OOD Explained

Task 1: Drawing the board

The maze is stored in the Maze class as a 2D array of integers. Each number represents a certain entity, such as a wall or the player, with negatives of each number representing unexplored cells in the maze.

After each update of all the entities in the maze, the 2D array is given to the DisplayMaze class. This class converts it into a 2D array of characters. It then displays this converted array to the player's screen.

Task 2: Manipulating the Player and Cats in the Maze

Both the Player and Cat are subclasses of the superclass Entity. This superclass handles the entity's position (row and column) in the maze, as well as methods to move up, down, left and right and check movement validity. The Maze class will store an arrayList of these Entities and iterate through them during the update cycle, taking each Entity's position and adjusting their positions in the integer array.

Task 3: Handling Player Input

The UserUI class implements any interactions between the player and the game. It displays menus at the beginning and end, as well as prompts for input after each turn. This input is stored inside this class. It contains a static method called getUserInput() that can be called by the Player class during its update cycle, returning a char (wasd). The Player class then handles movement according to which character was returned. An exception will be thrown by the Entity class if a move is invalid. This exception will be caught by the UserUI class, which will display the appropriate error message.