

Whack It!

Iteration #3

Team 2: Frog on a Log Studio

CSE 3310 Fundamentals of Software Engineering

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Team Project Description

"Whack-It!" reinvents the classic whack-a-mole arcade game for modern, fast-paced mobile gaming. Designed for quick entertainment during downtime, like students between classes or commuters, our app lets you customize your game by uploading your own targets using custom images. Upon opening the app, players can jump right into a game, upload a photo to play with, or look at the extras for statistics and settings. When the game is started, users tap away at moles in order to gain points. Hitting bad moles increases your score, while hitting good moles decreases it. The game ends when the timer hits zero. A final score is displayed and users can either choose to play again or return to the main menu.

Requirements

| Req ID | Req | Line |
|--------|--|----------------|
| R1 | The app shall allow a user to interface with 3 buttons: "Play," "Make a Mole," and "Extras." | 5-6 |
| R1.1 | The app shall allow the user to select level difficulty: Easy, Normal, Hard when "Play" is selected | Derived Line 5 |
| R1.2 | The game shall start after the difficulty is selected | Derived Line 5 |
| R1.3 | The app shall allow the user to upload an image of their choosing using the Upload Button after "Make a Mole." is selected. | Derived Line 5 |
| R1.4 | The app shall allow the user to have access to volume and vibration adjustments in the Extras Button. | Derived Line 5 |
| R1.5 | The app shall allow the user to see statistics based on the most recent game such as accuracy and highest score in the Extras button | 6 |
| R1.6 | The app shall allow the user to see a tutorial that will show them how to play the game. | Derived Line 6 |
| R2 | When the game starts, the user input via touch shall count as a hit on a mole | 7-8 |
| R3 | The app shall allow the user to be able to visually distinguish between the 2 mole types: Bad and Good moles. | 7-8 |
| R4 | The app shall increase/decrease the point counter after a mole is hit | 7-8 |
| R5 | The app shall end when the time counter is equal to zero. | 8 |
| R5.1 | App shall show final score and amount of good, and bad moles hit | 8-9 |
| R5.2 | App shall allow user to select play again or return to the main menu when the game ends | 9 |

Use Case List

| Use Case # | Use Case Name |
|------------|-----------------------------|
| UC 1 | Play Game |
| UC 1.1 | Select Game Difficulty |
| UC 1.1.1 | Start Game |
| UC2 | Make a Mole |
| UC 2.1 | Get new Mole information |
| UC 2.1.1 | Upload picture |
| UC 2.1.2 | Choose stock image |
| UC 2.2 | Create Mole |
| UC 3 | Open Extras |
| UC 3.1 | Change Volume |
| UC 3.2 | Change Vibration |
| UC 3.3 | Open Stats |
| UC 3.4 | Open Tutorial |

| | |
|----------|---------------------------|
| UC 4 | Mole popup |
| UC4.1 | Hit Mole |
| UC4.1.1 | Bad Hit |
| UC 4.1.2 | Good Hit |
| UC 5 | Game Over |
| UC 5.1 | Game Over Summary Page |
| UC 5.1.1 | Play Again |
| UC 5.1.2 | Quit |

High Level Use Cases

UC 1: Play Game

- TUCBW: User selects the "Play" button from the main menu.
- TUCEW: User is shown difficulty options ("Easy," "Normal," "Hard"), selects one, and the game starts.

UC 1.1: Select Game Difficulty

- TUCBW: User initiates the process of starting a game.
- TUCEW: User chooses the game difficulty level (e.g., "Easy," "Normal," "Hard").

UC 1.1.1: Start Game

- TUCBW: User selects a game difficulty level.
- TUCEW: The game begins with the selected difficulty.

UC 2: Make a Mole

- TUCBW: User selects the "Make a Mole" button.
- TUCEW: User is prompted to provide new mole information, including options to upload a picture or choose a stock image, and then creates a mole.

UC 2.1: Get New Mole Information

- TUCBW: User initiates the process of creating a new mole.
- TUCEW: User provides information about the new mole, which may include uploading a picture or choosing a stock image.

UC 2.1.1: Upload Picture

- TUCBW: User selects the option to upload a picture for the new mole.
- TUCEW: User uploads a picture to customize the new mole.

UC 2.1.2: Choose Stock Image

- TUCBW: User selects the option to choose a stock image for the new mole.
- TUCEW: User selects a stock image to customize the new mole.

UC 2.2: Create Mole

- **TUCBW:** User provides information for the new mole.
- **TUCEW:** The new mole is created with the specified information.

UC 3: Open Extras

- **TUCBW:** User selects the "Extras" button.
- **TUCEW:** User gains access to options, including changing volume, adjusting vibration settings, viewing game statistics, and opening the tutorial.

UC 3.1: Change Volume

- **TUCBW:** User selects the option to change volume in the "Extras" menu.
- **TUCEW:** User adjusts the game's volume settings.

UC 3.2: Change Vibration

- **TUCBW:** User selects the option to change vibration settings in the "Extras" menu.
- **TUCEW:** User adjusts the game's vibration settings.

UC 3.3: Open Stats

- **TUCBW:** User selects the option to view statistics in the "Extras" menu.
- **TUCEW:** User views game statistics, including accuracy and highest score.

