Project: Robotics Triathlon

Sprint: Agility

Date: 12/07/2024

Team Members: [Oleksandr, John, Avery]

1. Gantt Chart:

ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE	PEF	RIOE)S 3	4	5	6	7	8	9	10
Requirements						1///	2	3	4	5	О	/	0	9	10
Analysis	1	1	2	1	100%										
Algorithm Design	1	2	3	2	100%										
Flowchart Creation	1	2	3	2	100%										
Block Code Development	2	4	4	3	100%										
Testing and Verification	2	4	4	3	100%										
Documentation Finalization	2	4	5	3	100%										

2. Requirements Table:

Require	Description	Priorit	Status
ment ID		\mathbf{y}	
R-01	Robot identifies and avoids	High	Completed
	obstacles.		
R-02	Robot traverses over a ramp	High	Completed
	successfully.		
R-03	Robot knocks down as many pins as	High	Completed
	possible in the final section.		

3. Requirements Signoff Table:

Requirement ID	Description	Approver Name	Date Approved
R-01	Robot avoids obstacles.	Oleksandr	12.07.2024
R-02	Robot traverses over a ramp successfully.	John	12.07.2024

R-03	Robot knocks down	Avery	12.07.2024
	as many pins as possible in the final section.		

4. Algorithm:

1) Initialize and Start:

a) Begin moving forward from the starting square.

2) Obstacle Avoidance:

- a) While moving forward:
 - If robot hits an obstacle:
 - 1. Adjust the code and start the path over.
 - Else:
 - 1. Keep monitoring the path;

3) Ramp crossing:

- a) Approach the ramp, adjusting speed to ensure stability.
- b) Increase power to climb the ramp smoothly without losing control.

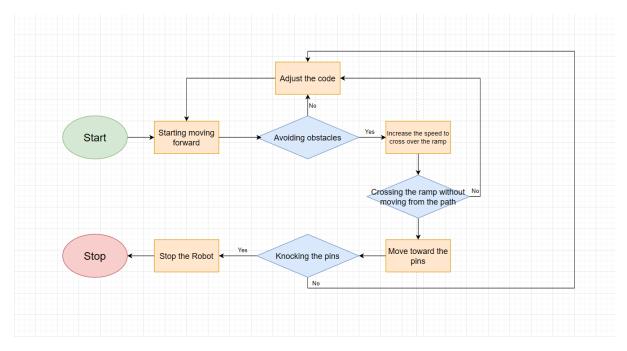
4) Knoking down the pins:

a) Move forward and adjust direction to knock over as many pins as possible.

5) Completion:

- a) After completing the path:
 - Stop moving.

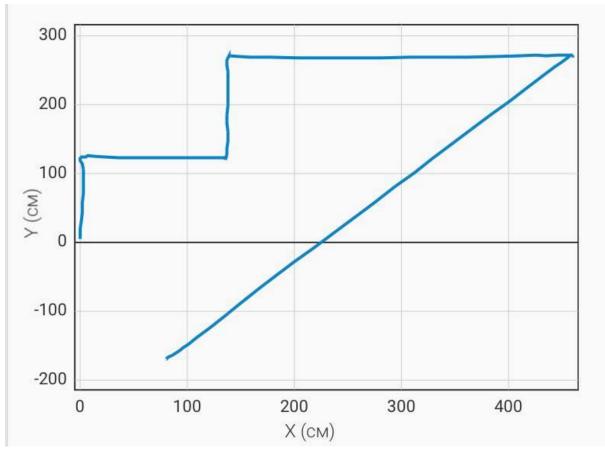
5. Flowchart:



6. Block code:

```
on start program
roll 0° at 80 speed for 1.28s
delay for 1s
heading 90°
delay for 1s
roll (90° at (80) speed for (1.33s
 delay for 1s
 heading 0°
 delay for 1s
 delay for 1s
  heading 90°
  delay for 1s
  roll 90° at 160 speed for 1.85s
  delay for 1s
  delay for 1s
  roll 220° at 160 speed for 3s
```

7. Sensor data diagram:



8. Test Table:

Test Case	Description	Expected	Actual	Status
ID	_	Result	Result	
T-02	Robot	Robot	Robot	Tested
	avoids	successfully	avoids	
	obstacles.	avoids	obstacles.	
		obstacles.		
T-03	Robot	Robot	Robot	Tested
	crosses ramp	climbs and	crosses	
	smoothly.	descends	ramp.	
		ramp		
		without		
		tipping over.		
T-04	Robot	Robot	Robot	Tested
	knocks	knocks over	knocks	
	down pins in	pins in	down pins in	
	final section.	designated	final section.	
		pin area.		

9. **Staffing Plan:**

Team Member	Role	Responsibilities	Reports To
Avery	Project Manager	Oversees Agility	Team Lead
		Sprint and	
		manages	
		schedule.	
John	Path Algorithm	Develops code	Project Manager
	Dev	for obstacle	
		avoidance,	
		ramp, and pins.	
John	Flowchart	Creates	Project Manager
	Designer	flowchart based	
		on algorithm	
		and	
		requirements.	
Avery	Tester	Conducts tests	Project Manager
		and verifies	
		functionality.	
Oleksandr	Documenter	Prepares	Project Manager
		documentation	
		including Gantt	
		chart, flowchart,	
		and reports.	