PROJECT THREE: MILESTONE TWO (TEAM): PRELIMINARY DESIGN

Milestone 2 – Cover Page

Team ID: | Thurs-14

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Luay alabed alkader	alabedalch
Evan Chadwick	chadwe1
Dante FInoro	finorod
Muhammad Haseeb Aslam	aslamm14

Milestone 2 (Stage 1) – Sensor Selection and Computer Program Workflow (Computation Sub-Team)

Team ID: Thurs-14

1. As a sub-team, discuss the results of your individual sensor demo activity and select the sensor(s) that you will use in your project. Identify the sensor(s) in the box below and include any decision-making tools or justification in the space provided. *Teams are allowed to use a maximum of 2 sensors*

> Chosen Sensor(s):

Ultrasonic sensor and colour sensor

Decision making tools and/or justification:

We can use the colour sensor to differentiate between bins and we can use the ultrasonic sensor to determine how close we are to the bins.

2. As a sub-team, write out the pseudocode or create a flowchart for the indicated tasks in the space below
   → If creating a flowchart, complete your flowchart on a separate sheet of paper, take a photo of your sketch and insert photo as a Picture under the appropriate task

Dispense Container

Dispense random container
Note mass of container to determine what bin it needs to be deposited at

Load Container

q-arm to grab container
q-arm pick up container

q-arm move to above q-bot
q-arm release container
Repeat until there are 3 containers or total mass of containers does not exceed 90 grams or the next container has a different container id

Transfer Container

Activate colour sensor
q-bot following line on floor to the bins
Sensor can determine which bin it needs to stop at based on the information it has already received and the colour of the bin

Deposit Container
Use ultrasonic sensor to determine if q-bot is close enough to the bin
If it is not q-bot should move toward bin and adjacent to it
Dump containers into bin
Add pause
Move back to line if necessary

Return Home
Q-bot follow line back to home

Milestone 2 (Stage 5) – Informal TA check-in (Computing Sub-Team)

☒ A sensor(s) has been selected. Discuss reasons as to why the group chose said sensor(s).

☒ The following tasks have been planned either in pseudocode or flowchart format:

- → Dispense container
- → Load container
- → Transfer container
- → Deposit container
- → Return home

☒ The following tasks are planned in pseudocode or flowchart format as their own functions:

- → Load container
- → Transfer container
- → Deposit container

☒ Do the tasks cover the following:

- Container attributes are determined
- Containers are positioned in the sorting station
- Q-arm loads the containers until one of the following conditions are met:
    - o A container with a different ID is placed in the sorting station
    - o The total mass of the bottle placed in the sorting station and the bottles loaded on the Q-bot is greater than 90 grams
    - o 3 bottles have been placed on the Q-Bot
- Q-bot transfers the containers to the correct recycling bin
- Q-bot deposits the containers into the bin
    - o If needed, Q-bot turns 90 degrees to face the required bin, and then locomotes to bin
- Q-bot returns home
- Cycle repeats

Mentor Comments: Use the space below to document mentor feedback for your design, including requirement for reviewing progress next design studio.

-Need to add pause in the pseudocode when disposing of container to allow time for it to fall in to bin

-Also need to figure out how the bot knows where home is

Action Items: Use the space below to propose design refinements based on feedback.

-Can simply use the time.sleep() function to make a pause

-We can store the co-ordinates of the starting position as a variable and tell the bot to stop when it gets to that point

PROJECT THREE: MILESTONE THREE (TEAM): WORK PERIOD / INFORMAL TA CHECK-IN

Milestone 3 – Cover Page

Team ID: THU-14

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Luay Alabed Alkader	alabedal
Dante Finoro	finorod
Evan Chadwick	chadwe1
Muhammad Haseeb Aslam	aslamm14
Yazan Khatib	Khatiy2

Milestone 3 (Stage 3) – Informal TA check-in (Computing Sub-Team)

✅ All 5 program tasks are accounted for (dispense container, load container, transfer container, deposit container, return home)

✅ One cycle (for ONE container of the sub-team's choice) sufficiently executes based on requirements outlined in project module
- The general flow: home → dispense → load → transfer → deposit → home

✅ The following tasks are written as their own functions:
- Load container
- Transfer container
- Deposit container

✅ The return home task executes properly by following the yellow line *around the loop* and back to the sorting station

✅ No errors in program

✅ Commenting their code (i.e., headers explaining purpose of functions & any other appropriate comments where needed)

Mentor Comments: **Use the space below to document mentor feedback for your design, including requirement for reviewing progress next design studio.**

- Missing the comment of the codes.

