Use Case: Move Mouse
Primary Actor: Mouse controlled by player
Goal in Context: To cross the finish line and collect all the crumbs
Preconditions:

- Mouse's intended path must exist
- Mouse must not be frozen

Trigger:

- When player presses directional input (wasd or arrow keys)
- Mouse position updates to the new position

Scenario:

1. Player enters keyboard input
2. Mouse moves onto empty space
3. Mouse then occupies that space

Exceptions:

- Mouse moves onto occupied space
    1. If there is crumbs or cheese on the space, collect the points and remove the reward
    2. If there is a cat, game over
    3. If there is a mouse trap, deduct points and check score. game over if score is negative, occupy space if positive
    4. If end space, win game if all rewards collected
- If player doesn't press a key or presses a valid key, then mouse stands still

Priority: Essential, must be implement
When available: Start of game
Frequency of Use: Frequent
Channel to Actor: Keyboard inputs
Open Issues:

1. What should happen when two inputs are pressed simultaneously?

Use Case: Moves in space with a Cheese/Crumb/Mouse trap

Primary Actor: Mouse

Goal in Context: To collect the crumbs/cheese and avoid mouse trap

Preconditions:
- Player must make a move
- Player moves into a cell with a Cheese/Crumb/Mouse trap

Triggers: valid keyboard input from the player

Scenario:
1. Player enters an input
2. Player moves into a Cheese/Crumb/Mouse trap space
3. Player then collects the Cheese/Crumb/Mouse trap
4. Player's score is then adjusted

Exceptions:
- If players collects a punishment and score is dropped below 0 then game is lost
- If player collects a punishment, another punishment is spawned in

Priority: High priority, must be implement after movement
When available: Start of game
Frequency of Use: Semi Frequent

Use Case: Punishment spawning
Primary Actor: Mouse traps

Goal in Context: Spawn in a punishment so there is always a given amount of punishments

Preconditions:
- A punishment must've been collected by the player

Triggers:
- Punishment being collected by the player

Scenario:
1. Player collects a punishment
2. Another punishment spawns in a different unoccupied cell

Exceptions:
- At the beginning of the game, all the punishments are spawned on the board at the same time

Priority: Low Priority, implements after collecting items
When available: After player collects a punishment
Frequency of Use: Infrequent

Use Case: Player’s score drops below 0

Primary Actor: Mouse

Goal in Context: To make traps a bigger obstacle

Preconditions:
- Mouse moves into a cell with a punishment

Triggers:
- Collect punishment

Scenario:
1. Player moves into a cell with punishment
2. Player’s score is checked and has dropped below 0
3. Game over, player lost

Priority: Moderate priority, implemented after collecting items
When available: When player steps on a trap
Frequency of Use: Once per game

Use Case: Player finishes the game
Primary Actor: Mouse

Goal in Context: To complete/win the game

Preconditions:
- Mouse has collected all rewards
- Mouse is on the end space

Triggers: Mouse's current position is equal to the final position

Scenario:
1. Game is over, player wins and final score is displayed

Priority: Moderate priority, implemented after collecting items
When available: After all rewards have been collected
Frequency of Use: Once per game

Use Case: Cat movement
Primary Actor: Cat

Goal in Context: To catch up with the mouse

Preconditions: Game has to have started

Triggers:
- Mouse stand still/makes move

Scenarios:
- Cat makes movement decision then cat moves closer towards the mouse
- If cat's best move is occupied by another cat or a barrier, then cat will re-evaluate its move

Alternative Scenario:
- If there is cheese/crumbs/mouse trap on next cell to move to, cat doesn't accumulate any punishments/rewards and treats as normal move

Exceptions:
- Cat moves into the mouse

Priority: Essential
When available: At the start of game
Frequency of Use: Very frequent

Use Case: Cat and Mouse occupy the same space

Primary Actor: Cat

Goal in Context: Cat is trying to share same cell as mouse

Preconditions:
- Cat needs to occupy an adjacent cell to the mouse

Triggers:
- Mouse stand still or makes move

Scenario:
1. Cat and mouse are in adjacent cells
2. Cat moves into same cell as the mouse
3. Game is over, player loses

Priority: Moderate priority, must be implemented after movement
When available: Start of game
Frequency of Use: Once per game

Use Case: Cheese isn't collected
Primary Actor: Cheese

Goal in Context: Disappear and move elsewhere on the board after a certain time

Preconditions:
- Cheese must already exist on the board

Triggers:
- Certain amount of time passes after spawning

Scenarios:
- Cheese disappears after certain amount of time passes

Priority: Low Priority, implement after collecting items
When available: After bonus reward timer reaches 0
Frequency of Use: Frequent

Use Case: Cheese spawning
Primary Actor: Cheese

Goal in Context: Spawn cheese somewhere random on the board after a certain time

Preconditions:
- Cheese must not exist on board
- Nothing must be occupying the random cell beforehand

Triggers:
- Randomly throughout the game

Scenarios:
- Cheese spawns onto an empty space
- If cheese is about to spawn on already taken space, re-generate location coordinates and check again until an empty space is found

Priority: Low priority, implement after collecting items
When available: Varying times
Frequency of Use: Frequent