

Sprint 2 - Accuracy Design Document

October XX, 2019

Use this Requirements Specification template to document the requirements for your product or service, including priority and approval (Must do).

This document will also serve as a System Design Document (How to) and will include sections detailing system flow, algorithms, staffing plan, software/hardware, and Test Plan

This document contains instructions and examples which are for the benefit of the person writing the document and should be removed before the document is finalized.

To regenerate the TOC, select all (CTL-A) and press F9.

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1. Executive Summary

1.1 Project Overview

- To program and direct a robot in a manner that displays the comprehension of various topics

1.2 Purpose and Scope of this Specification

In scope

- To successfully run a robot along a course line

Out of Scope

- Assignment is meant to meet the requirements of CS104-02

2. Product/Service Description

- CSSE SPRK programmable sphere robot, color-changing/versatile

2.1 Product Context

- CSSE SPRK 25 is an independent product with a limited variety in terms of what it can accomplish. Low complexity level

2.2 User Characteristics

- All group members (potentially professor)
- Low experience level
- Moderately technical minded

2.3 Assumptions

- Robot is provided
- Sphero Edu app is functional
- Extenuating OS are functional

2.4 Constraints

- access, management and security
- criticality of the application
- system resource constraints (e.g., limits on disk space or other hardware limitations)
- other design constraints (e.g., design or other standards, such as programming language or framework)

2.5 Dependencies

- Block code must be completed before procedure
- Sphero Edu program must be available for usage
- Robot is functional

3. Requirements

1. Robot must be functional and ready to be programmed
2. Sphero software is ready for use
3. Algorithm is laid out in preparation for completion of the flowchart
4. Flowchart upon completion should be ready to be formatted into block code
5. Block code then runs robot/robot runs course
6. Gantt chart is filled out further
7. Github repository marks progression

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3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
ACCURACY_01	Start robot, Delay for one second	Delay worked well.	Make sure the robot stays on track.	11/20/22	11/20/22
ACCURACY_02	Spin around the circle, full 360.	Spun around circle, stopped short	have it spin correctly	11/20/22	11/20/22
ACCURACY_03	Stop, delay one second	Delay worked.	make sure the delay gives enough time for the robot to work correctly.	11/20/22	11/20/22
ACCURACY_04	Spin around other circle, full 360.	Cleared circle good.	have it spin correctly	11/20/22	11/20/22
ACCURACY_05	Repeat 5 times.	During the repeating process, we changed a few numbers to make it work better and more consistently. Some tries were more on track than others, having the robot loop 5 times was the hard part.	loop repeated correctly	11/20/22	11/20/22
ACCURACY_06	Stop, and say command	Worked well with added delay, said command as well.	Stopped correctly	11/20/22	11/20/22
ACCURACY_07	Turn Pink	Color changed correctly	Turned right color	11/20/22	11/20/22
ACCURACY_08	Delay for one second	Delayed worked	Delay working	11/20/22	11/20/22

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
ACCURACY_09	Turn Green	Color changed correctly	Color turned the right color	11/20/22	11/20/22
ACCURACY_10	Delay for one second	Delayed worked	Delay working	11/20/22	11/20/22
ACCURACY_11	Turn yellow	Color changed correctly	Turning correct color	11/20/22	11/20/22
ACCURACY_12	Stop procedure when done correctly.	Finishing the procedure complete.	Stopping correctly	11/20/22	11/20/22

3.2 Security

3.2.1 Protection

- Consistent check in from all group members
- Saving System
- Only group members saw project

3.2.2 Authorization and Authentication

- Github Authorization sent to group members and Professor Gil

3.3 Portability

- All files sent to Github Repository: <https://github.com/GideonQ/Accuracy>
- Use of a good environment
- Used in common language

4.

