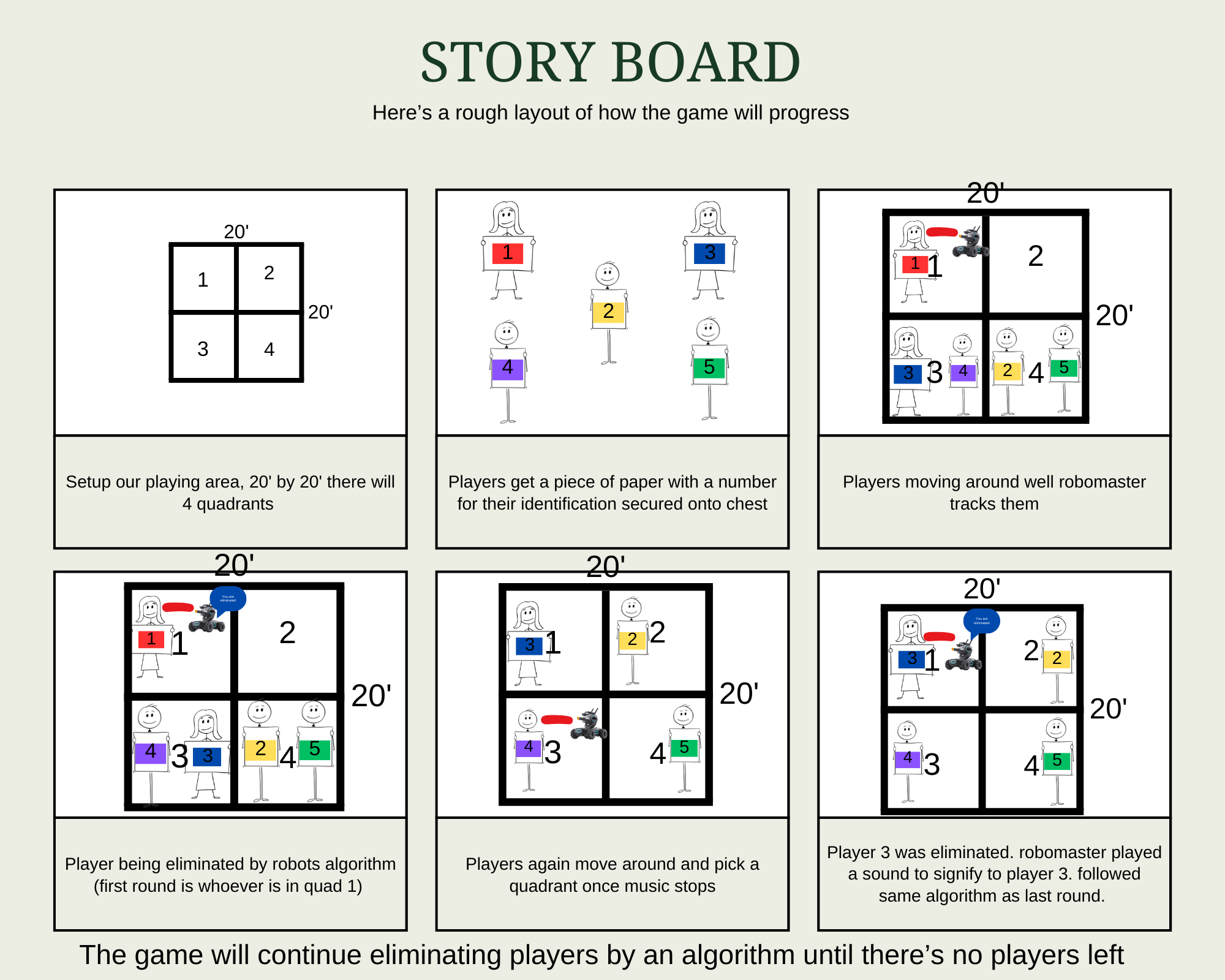
Introduction: In this document we will be making our first prototype, and also the test plan for our second prototype. The main focus for our first prototype is to have a storyboard that represents what will happen in our experience, and to have some basic code done that will track different colours and symbols.