- Adjust how far the bins are from the line.

- small adjustments on making deposit the bottles in the bin more accurately.

Action Items: **Use the space below to propose design refinements based on feedback.**

- We've fine-tuned the bin distances to enhance efficiency and expedite the cycling process.

- We've meticulously documented and elucidated every line of code and command, clearly outlining their respective roles and the sequence in which they are executed.

- We've implemented precision enhancements to ensure the robot accurately deposits waste into the bins, minimizing the risk of any spills or scattered debris in the surrounding area.

PROJECT THREE: MILESTONE ONE (TEAM): PROBLEM FRAMING AND CONCEPTUAL DESIGN

Milestone 1 – Cover Page

Team ID: | Thurs-14

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Dante FInoro	finorod
Muhammad Haseeb Aslam	aslamm14
Yazan Khatib	khatiy2
Evan Chadwick	chadwe1
Luay alabed alkader	alabedal

Milestone 1 (Stage 1) – Initial Problem Statement, Objectives and Constraints

Team ID: | Thurs-14

You should have already completed these tasks individually *prior* to Design Studio 13.

Initial Problem Statements

Copy and paste the initial problem statement(s) below.

> We need to make a system that determines whether the container is recyclable or not, what type of recyclable it is and where to deliver the container.
>
> We need a system to recycle our trash, since we are running out of places to put our trash, and having a good sorting system for recycling helps yield higher quality recycled products.
>
> Design a recycling system that prevents waste of recyclable materials to prevent losing recyclable materials and overfilling facilities.
>
> Design a system for sorting and recycling containers.

Objectives and Constraints

Copy and paste each team member's Objectives and Constraints tables here or combine the objectives and constraints into the single table below.

Objectives	- Determine what category container is, deliver it to the correct drop-off, return home - Maximize Recyclables - detect and identify containers as accurately as possible - Smooth motion as to not require maintenance - Quickly identifies type of recycling to function as fast as possible
Constraints	- Sensor limitations, space restrictions, processing speed - Hopper must must hold a maximum of three containers. - Container must include a hopper for holding containers during transfer. - Assembly model must be properly constrained to base plate along with actuator. - Device must mount to a base plate on top of the Qbot.

	- Q arm range of motion - Number of containers cannot exceed 3 or be signficantly over 90 grams

We are asking that you submit your work on both worksheets. It does seem redundant, but there are valid reasons for this:

- Each team member needs to submit their work with the **Milestone 1 Individual Worksheet** document so that it can be *graded*
- Compiling your individual work into this **Milestone 1 Team Worksheet** document allows you to readily access your team member's work
  - o This will be especially helpful when completing **Stage 2** of the milestone

Milestone 1 (Stage 2) – Refined Problem Statement

Team ID: | Thurs-14

Refined Problem Statement

1. As a team, write the refined problem statement below. Kindly refer to the Refined Problem Statement rubric in the P3 Project Module. This will guide your group in creating a valid statement.

Approximately 30 percent of items placed in recycling bins are not recyclable, leading to significant loses of materials annually, having a recycling system that sorts trash will help yield higher quality and a smaller loss of materials.

