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Sprint 2 - Accuracy Design Document

November 22, 2021

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1. Executive Summary

1.1 Project Overview

This project is the second of three sprints using a Sphero Robot. The project is meant for the professor of the class and presentation to the entire class.

1.2 Purpose and Scope of this Specification

In scope

This project addresses requirements related to Sprint 2 Accuracy assignment

Out of Scope

Sprint 1 has been previously completed, therefore not related to this particular section of the robotics project.

Sprint 3 is out of scope and will be completed at a later time.

2. Product/Service Description

The project must meet the requirements laid out in the directions for the Accuracy Sprint

2.1 Product Context

The project is independent of all other projects besides the other Sprints which will be completed later or have been previously completed. Other sprints will be compiled with this Sprint to create a presentation.

2.2 User Characteristics

- Professor: Grades the project based on requirements and specifications
- Students: Will observe project when it is presented in December alongside Sprints 1 and 3

2.3 Assumptions

Assumed that the person using the block code for the robot actually has a robot that can run the code and Sphero Edu software on their computer to link with the bot

2.4 Constraints

- Must work with block code in Sphero Edu app

2.5 Dependencies

List dependencies that affect the requirements. Examples:

- Project assignment requirement list on eCampus

3. Requirements

Req#	Requirement	Comments	Priority	Date Rvwd
ACCUR_01	Run the course 5 times	<i>LOOPING = IMPORTANT</i>	1	11/16/21
ACCUR_02	Stay within the path	This is difficult to do, the track is not perfectly circular and it's hard to keep the ball on a set path	1	11/16/21
ACCUR_03	Start and finish in the same area	Same as above	1	11/16/21

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ACCUR_04	Say "I am the winner"		1	11/16/21
ACCUR_05	Flash for 5 seconds		1	11/16/21

3.1 Security

3.1.1 Protection

- Our laptops have passwords
- One person keeps the robot at all times

3.1.2 Authorization and Authentication

- Security features were not required or needed for this assignment

3.2 Portability

- Not a requirement, none of the code written is meant to be used anywhere besides in the classroom

4. 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
10/29/21	Vincent, Mason, Zak	confirmed all requirements

5. System Design

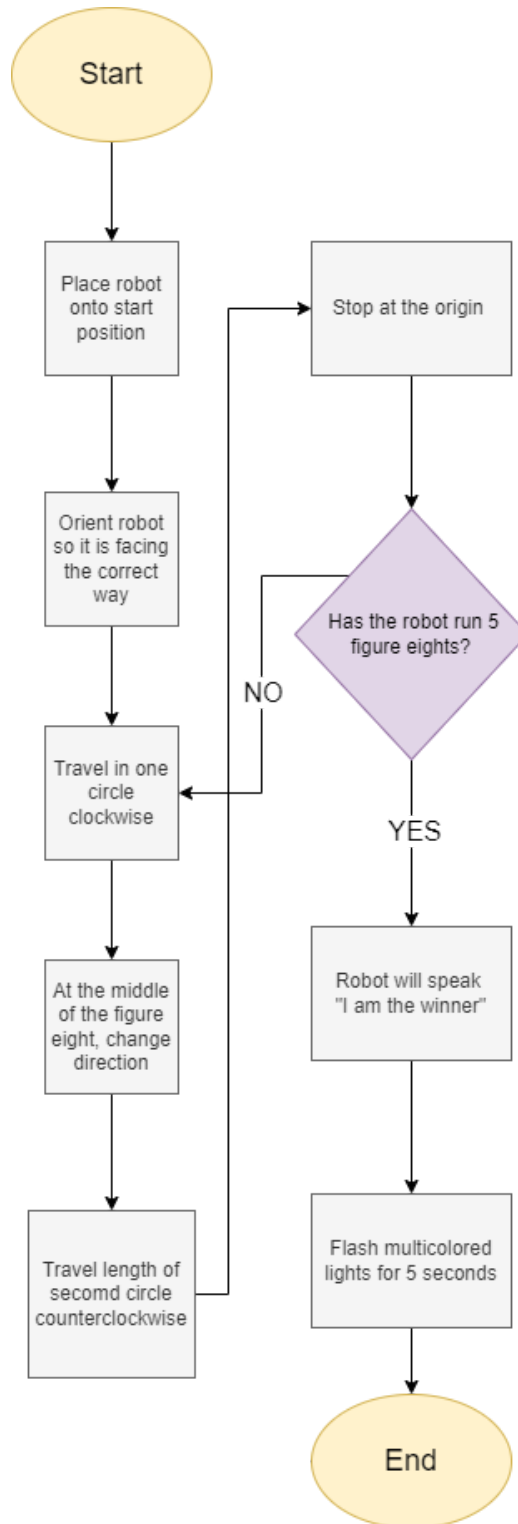
This section will provide all details concerning the technical design, staffing, coding, and testing the system