Prototype 1:



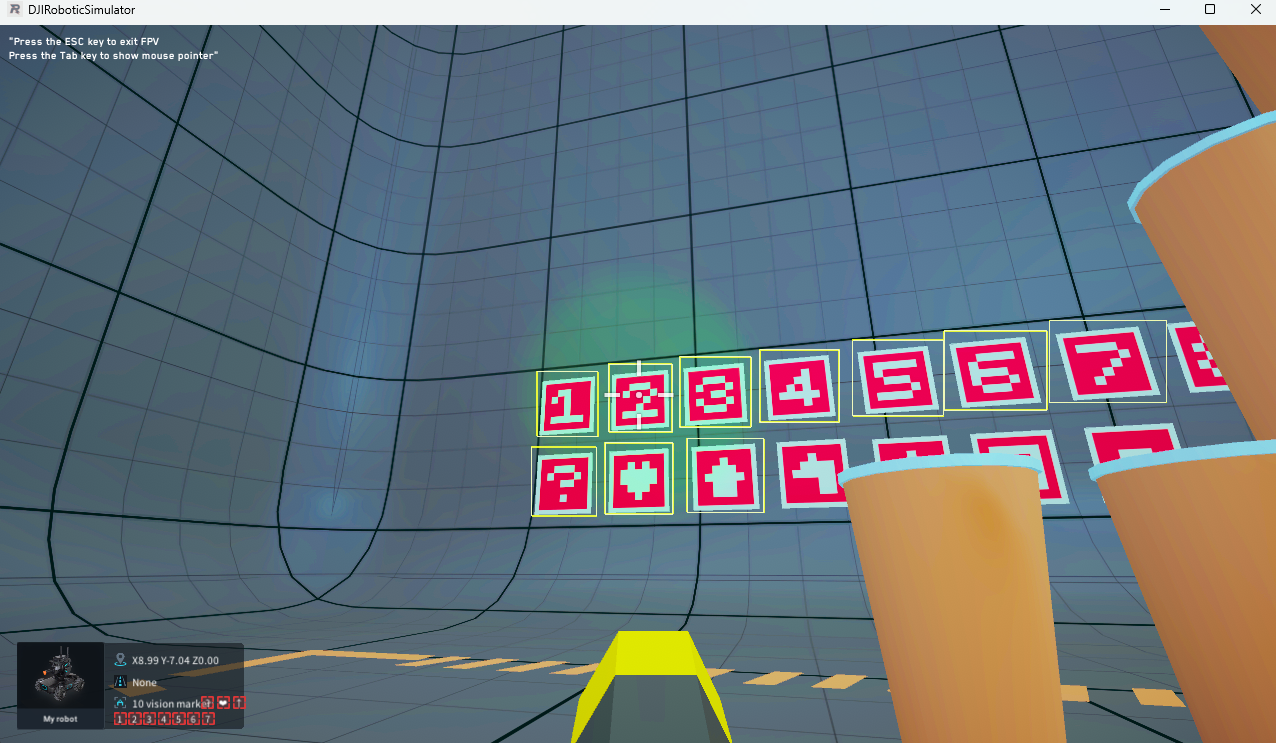
Objectives for prototype one:

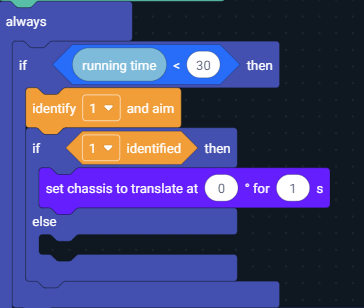
Why:

The reason for this first prototype is to ensure the robot is able to detect colours and symbols, and make decisions based off of those detections in order to create an immersive experience for our participants. We will also be checking to see the potential emotions people may have based on the concepts we have created, in order to get a better understanding of whether or not our concepts have a chance at completing the main goal of this project. This prototype also serves the purpose of creating more of a visual projection of what our game is going to look like and this will result in us having a better picture of what we will realistically be able to create with this project and what we can cut or leave out to create the most efficient game. Another objective this covers with creating a more visual representation is for our audience to be able to create this game in their head so they understand it so they can give us valuable and accurate feedback.