UC 3.4: Open Tutorial

- **TUCBW:** User selects the option to open the tutorial in the "Extras" menu.
- **TUCEW:** User enters tutorial mode to learn how to play the game.

UC 4: Mole Popup

- **TUCBW:** Moles appear on the game board.
- **TUCEW:** User interacts with the moles, potentially hitting them (either good or bad hits).

UC 4.1: Hit Mole

- **TUCBW:** User interacts with a mole on the game board.
- **TUCEW:** The app registers whether it was a good or bad hit.

UC 4.1.1: Bad Hit

- **TUCBW:** User interacts with a mole on the game board and registers a bad hit.
- **TUCEW:** The app processes the bad hit and may decrease the user's score.

UC 4.1.2: Good Hit

- **TUCBW:** User interacts with a mole on the game board and registers a good hit.
- **TUCEW:** The app processes the good hit and may increase the user's score.

UC 5: Game Over

- **TUCBW:** Game timer reaches zero or the user chooses to end the game.
- **TUCEW:** User is presented with a game over summary page with options to play again or quit.

UC 5.1: Game Over Summary Page

- **TUCBW:** Game timer reaches zero or the user chooses to end the game.
- **TUCEW:** User views a summary page showing the final score, the number of good and bad moles hit, and options to play again or quit.

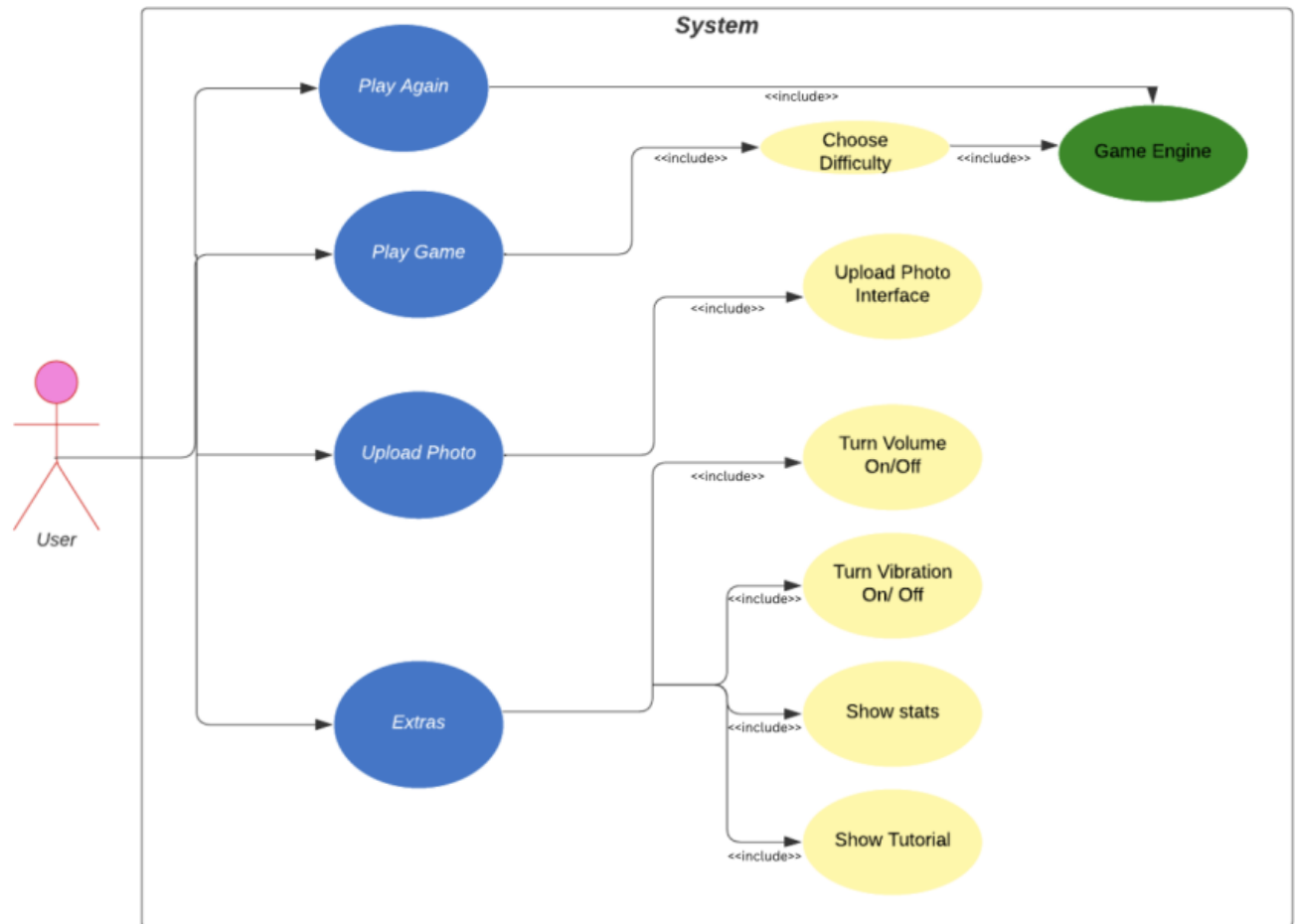
UC 5.1.1: Play Again

- **TUCBW:** User selects the option to play again on the game over summary page.
- **TUCEW:** The app starts a new game.