5.1 Algorithm

1. START
2. Place the robot onto the start position.
3. Orient Robot so that it is facing the proper direction.
4. Robot moves in a clockwise circle.
5. Robot changes direction once at the origin.
6. Robot moves in a counterclockwise circle.
7. Repeat steps 2 through 6 until it has run 5 figure eights.
8. Robot will say "I am the winner!"
9. Robot flashes multicolored lights for 5 seconds.
10. END

5.2 System Flow

Develop a flowchart (and show here) that accurately depicts how your software application will act to fulfill the algorithm



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5.3 Software

Describe software languages/platforms/api's used to develop and deploy this application

- Sphero Edu

5.4 Hardware

Describe hardware platforms that were used to develop, test and demonstrate this application

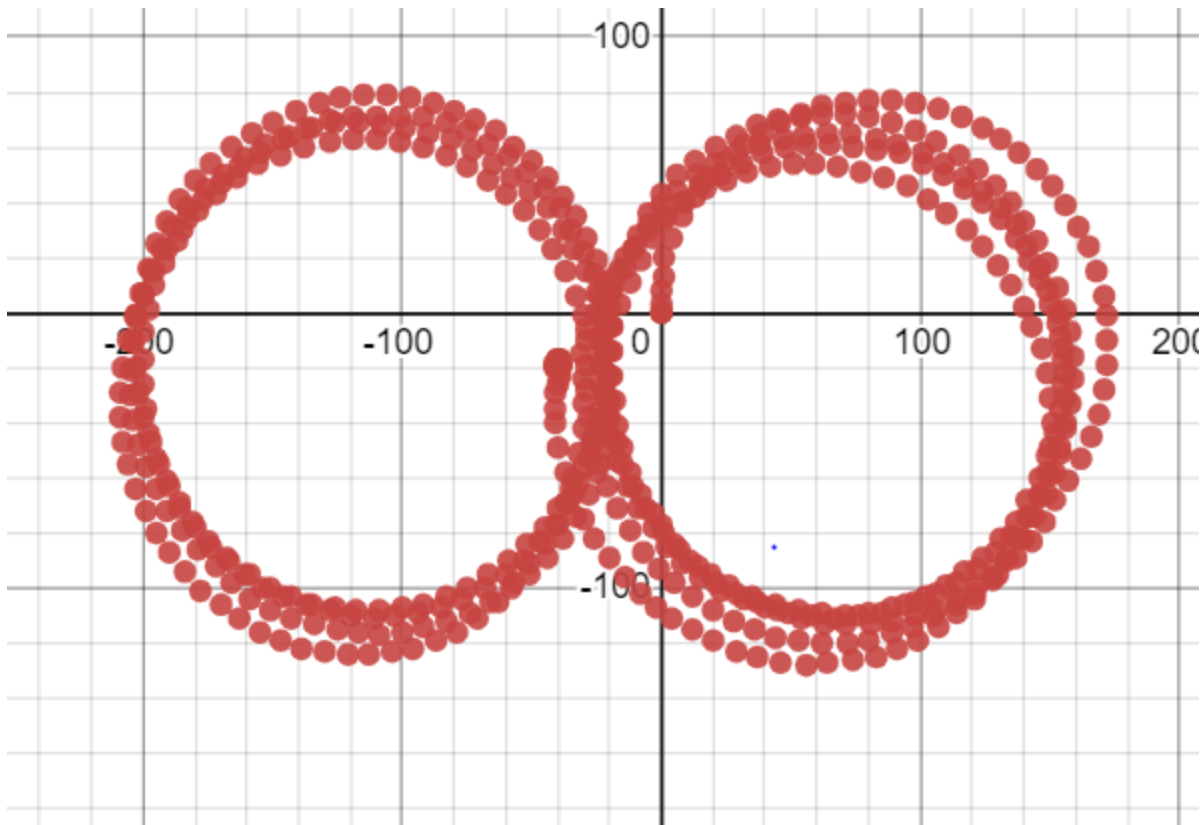
- Laptops

5.5 Test Plan

Include a test plan showing all unit tests performed for this application, Include test rational, test date, staff member, pass/fail status

