

# **Sprint 1 - Endurance Design Document**

**10/24/22**

Melissa Abad, Thomas Farrell, and Derek Boyle

## **1. User Characteristics**

Student/faculty/staff/other	experience/technical expertise	
Derek Boyle	experience with coding	
Melissa Abad	no experience	
Thomas Farrell	experience with coding and robots	

### **1.1 Assumptions**

Derek and Thomas will have a better idea of how to work the robot.

### **1.2 Constraints**

- Chairs
- Tables

### **1.3 Dependencies**

- Code
- Robot being charged
- Clear path

## **2. Requirements**

### **2.1 Functional Requirements**

<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priority</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
ENDUR_01	Robot must successfully travel around the periphery of HH208				
ENDUR_02	Your robot must successfully run the figure eight course 5 times				
ENDUR_03	Your robot will run the obstacle course.				

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
ENDUR_XX					

### 2.2 Portability

Portability is effortless as the robot is very small and you can bring it with you along with a laptop or just use your phone and you are able to make code for it to follow.

## 3. Requirements Confirmation/Stakeholder sign-off

Include documentation of the approval or confirmation of the requirements here. For example:

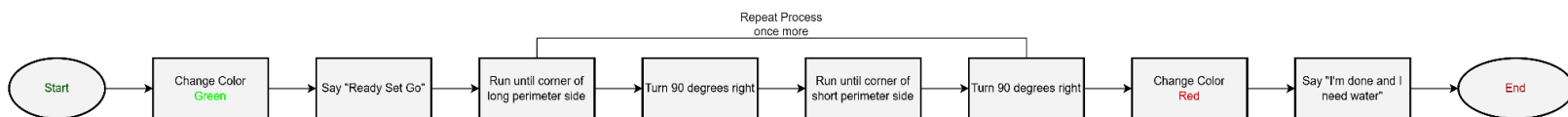
Meeting Date	Attendees (name and role)	Comments
10/24/22	Derek and Melissa	Worked on Gant chart
11/04/22	Derek, Melissa, and Thomas	Worked with robot

## 4. System Design

### 4.1 Algorithm

1. Start
2. Change color to Green
3. Say "Ready Set Go"
4. Run until corner of long perimeter side
5. Turn 90 degrees to the right
6. Run until corner of short perimeter side
7. Turn 90 degrees to the right
8. Repeat steps 4 - 7 once more
9. Change color to Red
10. Say "I'm done and I need water"
11. End

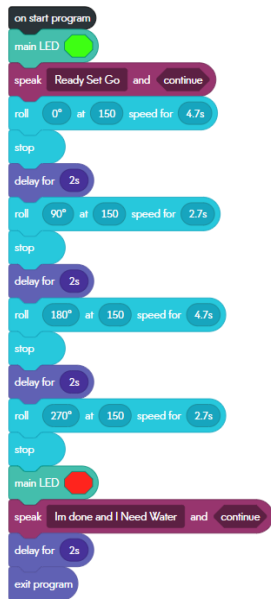
### 4.2 System Flow



### 4.3 Software

We used block coding in sphero.edu to create the movement of the robot using the coding below.

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### 4.4 Hardware

For hardware we used the sphere robot and a computer to code along with a phone to record what we did with the robot once successfully completed the task.

### 4.5 Test Plan

Reason for Test Case	Test Date	Expected Output	Observed Output	Staff Name	Pass/Fail
To achieve the expected output; robot will travel to each of the yellow floor tiles and turn right at the center of each tile.	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tile.	Robot achieved expected output but on a smaller scale.	Melissa Derek Thomas	Fail
To achieve the expected output on a bigger scale	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robot slammed into wall	Melissa Derek Thomas	Fail
To achieve the expected output without hitting anything	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robots distance was too short	Melissa Derek Thomas	Fail
To achieve the expected output with the correct distance	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robot slammed into tv stand	Melissa Derek Thomas	Fail
to achieve the expected output without hitting anything and with the correct distance	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robot landed between chairs	Melissa Derek Thomas	Fail

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<b>Reason for Test Case</b>	<b>Test Date</b>	<b>Expected Output</b>	<b>Observed Output</b>	<b>Staff Name</b>	<b>Pass/Fail</b>
To achieve the expected output without hitting anything and with the correct distance	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robot achieved expected output but the last step was short	Melissa Derek Thomas	Fail
To achieve the expected output without the last step being short	11/4/22	Robot will travel to each of the yellow floor tiles and turn right at the center of each tiles	Robot achieved expected output	Melissa Derek Thomas	Pass

#### **4.6 Task List/Gantt Chart**

#### **4.7 Staffing Plan**

Insert a chart/table that depicts the roles and responsibilities of each team member that worked on this project

<b>Name</b>	<b>Role</b>	<b>Responsibility</b>	<b>Reports To</b>
Melissa Abad	Documenter	Documenting data	
Derek Boyle	Programmer	Coding the robot	
Thomas Farrell			

## Sensor Data Diagram