UC 5.1.2: Quit

- **TUCBW:** User selects the option to quit on the game over summary page.
- **TUCEW:** The app exits the game and returns to the main menu.

Use Case Diagram



Requirements to Use Case Traceability Matrix

Part 1

NOTE: Priority 1 is highest priority

| | Priorit y | UC 1 | UC 1.1 | UC 1.1.1 | UC 2 | UC 2.1 | UC 2.1.1 | UC 2.1.2 | UC 2.2 | UC 3 | UC 3.1 |
|-------|--------------|------|-----------|-------------|------|-----------|-------------|-------------|-----------|------|-----------|
| R 1 | 1 | X | X | X | | | | | | | |
| R 1.1 | 2 | | X | | | | | | | | |
| R 1.2 | 4 | | | X | | | | | | | |
| R 1.3 | 4 | | | | X | X | X | X | X | | |
| R 1.4 | 5 | | | | | | | | | X | X |
| R 1.5 | 5 | | | | | | | | | X | |
| R 1.6 | | | | | | | | | | X | |
| R 2 | 1 | | | | | | | | | | |
| R 3 | 3 | | | | | | | | | | |
| R 4 | 2 | | | | | | | | | | |
| R 5 | 2 | | | | | | | | | | |
| R 5.1 | 3 | | | | | | | | | | |
| R 5.2 | 2 | | | | | | | | | | |

Requirements to Use Case Traceability Matrix

Part 2

NOTE: Priority 1 is highest priority

| | Priorit y | UC 3.2 | UC 3.3 | UC 3.4 | UC 4 | UC 4.1 | UC 4.1.1 | UC 4.1.2 | UC 5 | UC 5.1 | UC 5.1.1 | UC 5.1.2 |
|----------|--------------|-----------|-----------|-----------|---------|-----------|-------------|-------------|---------|-----------|-------------|-------------|
| R 1 | 1 | | | | | | | | | | | |
| R 1.1 | 2 | | | | | | | | | | | |
| R 1.2 | 4 | | | | | | | | | | | |
| R 1.3 | 4 | | | | | | | | | | | |
| R 1.4 | 5 | X | | | | | | | | | | |
| R 1.5 | 5 | | X | | | | | | | | | |
| R 1.6 | | | | X | | | | | | | | |
| R 2 | 1 | | | | | X | X | X | | | | |
| R 3 | 3 | | | | X | | | | | | | |
| R 4 | 2 | | | | | X | X | X | | | | |
| R 5 | 2 | | | | | | | | X | | | |
| R 5.1 | 3 | | | | | | | | | X | | |
| R5.2 | 2 | | | | | | | | | | X | X |