# PROJECT THREE: MILESTONE ZERO (TEAM): TEAM DEVELOPMENT AND PROJECT PLANNING

Milestone 0 – Cover Page

Team ID: Thurs-14

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Muhammad Haseeb Aslam	aslamm14
Yazan Khatib	khatiy2
Dante Finoro	finorod
Luay alabed alkader	alabedal
Evan Chadwick	chadwe1

Insert your Team Portrait in the dialog box below
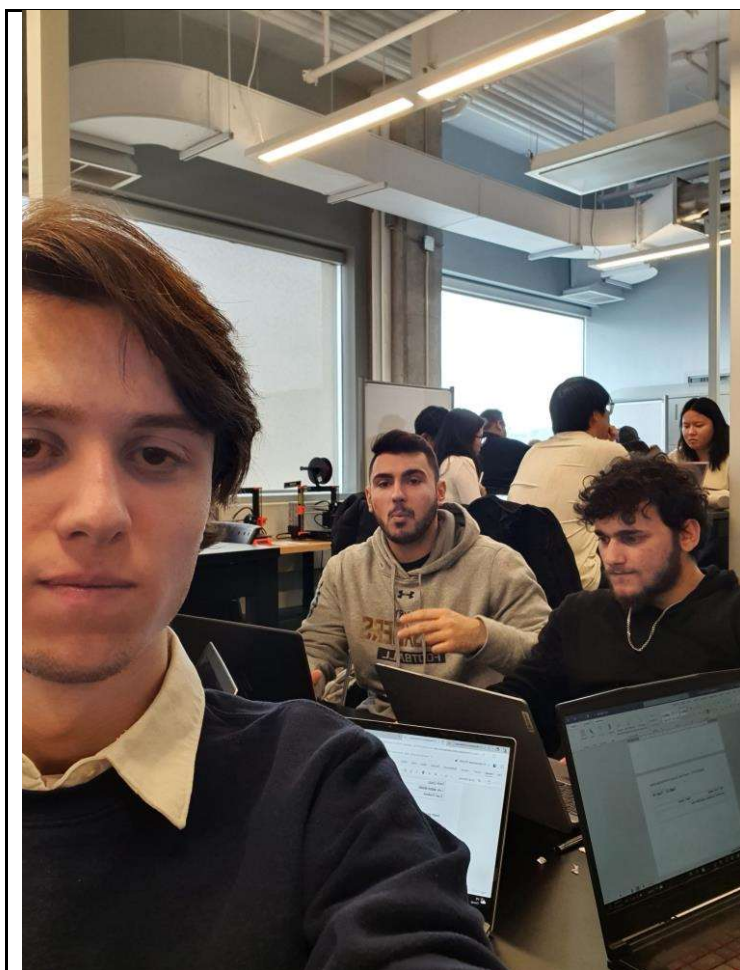
Milestone 0 – Team Charter

	Team ID:	Thurs-14

Incoming Personnel Administrative Portfolio:

Prior to identifying Leads, identify each team members incoming experience with various **Project Leads**

	Team Member Name:	Project Leads
1.	Muhammad Haseeb Aslam	☒ M ☒ A ☐ C ☐ S
2.	Yazan Khatib	☒ M ☐ A ☒ C ☐ S
3.	Dante Finoro	☒ M ☒ A ☐ C ☐ S
4.	LUAY ALABED ALKADER	☒ M ☐ A ☒ C ☐ S
5.	Evan Chadwick	☒ M ☒ A ☐ C ☐ S

To 'check' each box in the Project Leads column, you must have this document open in the Microsoft Word Desktop App (not the browser and not MS Teams)

Project Leads:

Identify team member details (Name and MACID) in the space below.

Role:	Team Member Name:	MacID
Manager	Luay alabed alkader	alabedal
Administrator 1	Dante Finoro	Dante Finoro
Administrator 2	Yazan Khatib	Khatiy2
Coordinator	Muhammad Haseeb Aslam	aslamm14

| Coordinator | Evan Chadwick | chadwe1 |

Milestone 0 – Preliminary Gantt Chart (Team Manager Only)

Team ID: | Thurs-14

Full Name of Team Manager: | MacID:

Luay alabed alkader | alabedal

Preliminary Gantt chart

Project 3- Revenge of the recycling system

Preliminary Gantt chart