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[Lab session: <u>L02</u> **Group Number:** <u>4</u>

WEEKLY REPORT

1st Week: From _____3/10_____ **to** _____9/10_____

<u>Summary of work undertaken during the week (last 7 days),</u>
<u>highlighting what was carried out and in particular conflicts and their resolution.</u>

This week, we discussed the design of the recycling bin and its primary operating principles and finalized the list of required hardware.

For the design, we decided on a rectangular shape. The recycling bin contains three separate compartments for sorting different types of recyclables. When waste is placed into the bin, it initially rests at the entrance and falls into an internal chute. The chute is comprised of four ramps, allowing the waste to slide by gravity into the designated sorting compartments. I used Tinkercad to make the 3D model draft of the system.

We have established a preliminary operational process. Initially, users will log in using RFID or NFC. Next, the camera will detect and classify items at the entrance, and finally, various slopes will be activated to guide the waste into designated sorting areas. Based on this workflow, our team has identified the hardware we need to procure and drafted the UI design for the accompanying mobile application.

We needed clarification regarding whether to use the Arduino Mega or the ESP32 as the central controller. Some team members favored the Arduino Mega, which is familiar and more accessible. However, we realized that the Arduino Mega's memory and processing capabilities would need help to support essential bidirectional communication, especially with AI functionalities. Ultimately, we decided to use the more powerful ESP32, which also has a built-in Wi-Fi module, as our central controller.

RFID
NFC

screen