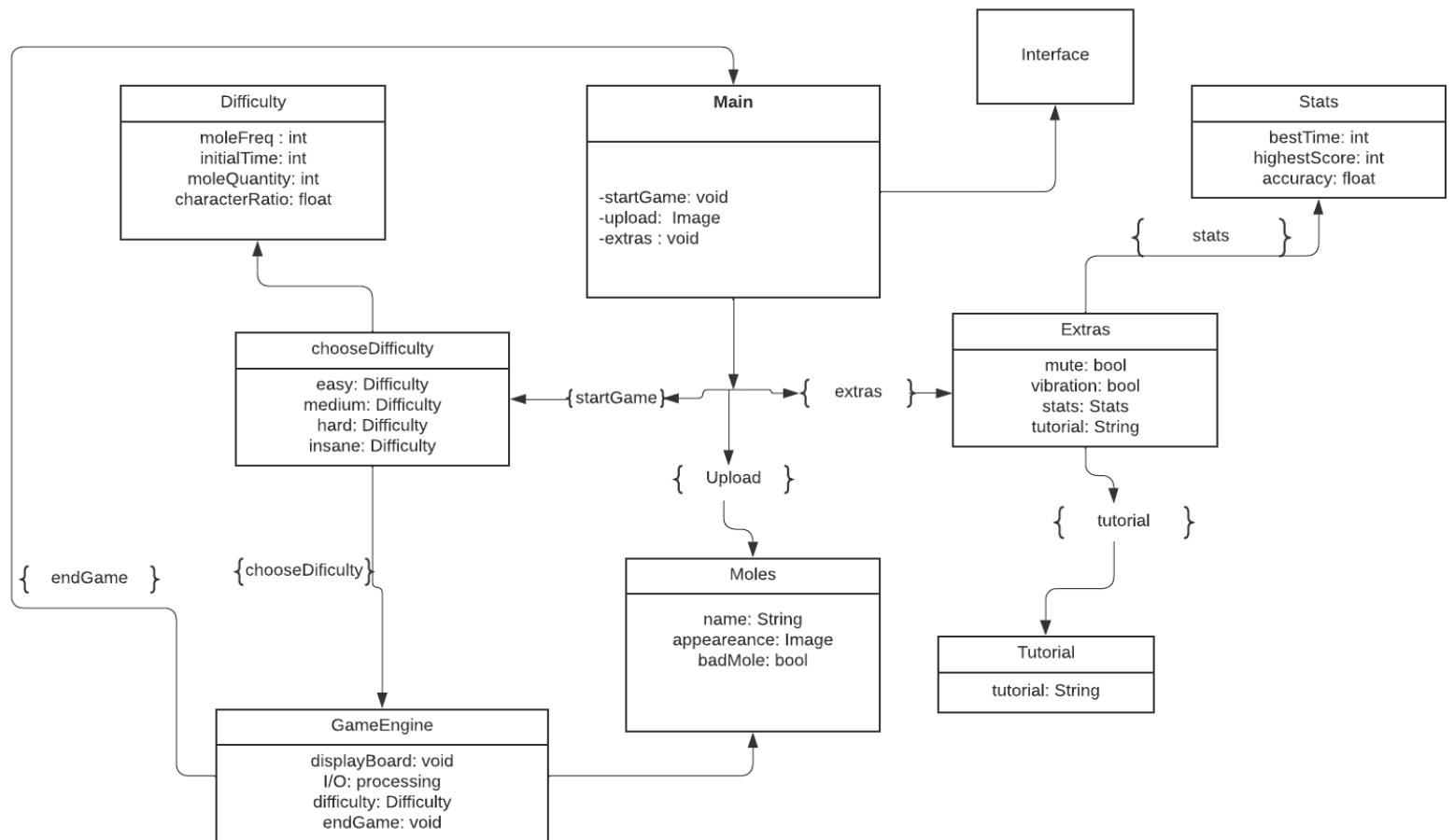
Increment Matrix

| UC # | Priority | Effort (person weeks) | Depends on | Assigned to | Iteration 1 | Iteration 2 | Iteration 3 |
|--------|----------|--------------------------|----------------------------|-----------------------|-------------|-------------|-------------|
| 1 | 2 | 4 | None | AK, MA | 2 | 2 | |
| 1.1 | 3 | 6 | UC 1, UC4 | MA, | 2 | 2 | 2 |
| 1.1.1 | 2 | 6 | UC 4 | RO, DS, GR | 2 | 4 | |
| 1.2 | 5 | 2 | UC 3.1 UC 3.2 UC 3.3 | AK, RO | | | 2 |
| UC 3.1 | 6 | 4 | None | GR,RO | | 2 | 2 |
| UC 3.2 | 6 | 4 | None | RO,GR | | 2 | 2 |
| UC 3.3 | 7 | 2 | None | DS, MA | | | 2 |
| UC 4 | 1 | 8 | None | GR, AK, DS, RO, MA | 2 | 6 | |
| UC 5 | 4 | 2 | UC 1 UC 1.1, UC 4 | AK, GR | | | 2 |
| Total: | | 38 | | | 8 | 18 | 12 |

1 Person-Week = 5 hours

| | | | | | |
|---------|-----------------------|---------------------------|------------------------------|-------------------------|--------------------------|
| Legend: | MA = Maya Akins | AK = Ankita Kadayat | RO = Richmond Onyeagba | GR = Gensik Rubio | DS = David Saucedo |
|---------|-----------------------|---------------------------|------------------------------|-------------------------|--------------------------|

Domain Model



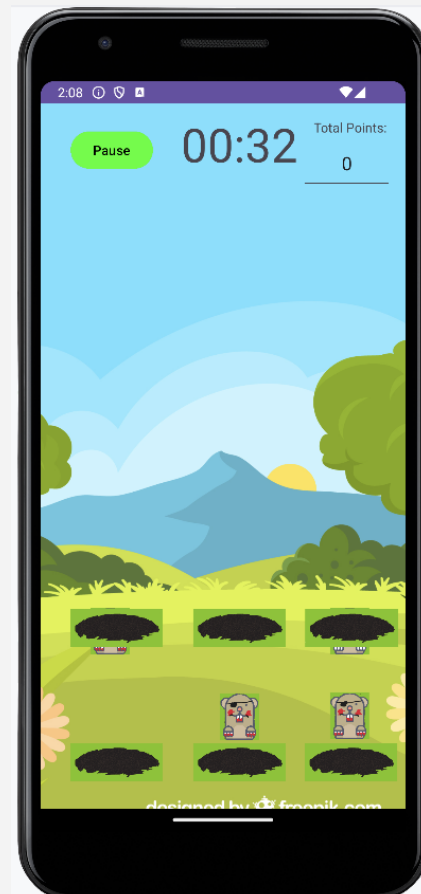
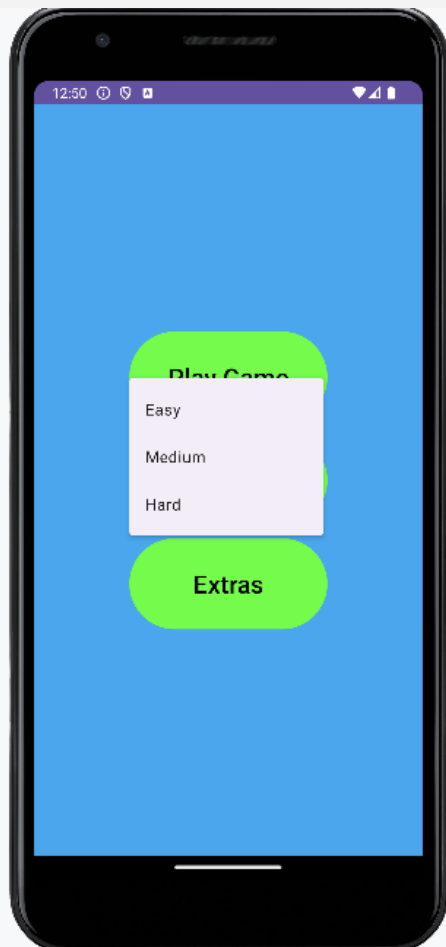
Expanded Use Cases

EUC 1.1 Select Game Difficulty

Precondition: The use case assumes that the player has selected play.

