

Sprint 3- Agility Design Document

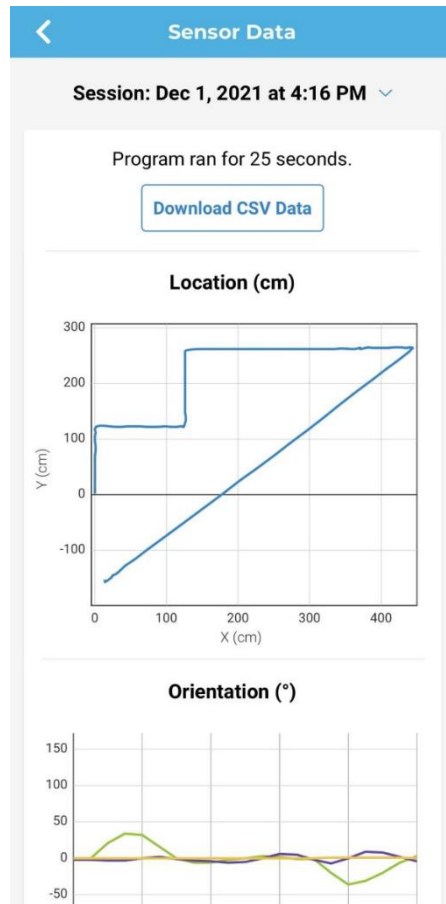
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December 2, 2021

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1. Executive Summary

1.1 Project Overview

This Project was made as a computer science project by Jenna Esposito (manager), Thérèse Racancoj (editor), and Anthony Pastorelli (Chart Maintenance). The purpose of the project is to test the robot and see if it will follow the commands we program into it, which is to travel along the blue tape without hitting any of the bottles, jump the binder and knock over as many markers as possible.

1.2 Purpose and Scope of this Specification

In scope

- **Agility course**

Out of Scope

- **Other courses**

2. Product/Service Description

2.1 Product Context

This is one of three parts of the Robotics Triathlon

2.2 User Characteristics

- **Team members**

2.3 Assumptions

The classroom was assumed to be available when team members needed it

Team members were assumed to have similar schedules

2.4 Constraints

- **The tiles in classroom 208 is uneven**
- **The tape does not always stay down**
- **Teammates have conflicting schedules**

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- Classroom 208 is not always available

2.5 Dependencies

- This program must be run in classroom 208
- Requirements must be finished before the coding process can begin

3. Requirements

- Robot must travel along the blue tape: The robot should stay on the blue tape as much as possible.
- Robot must complete the course without hitting any of the bottles: The robot must stay on course without touching any of the bottles on the ground next to the tape.
- Robot must go over the binder and land on course: When the robot reaches the binder it must roll up the binder and land back on the blue tape.
- Robot must knock over as many markers as possible: When the robot goes near the markers it should speed up to knock over all the markers if possible.

○ Functional Requirements

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
AGILIT Y_1	Robot must travel along the blue tape	N/A	Priority 1	11/18	11/30
AGILIT T_2	Robot must complete the course without hitting any of the bottles	A low speed will help	Priority 1	11/18	11/18
AGILIT Y_3	Robot must go over the binder and land on course	Give the robot a higher speed to help it go over the binder easier	Priority 1	11/18	11/18
AGILIT Y_4	Robot must knock over as many markers as possible	Increasing the robot's speed will increase the chances of it knocking over all the makers	Priority 1	11/18	11/18

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3.1 Security

3.1.1 Protection

NA

3.1.2 Authorization and Authentication

NA

3.2 Portability

- Testing was limited to classroom 208
- Recording the video can only be done in classroom 208
- Code can be done anywhere

4. Requirements Confirmation/Stakeholder sign-off

Meeting Date	Attendees (name and role)	Comments
11/30	Anthony Pastorelli (Chart Maintenance), Jenna Esposito (manager), Thérèse Racancoj (editor)	All requirements approved

