the available highscores will be shown.
- **Cross References:**
- **Actors:** Unregistered user, Registered user
- **Pre Conditions:**
 1. the user is on the start screen of the game
 2. The application has an active connection to the database.
- **Post Conditions:**
 1. the user is able to view the top 10 highscores on the highscore page.