

Classes:

Game

Player

Cat

Cheese

Maze

Maze Generator

Game State

Movement

RandomMovementGenerator

UI

| Class Name | Responsibilities | Collaborators |
|------------|---|--|
| Game | <ul style="list-style-type: none">• Initialize and manage the overall game• Control start, play, win/lose conditions• Manage user input• Have methods that check and update the game state | <ul style="list-style-type: none">• Maze• Player• Cat• Cheese• GameState• RandomMovementGenerator |

| Class Name | Responsibilities | Collaborators |
|------------|---|---|
| GameState | <ul style="list-style-type: none">• Track current game state• Store positions of cat, player, cheese and explored area• Provide methods for querying the game state | <ul style="list-style-type: none">• Game• Player• Cat• Cheese• Maze |

| Class Name | Responsibilities | Collaborators |
|------------|--|---|
| Player | <ul style="list-style-type: none">• Handle player movement• Track position• Manage cheese collection• Expose player position to GameState | <ul style="list-style-type: none">• Game• Maze• GameState |

| Class Name | Responsibilities | Collaborators |
|------------|---|--|
| Cat | <ul style="list-style-type: none"> • Handle cat movement • Track position • Expose cat position to GameState | <ul style="list-style-type: none"> • Maze • Game • RandomMovementGenerator • GameState |

| Class Name | Responsibilities | Collaborators |
|------------|---|---|
| Cheese | <ul style="list-style-type: none"> • Track cheese position • Generate new cheese position upon collection | <ul style="list-style-type: none"> • Game • Maze • GameState |

| Class Name | Responsibilities | Collaborators |
|------------|--|--|
| Maze | <ul style="list-style-type: none"> • Generate maze using algorithm • Ensure maze constraints • Expose maze structure to GameState • Manage maze area | <ul style="list-style-type: none"> • MazeGenerator • Game • GameState |

| Class Name | Responsibilities | Collaborators |
|----------------|---|--|
| Maze Generator | <ul style="list-style-type: none"> • Generate valid maze based on maze generation algorithm • Apply constraints | <ul style="list-style-type: none"> • Maze |

| Class Name | Responsibilities | Collaborators |
|-------------------------|--|---|
| RandomMovementGenerator | <ul style="list-style-type: none"> • Generate pseudorandom movement for cat | <ul style="list-style-type: none"> • Maze • Cat |

| Class Name | Responsibilities | Collaborators |
|------------|---|---|
| Movement | <ul style="list-style-type: none"> • Provide methods for moving entities into the maze • Handle direction and position updates based on input (W,A,S,D) | <ul style="list-style-type: none"> • Maze • Player • Cat |

| Class Name | Responsibilities | Collaborators |
|------------|---|---|
| UI | <ul style="list-style-type: none"> • Display current state of game • Handle user input • Output messages | <ul style="list-style-type: none"> • Game • GameState |