Reason for Test Case	Test Date	Expected Output	Observed Output	Staff Name	Pass/Fail
Make the robot go in a circle	11/17	Goes in circle	Went in a circle	Vincent, Zak	Pass
Make the robot go in a figure eight	11/17	[Code: New circle that goes in opposite direction as first] Goes in figure eight	Went in a figure eight	Vincent, Zak	Pass
Make the robot follow the figure eight on the floor	11/17	Follows blue line on the floor	Robot traveled in a figure eight motion, however it seems its path was rotated from that of the floor, aim adjustment may be needed, the robot traveled too many times around the course	Vincent, Zak	Fail
Make the robot follow the figure eight on the floor 5 times	11/17	[Code: Lowered loop amount (code originally structured for half circles)] Robot will travel 5 times around the course, rather than 10	Robot travelled 5 times around the course, rather than 10	Vincent, Zak	Pass

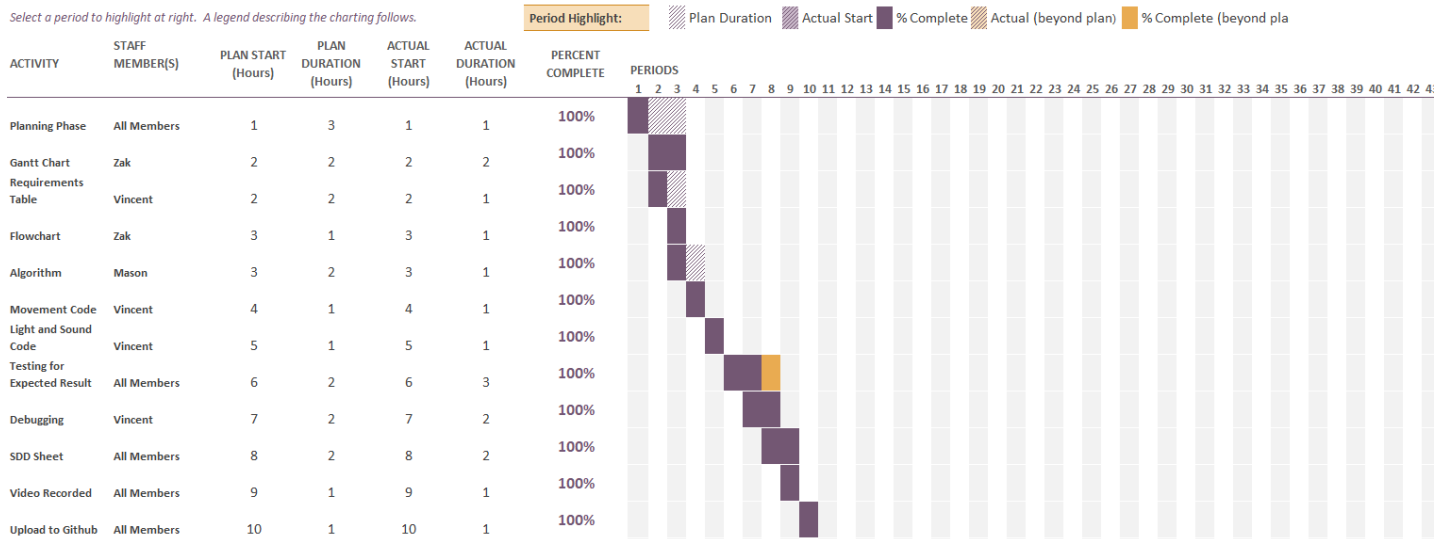
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5.6 Task List/Gantt Chart

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Select a period to highlight at right. A legend describing the charting follows.



5.7 Staffing Plan

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

Name	Role	Responsibility	Reports To
Zak	Group Member	Flowchart	Other Members
Mason	Group Member	Algorithm	Other Members

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Vincent	Group Member	Block Code	Other Members
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