PROJECT THREE: MILESTONE 1 – COVER PAGE

Team Number:	THURS-14

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

Full Name:	MacID:
Mahmoud El Shafei	elshafem
Yuvraj Sandhu	Sandhuy
Kelvin Weng	wengc3
Kartik Chaudhari	chaudk4
Dariusz Wolosz	wolosd1

MILESTONE 1 (STAGE 1) – WHY/HOW LADDERING

Team Number:	THURS-14

1. Document both your conversation and a refined visual on a separate sheet of paper
2. Take a photo of both your rough work and refined visual
3. Insert each photo as a Picture (Insert > Picture > This Device)
4. **Do not include more than one Picture per page**

	Enhances quality of life.		
	Healthier Environment.	Increase recycling output. Decrease Labour Hours.	Increases sustainability and maintainability of scarce resources.
	Less pollution.	Save time and resources.	Recycled material can be used instead of new material.
Why?	To reduce waste.	Increase efficiency of recycling centers.	Lowers the need for production of new plastics /metals

Initial Problem Statement: Design a system for sorting and recycling containers.

How?	Determine the correct type of waste.	Place the waste into the bin	Move the waste from the bin into the appropriate box
	Use a sensor. Types of Sensors: Ultrasonic, LDR, Hall, Color, Active IR(Infrared) and Retro-reflective Photoelectric	Use automation.	1. Determine the right box using a color sensor. Move the Q-Bot to the box.
		Program a robotic arm to do it automatically.	2. Use a rack and pinion to deposit them in the box automatically.

MILESTONE 1 (STAGE 2) – LIST OF OBJECTIVES AND CONSTRAINTS

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As a team, create a list of objectives and constraints in the table below. The exact number you should have depends on what information you have gathered from the Project Pack as well your previously completed needs hierarchy.

Objectives	• Design a system that deposits the waste containers in their respective bins • Design a code that will detect if a container is recyclable and moves the Q-arm accordingly • Design a code that moves the Q-Bot to the appropriate bin depending on the type of waste
Constraints	• All code must be written in python and interface with Quanser-Labs (Computing) • Components must fit on baseplate with the size of 130.175 mm x 101.6 mm (Modelling) • Components must connect directly to the actuator and supports the hopper. (Modelling) • Destination bin is based on material and its recyclability (Computing) • Components at one end of the base plate must move with the actuator (Modelling)

MILESTONE 1 (STAGE 3) – REFINED PROBLEM STATEMENT

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Initial Problem Statement

1. Write the initial problem statement in the space below. This will have been defined in a previous lecture, prior to your scheduled Design Studio.

Design a system for sorting and recycling containers.

Refined Problem Statement

2. Write the refined problem statement below. Kindly refer to the Refined Problem Statement rubric provided on Avenue (see P3 Rubrics). This will guide your group in creating a valid statement.

Design a system for sorting and recycling containers - that should be fully automated - to reduce recyclable waste, and increase the sustainability and maintainability of scarce resources.