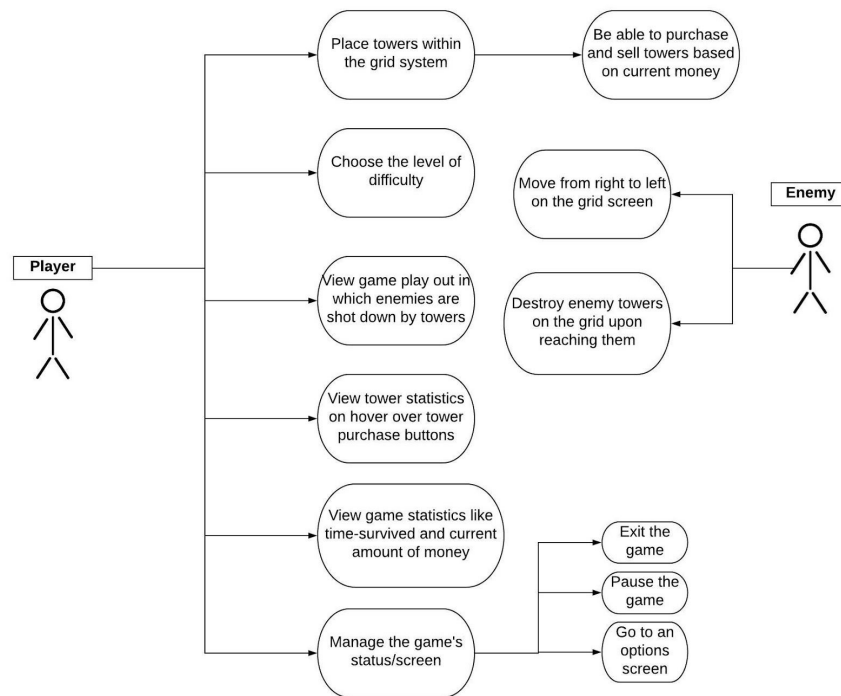


## **Monsters Vs. Plumbers User Manual**

This program is a tower-defense game, modeled after the mobile app *Plants vs Zombies*. A game of this style operates by having the player strategically place down towers to defend from oncoming enemies. These towers shoot projectiles at the oncoming enemy. The specific *Plants vs Zombies* aspects incorporated into this game focus mainly on where in the game screen that towers and enemies interact. Towers are placed in individual tiles that make up horizontal rows. Each tower can only shoot projectiles to the left across its respective row and each enemy can only move right to attack towers within its respective row.

### **Motivation and Background**

This game was motivated by our desire to create an enjoyable new tower defense game with unique characters and abilities. At the beginning of the project, we were unsure of what form our game would take on. We ultimately decided to model it after *Plants vs Zombies* because of its concise yet effective layout. With this design, the user is able to immediately understand the paths of the projectiles and enemies, as both simply move in opposite horizontal directions toward one another. Throughout this design process we also kept in mind what the goal of the player would be as well as what we needed to the enemies to be capable of. This can be seen in our Use Case Diagram which illustrates how the player would ideally interact with the various components of the game.



As can be seen in this diagram, we emphasized what the user would be able to influence within the game, and how the idea of enemies would contribute to this. This includes being able to choose the level of difficulty to keep gameplay challenging yet captivating, as well as viewing in-game statistics to inform their next decisions within the game. When designing this, we first created a task board using our user stories, and then chose specific tasks to include within each sprint in order of highest priority. For example, our initial, most important sprints included “Start the game with main menu with ‘play’ and ‘options’ buttons” and “See the background (board) with tiles clearly shown” as they were essential to the game functioning in the first place. Our primary goal at the start was to create basic window functionality, such as just seeing the gameboard along with hardcoded towers and enemies. Once we achieved that, we moved on to making the game functional by allowing the user to place towers, having

enemies move across the board, and having towers fire projectiles at the enemies. As we were working on these ideas we also added visuals to the game, starting out with basic rectangles and circles on a white background that were eventually replaced with sprites from the Super Mario series, giving the game an overall sense of completion.

### **Instructions**

To play the game, the user will first see a main-menu screen with a play, options, and exit button. The user can choose to either change the difficulty from the default 'Medium' setting by using the options button or press 'play' to play the game.



When the game begins, the user has options of placing down towers in individual tiles in order to destroy the enemies. All towers cost \$100 under the current design, but the towers have different statistics that determine their damage output over time. The user gains money through the time spent in the game as well as by killing enemies using their towers. In the initial implementation of the design, we had one basic type of tower and one basic enemy. As we continued with the design we added towers with different projectile speeds and damage outputs, as well as enemies with varying

amounts of health . The user will notice at the top of each enemy and tower is a bar indicating how much health they have remaining. Once a tower or enemy runs out of health due to being attacked by an enemy or hit by a projectile respectively, that tower or enemy will disappear. If an enemy makes it to the left of the screen, the player loses a life. The player begins the



game with 10 lives, and the game ends when there are none remaining. The number of lives remaining is displayed in the top right corner of the screen below the player's current balance. Once the player runs out of lives, the game ends and a game over screen appears. The screen shows the length of time the player was able to survive for. At that point, the only action left for the player to take is to play again!