5. System Design

5.1 Algorithm

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Made by: Jenna

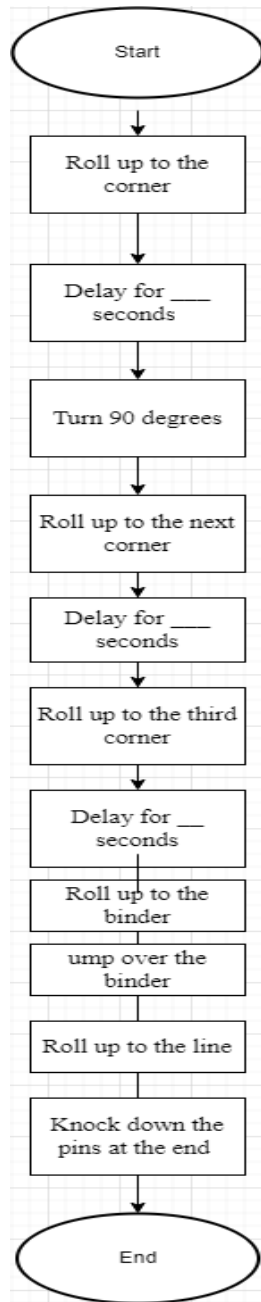
1. Roll up to the corner
2. Delay for ____ seconds
3. Turn 90 degrees
4. Roll up to the next corner

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5. Delay for ____ seconds
6. Roll up to the third corner
7. Delay for ____ seconds
8. Roll up to the binder
9. Jump over the binder
10. Roll up to the line
11. Knock down the pins at the end
12. End program

