Grid Robot

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Goal

The goal of this activity is to teach algorithms by going through a series of steps to get a "robot" from one location to another. By going through the steps to move the robot, the students learn how to create a set of instructions from beginning to end.

Requirements

1. **Obstacles**: Square labeled **X**. Locations in the grid that the player cannot go.
2. **Robot**: Object going through the maze.
3. **Start**: Square labeled **Start**. This is the starting position.
4. **Finish**: Square labeled **Finish**. This is the destination for the robot.

Setup

1. Use the provided grid to mark the **Start** and **Finish** location. This is the beginning and end of the player's path.
2. Use the given **X** blocks to mark the obstacles squares on the grid, creating a maze. This should be hard enough so the player has to path around them to get to the **Finish**. Note: These obstacles can be glued in place to avoid confusion and movement.
3. Place the **Car** marker onto the **Start** marker This is the beginning location for the robot.

Start

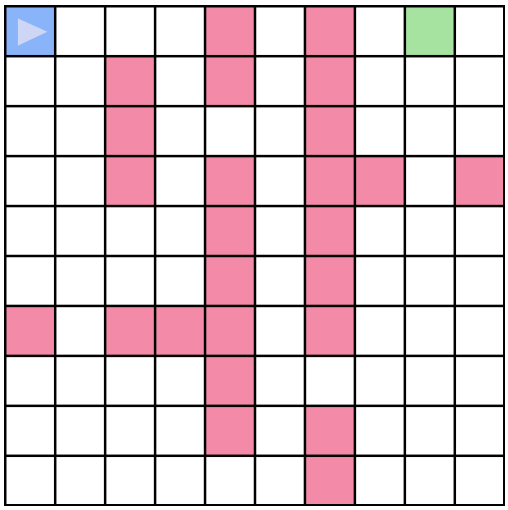
1. Using the commands below, the student will write down the steps that the **Robot** must follow to correctly travel through the maze from the start position to the finish position while avoiding the obstacles.
2. After the student finishes listing the commands to navigate through the maze, have the student find a partner. They will swap mazes and follow each other's commands to see if their commands correctly get the robot through the maze.

Commands

- **Move Number**: Moves forward a number of spaces in the direction they are going.
  - Example: `move 2`
- **Turn (left or right) Number**: Turns the robot the number of times in a direction so if they were facing left and the command was `turn left 2` they would make a 180-degree turn.

Example

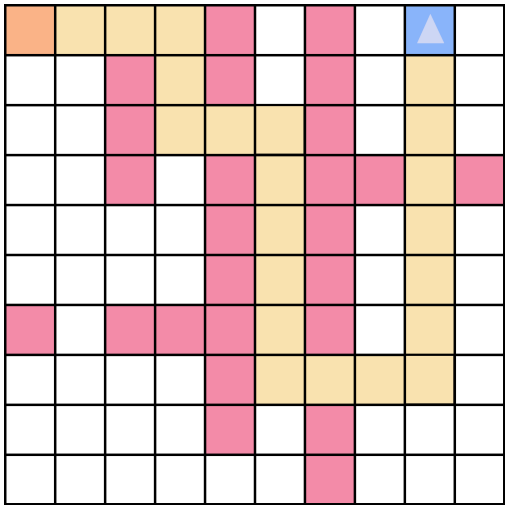
- We can use the maze below.
- The robot is directional, a blue arrow, so they are pointing in the direction they are headed.
- The start is the orange square, below the blue robot, arrow, and the finish is the green square.



Steps

Step 1 Commands

1. Move 3
2. Turn right 1
3. Move 2
4. Turn left 1
5. Move 2
6. Turn right 1
7. Move 5
8. Turn left 1
9. Move 3
10. Turn left 1
11. Move 7



Finished! Hooray!!!!