What:

Focus on how the experience might make the participants feel. Focus on finding out potential emotions that people will have during the experience. Our goal is to make participants feel anxious, vulnerable, or scared. For the programming we will be making sure that the robomaster will be able to track a player that is holding a specific colour/symbol during certain parts of the game. For example during the first 30 seconds during the phase when the players are free to roam around, it will track the participant holding the number 1, then after 10 seconds it will switch to the participant holding the number 2, and so on. To test this, we can use the DJI Education hub’s simulator to see if our code works. Another part of our testing is making a survey for people to go through and answer questions about our concepts so we can find out peoples opinions on what we have the robot tracking and seeing that that will make them feel the certain emotions we are looking to invoke.





When: This prototype will be developed over the week of October 28-November We aim to have the concepts laid out and done by the middle of the week in order to leave time to get feedback from people on our concept designs. Programming the robomaster to be able to detect different colours and symbols will be completed by November 3.

2. Analysis

One of our critical and defining systems in our game is the camera sensing/ tracking with the red laser

The laser system that we plan to use on the Robomaster S1 has the main goal of making the experience more scary. The laser will be paired with the camera and sensing system and as the robot is able to identify certain symbols or colours that we put in the code, it will track these symbols. This is where the red dot laser will be on and have the laser following with the camera tracking system and pointing at the symbol or colour which will be on a player. This creates the illusion that the robot is tracking them with a red laser. We will assume that the laser will be able to be seen in the lighting of design day, and that the players will understand that when the laser is on them, they are being targeted by the robot.

Another major system to analyse is how we will tell players when to move and stop throughout our game. We will either use sounds/music and the players can move around and choose their corner while the robomaster is playing music and then have to stop when the music stops. Or we will use lights in the same way where green will be for moving and red will tell them to stop moving. Either way, this will control the flow and pace of our game and allow us to have the players move in a way that we can make most effective.

3. Prototype test plan

[Prototyping test plan for first prototype - Google Sheets](https://docs.google.com/spreadsheets/d/1HeaT-EYeVgFFv_zvGEY_2dZoV8P3Q_P6oFcHwergjHI/edit?gid=0#gid=0)

Our prototype testing will be based on the metric: "In the simulation mode, the robot should be able to detect different colours or symbols"

This was the metric that the TA’s decided on as all of the groups need to test some sort of detection.

4. Feedback we received from clients and last lab:

Previous feedback that we have received from clients in our meetings was that they think we should keep it simple and really move with the red laser because they thought that would be most effective. This was confirmed when sharing our progress with another group as they also thought our design with this red laser was scary and created more emotions with the game. Some feedback we received from the TA’s was about developing a proper storyboard with more background information about the game to give to the players so that they feel more properly engaged in the game the way we intended and not like they are just playing some game for fun.

We also made a survey to gather information of the different emotions that people might have when playing our game. We had random people answer these questions. We tested what different people would feel like in each of the different scenarios that the participants might be put into during the experience. For example, in the survey one of the questions was about the emotions you would be feeling if a robot had a red dot laser pointed on you. We discovered that most people would feel scared, or vulnerable.

5. Update target specifications and detailed design?

Informed by our testing and feedback from Prototype 1, we made several updates to our target specifications. In the first prototype, we learned that color and symbol recognition needed to be more responsive to create the intended emotional impact. This upgrade allows the robot to move smoothly and seamlessly track multiple participants holding specific symbols. We also learned that more focus needs to be spent on the robots tracking ability to utilise the strong feer that comes with the red dot. Doing so we optimised the code to reduce delay and tried to enhance the strength of the red dot.

6. Prototyping test plan

<https://docs.google.com/spreadsheets/d/1w66JQsP3n7EAuIhhXrmzx0aBd1nQGbUe/edit?gid=330383338#gid=330383338>

**Conclusion**

In conclusion we built our first prototype using a storyboard and implementing sample code. This gave us feedback such as what to focus on. We ended up focused on making the robot more responsive, better at tracking, and more effective in creating the emotional impact we want. Making these changes will result in a much more effective final project