5.2 System Flow chart

Made by Thérèse Racancoj



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5.3 *Software*

sphero.edu app

5.4 *Hardware*

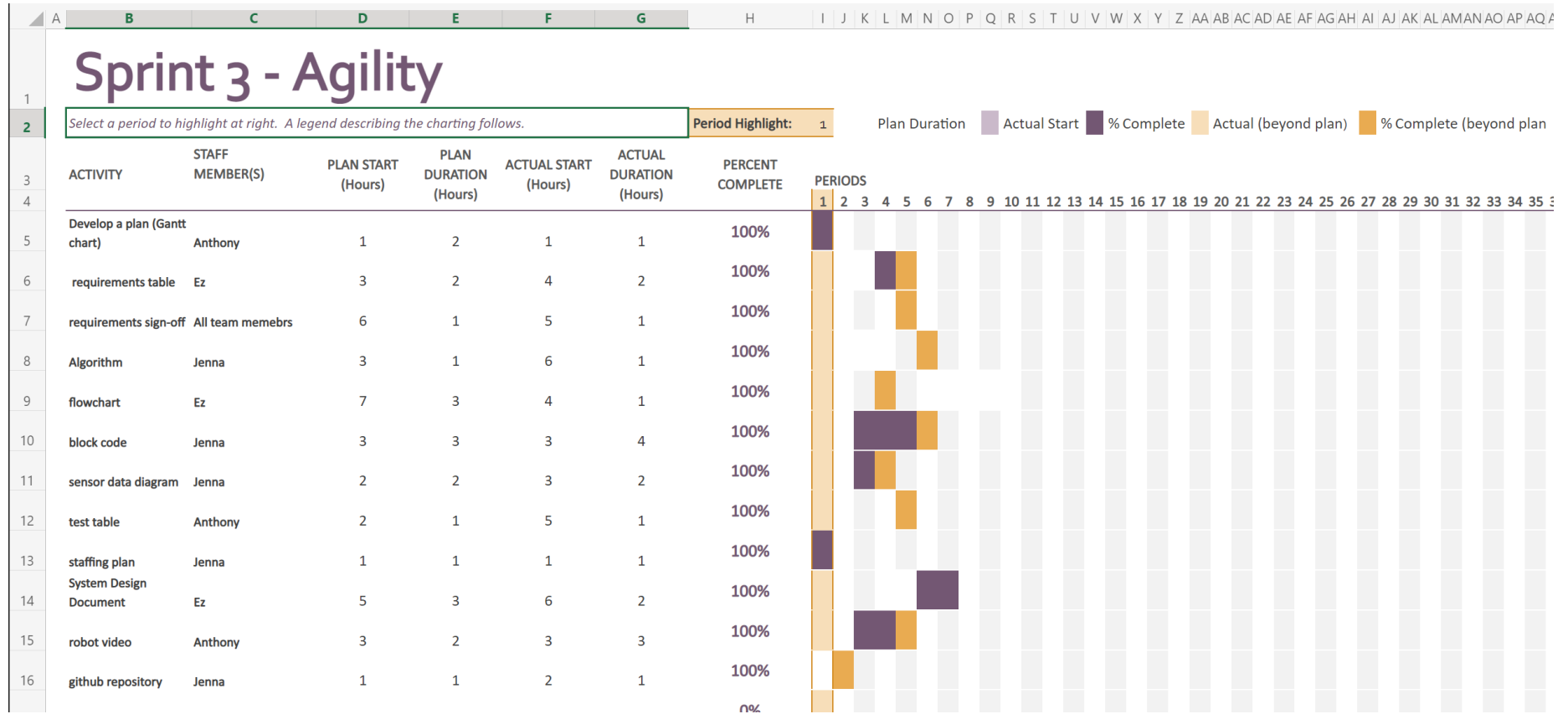
Phone, computer, and robot

5.5 *Test Plan*

Reason for Test Case	Test Date	Expected Output	Observed Output	Staff Name	Pass/Fail
Get the correct speed to complete the jump but not too far	11/23	Complete the jump	Wasn't fast enough to clear jump	Anthony	fail
Get correct speed to complete jump	11/23	Complete the jump		Anthony	pass
Get the correct degree before going straight to knock over the markers	12/1	Make the turn and hit the markers	Didn't complete turn and missed the markers	Anthony	fail
Get the correct degree before going straight to knock over the markers	12/1	Make the turn and hit the markers	Completed the turn at the right degree and hit markers	Anthony	pass

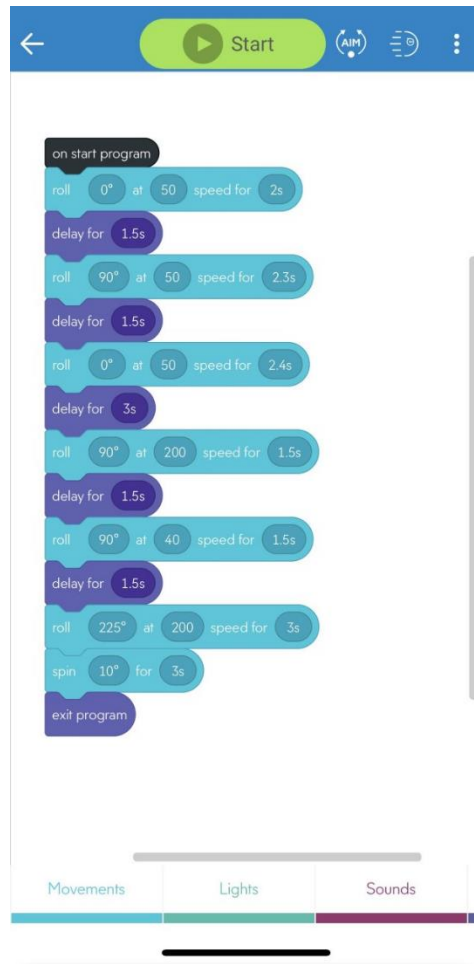
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5.6 Task List/Gantt Chart Made by Anthony Pastorelli

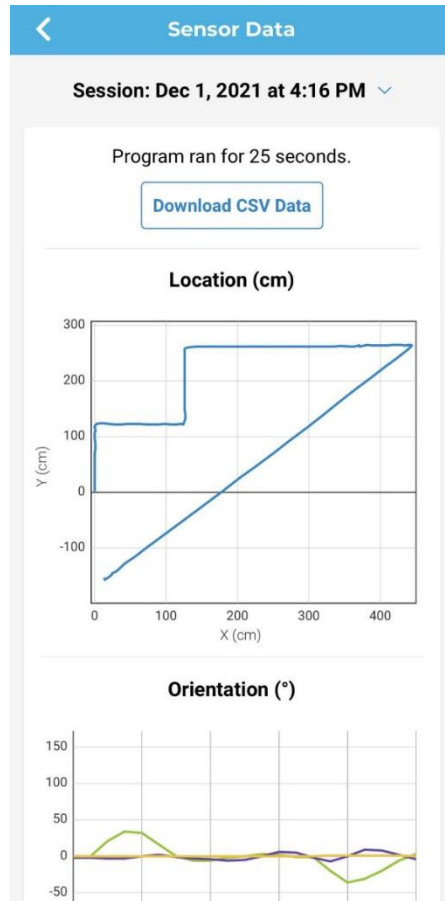


5.7 Block code made by: Jenna

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5.8 Sensor Data



5.8

5.9 Staffing Plan

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Name	Role	Responsibility	Reports To
Jenna Esposito	Manager	Team management, organize staffing plan and deadlines, write algorithm, work with block code, and manage GitHub repository	Team
Thérèse Racancoj	Editor	Editing and finalizing and filling out the doc fill out requirements table, create flowchart	Jenna Esposito
Anthony Pastorelli	Chart Maintenance	Maintain requirements sign-off, test table, and Gantt chart and record robot video	Jenna Esposito