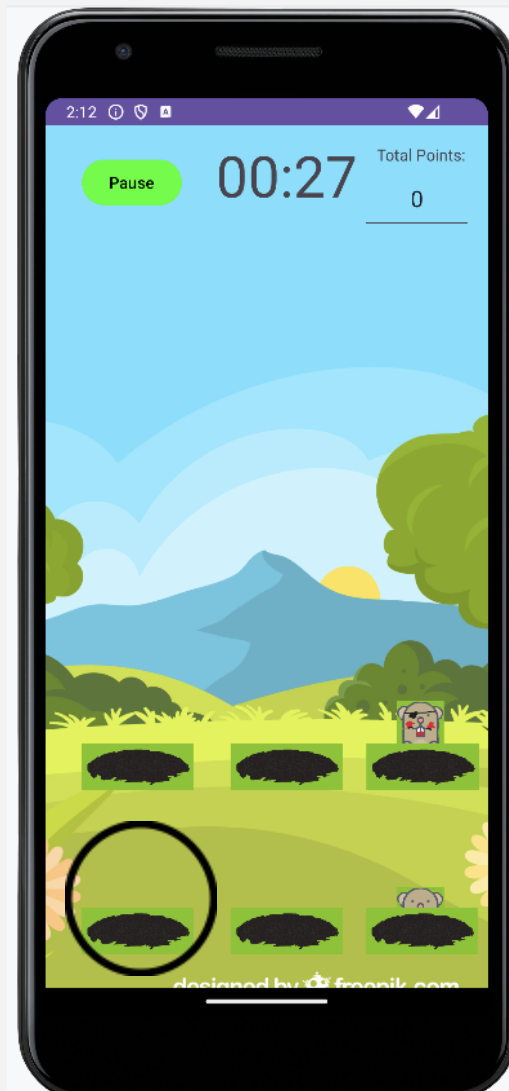
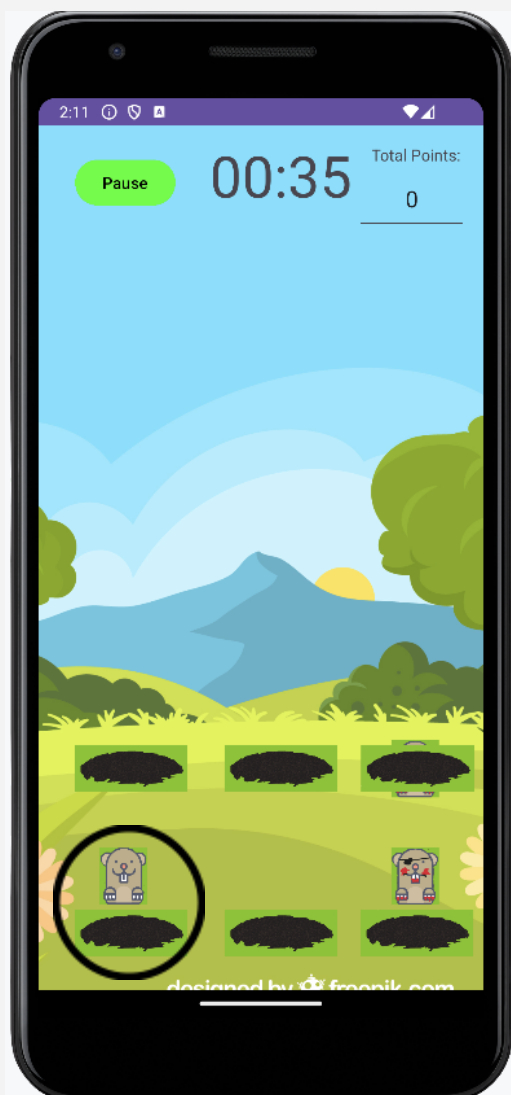
| Actor: Player | System: Whack It! |
|---|--|
| <ol style="list-style-type: none">1. TUCBW the player clicks the difficulty of choice. "Easy" "Normal" "Hard"3. TUCEW the player starts the main game, augmented by the difficulty selected. | <ol style="list-style-type: none">0. System displays the difficulty choices.* 2. System uses the difficulty chosen by the player to set up the game and display it on screen. |

Postcondition: The game has started.



EUC 4: Hit Mole

| | |
|--|---|
| Precondition: The use case assumes that the user was able to select a difficulty and the game starts | |
| Actor: Player | System: Whack It! |
| 1--- TUCBW the user seeing a mole appear on their screen. 2---The user then taps on the mole. 4--- TUCEW a point being added on the scoreboard and the mole disappearing | *0---The system initializes the game board and starts populating the board with moles *3---The system increments the score for the player and makes the mole disappear due to user input |
| Postcondition: The user can see that their score has incremented by one point visually by looking at the scoreboard | |