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

Meeting Date	Attendees (name and role)	Comments
11/18/22	GQ/PP	Finished code and system design
11/20/22	GQ/PP	Video taped robot

5. System Design

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

5.1 Algorithm

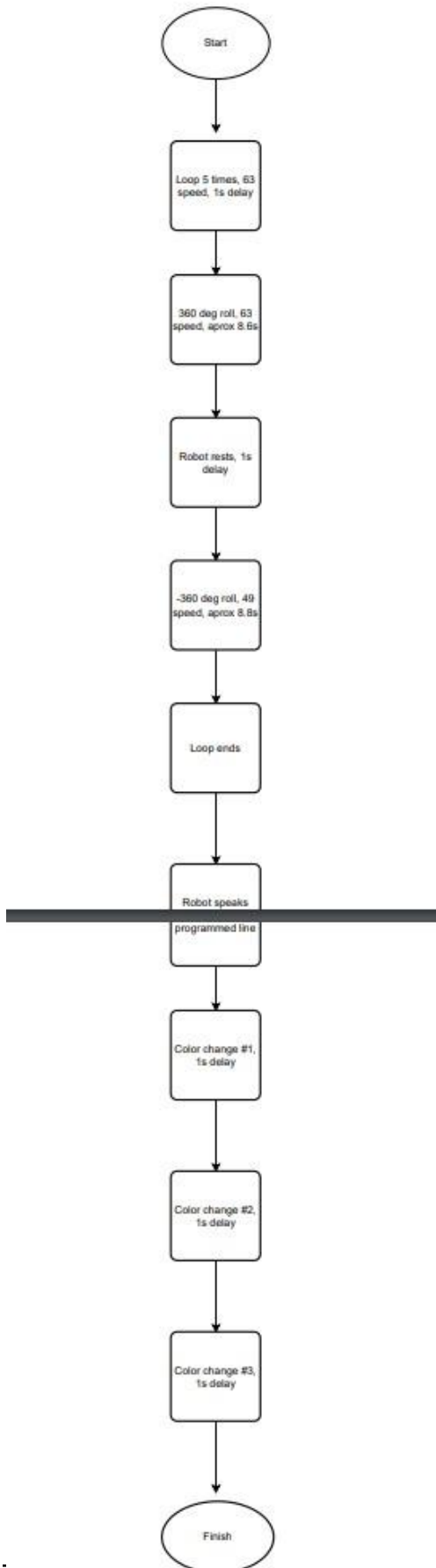
Develop and describe here the algorithm that will be used to provide the required performance of your software

- Start
- Loop 5 times
- 1 second delay
- Speed 63
- 360 degree roll, for 8.6 seconds
- Robot stops
- 1 second delay
- Speed 49
- -360 degree roll, for 8.8 seconds
- Loop ends
- speak "I AM THE WINNER" and wait
- Color change to pink takes place
- 1 second delay
- Color change to green takes place
- 1 second delay
- Color change to yellow takes place
- Finish

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

- CSSE SPRK 25

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
To see if robot stays in circles correctly	Nov 18.	Robot stopped short first loop	Robot went too far on the third loop.	Peter	Fail
To see if robot stays in circles correctly	Nov 18.	Robot went to far on final loop	Robot stopped short first loop.	Peter	Fail
To see if robot stays in circles correctly	Nov 20.	Robot successfully followed correct procedure	Robot went off track fully	Peter	Fail
To see if robot stays in circles correctly	Nov 20.	Robot successfully followed correct procedure 100%	Robot successfully followed correct procedure 100%	Peter	Pass

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5.6 Task List/Gantt Chart

ACTIVITY	STAFF MEMBER(S)	PLAN START (Hours)	PLAN DURATION (Hours)	ACTUAL START (Hours)	ACTUAL DURATION (Hours)	PERCENT COMPLETE
Develop a plan (Gantt chart)	All team members	1	2	1	1	100%
Build requirements table	All team members	3	2	2	1	100%
Signoff Table	All team members	6	1	3	1	100%
Algorithm	All team members	7	2-3	4	2	100%
Flowchart	Gideon	9	1-2	6	2	100%
Block Code	Peter	11	2-3	9	1	100%
Test Table	Peter	13	2-3	10	1	100%
Sensor Data Diagram	All team members	15	2	11	1	100%
Staffing Plan	All team members	16	1	12	1	100%
System Design Document	All team members	19	3	13	3	100%
Test Robot	All team members	22	1	16	1	100%
Robot Video	All team members	23	1	17	1	100%
Github Repository	All team members	24	1	18	1	100%

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
Peter	Project Manager, System Design	Receives instructions and gives instructions. Suggests changes that should be made to better the procedure. Also filled out Gantt chart and project summary. Provides details with technical design, coding, staffing, and testing the robot.	Professor Eckert
Gideon	Software Design	Creates the code, does multiple measurements and algorithms, The software designer makes sure the robot correctly follows procedure.	Peter

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