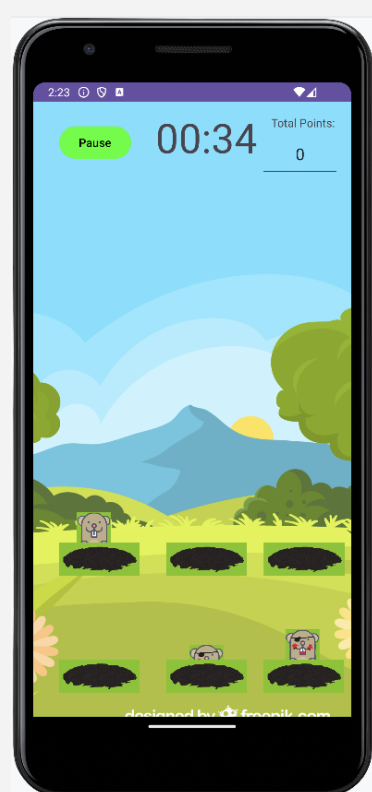
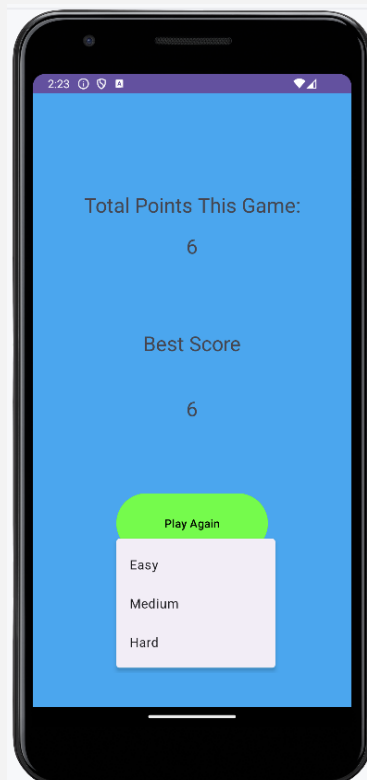
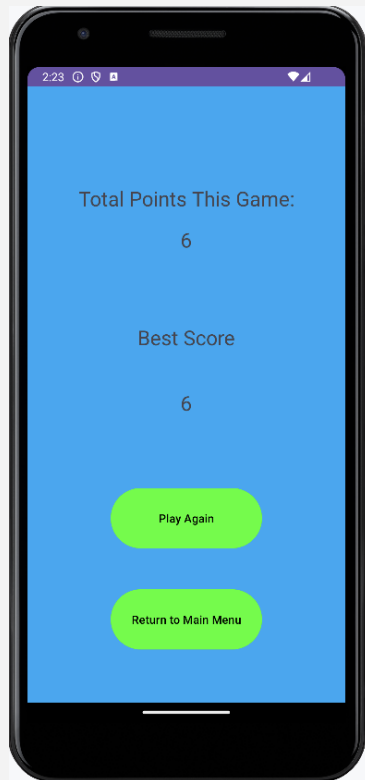


EUC 5.1.1 : Play Again

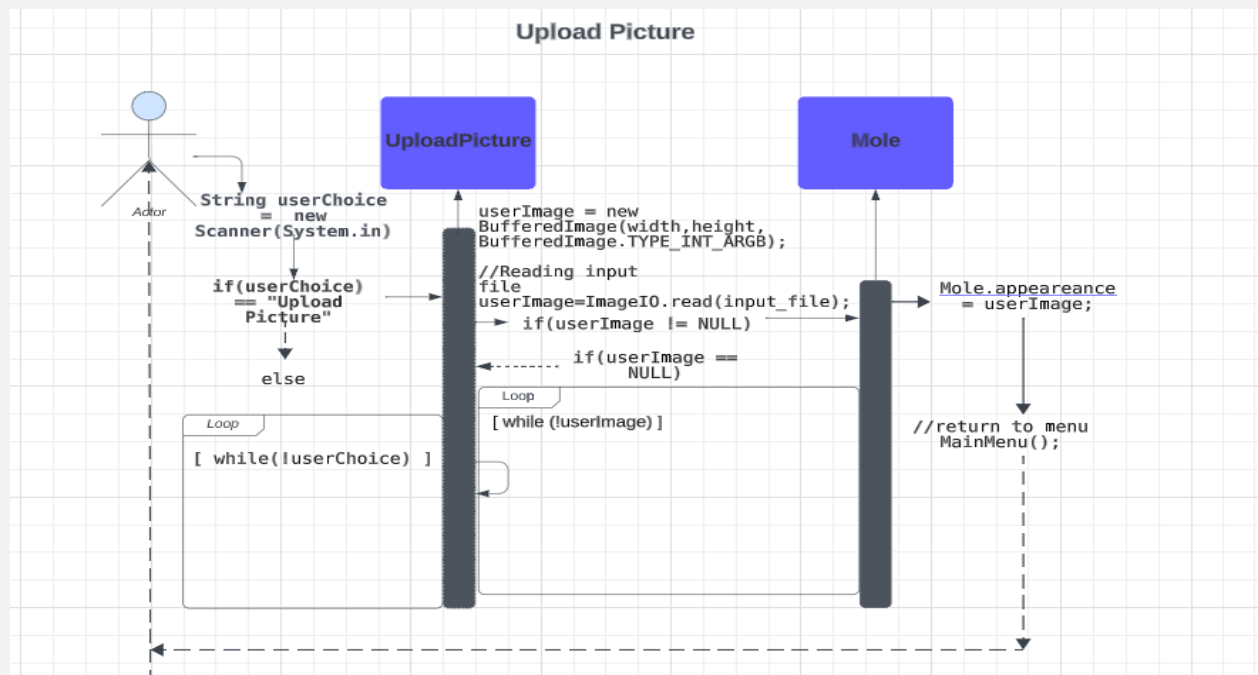
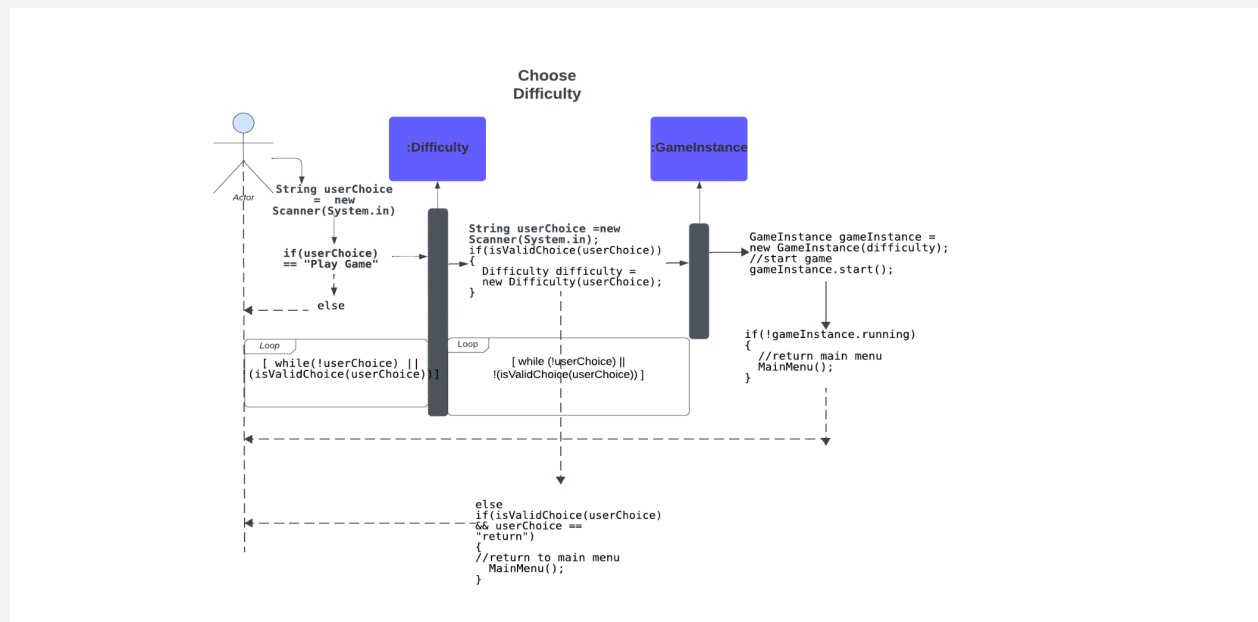
Precondition: The user is in the end of a game.

| Actor: Player | System: Whack It! |
|--|---|
| 1. (TUCBW): The user's game session ends, and a screen displays their final score and the number of moles hit during the game. | 2. The application provides a prompt that asks whether they want to play the game again or return to the main menu. |
| 3. The user selects their choice, indicating whether they want to play again or return to the main menu. | 4. The application processes the user's choice. |
| 5. (TUCEW): Based on the user's choice, the application either restarts the game if "Play Again" is selected or returns to the main menu if the user chooses to do so. | |
| | |

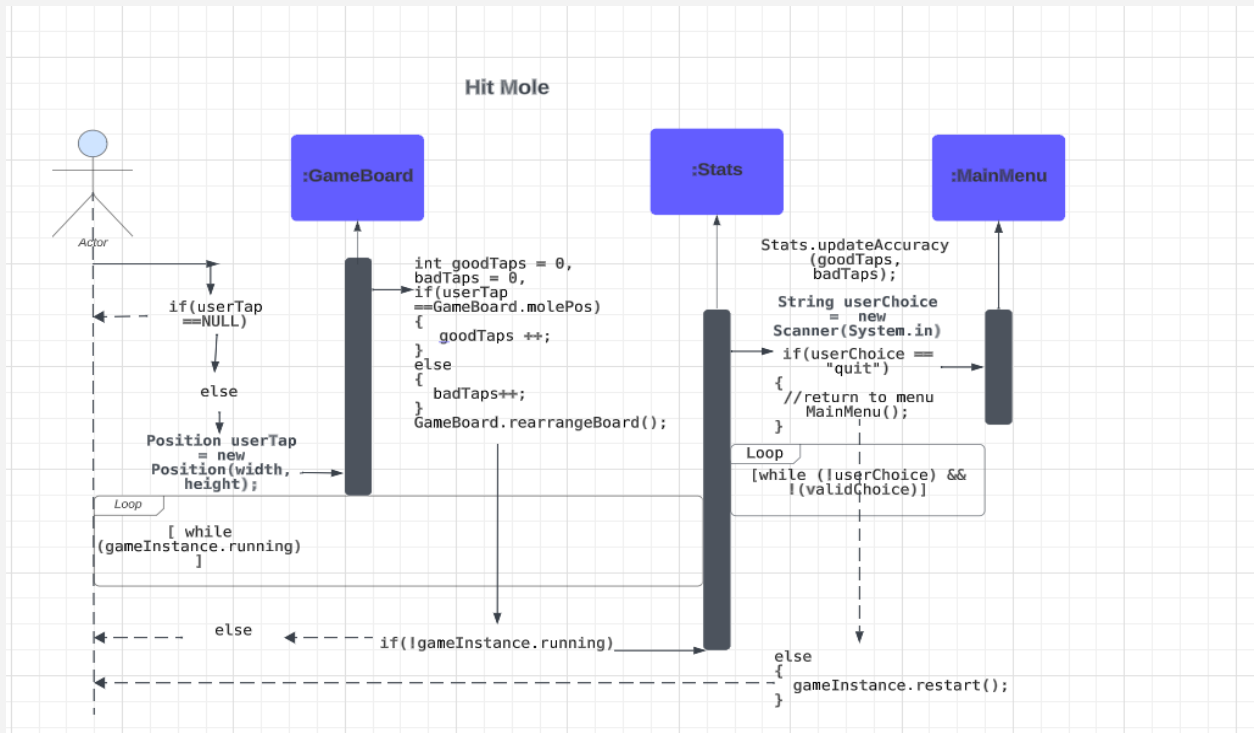
Postcondition: The application acts according to the user's choice, restarting the game or returning to the main menu after a game session ends.



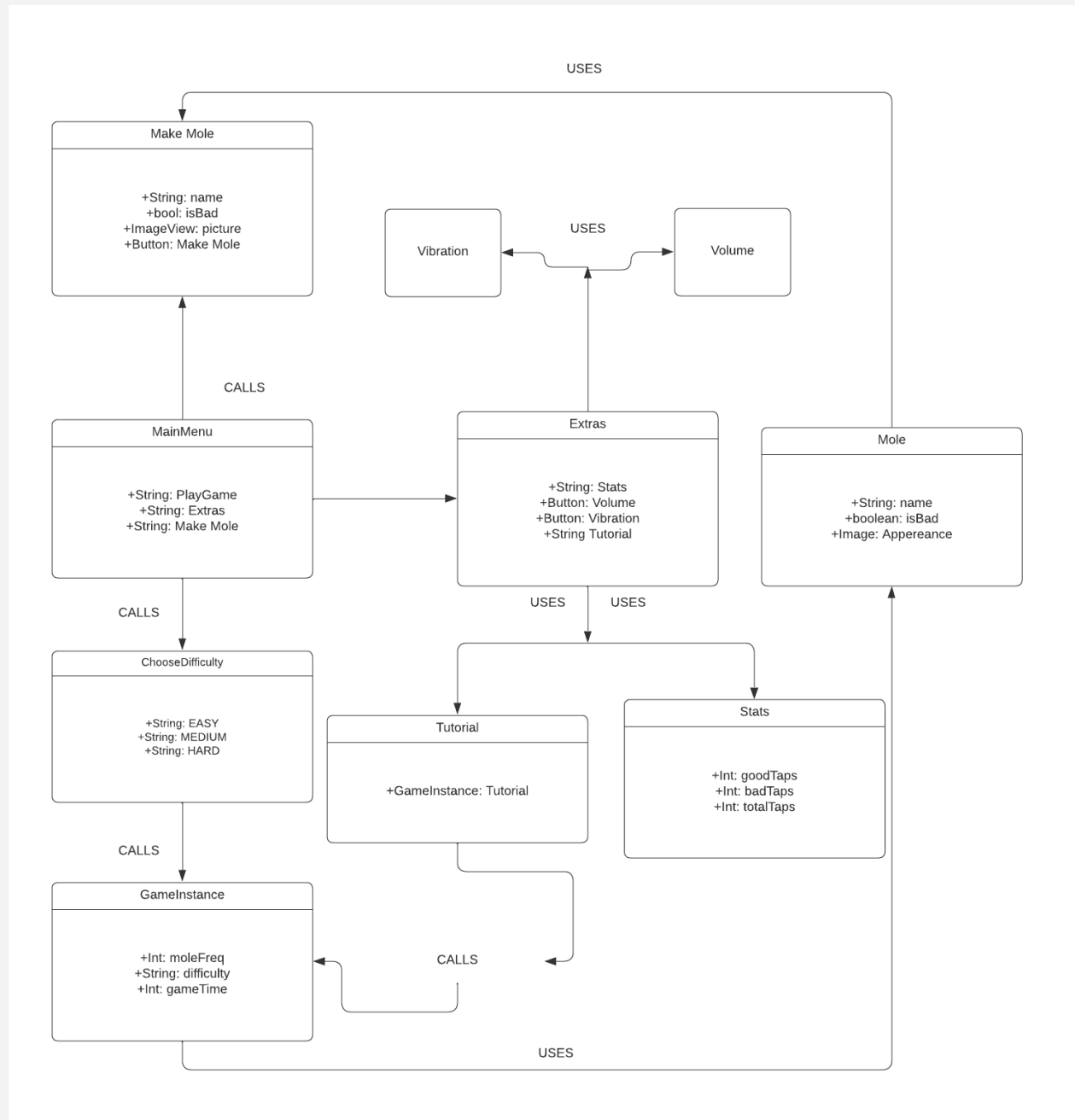
Design Sequence Diagrams



Analysis Sequence Diagram



Domain Class Diagram



Youtube Demo Reel

<https://youtu.be/03zj3sEXp-M>