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Title Of The Project: THYAAJYA-VARNABEDHA-SAADHANA (INTELLIGENT WASTE MANAGEMENT WITH REWARD SYSTEM)

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Introduction:

In the current situation, India is facing various challenges in the environment by the waste generated such as improper waste collection, treatment, transport, disposal. The most difficult challenge is from its inception to its disposal. Due to the increasing urban population, our country cannot survive the current system which results in environmental and public health pollution. Waste can be solid or liquid and each type of waste will have different methods of disposal. Waste will be a threat to human health. Proper management of waste is necessary and important to have a healthy lifestyle. So, this project aims to create automated segregator system primarily based on waste segregation which may determine the kind of waste and place them in respective bins accordingly and automatically. Implementing the system at domestic level can scale back the expenditure on waste disposal, manual effort needed for waste segregation and therefore the waste can be simply recycled, reused, and reduced.

Objectives:

- To design and construct a low-cost automatic waste segregator.
- To fabricate a less complex automatic waste segregator.
- To ensure the protection of the environment through an effective waste management system.
- To reduce time consumed in managing waste at later stages.

- To encourage recycling by segregating waste at the earliest.
- To reduce and eliminate adverse impacts of waste on human health and the environment.

Methodology:
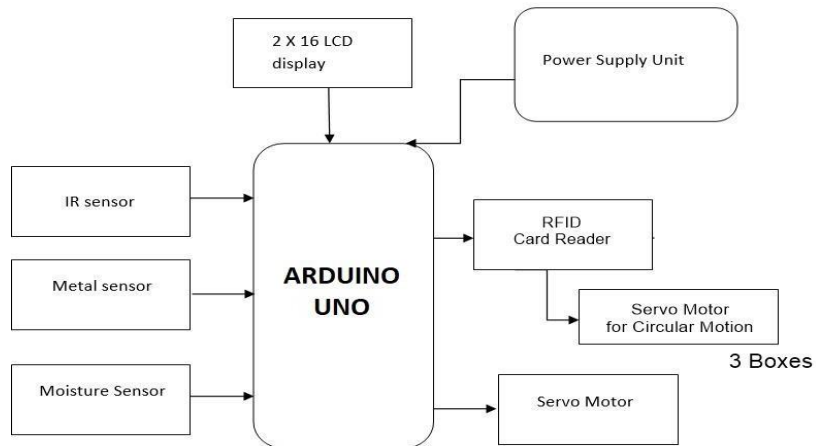
Fig 1: Architecture Of Automated Waste Segregator System

The following steps are involved in this credit-based system:

Step 1: Use an RFID scanner to scan the RFID card.

Step 2: Insert the garbage into the system.

Step 3: Sorting garbage into dry, metal, and moisture categories.

Step 4: Collecting the waste once it has been sensed by sensors into 3 distinct containers.

Step 5: Show the credits on the LCD.

The following are the components used to implement the system:

1. Arduino uno (AVR ATmega 328PU)

2. IR sensor

3. Metal sensor

4. Moisture sensor

5. Liquid Crystal display

6. Servo motor

7. Power supply

8. RFID card reader

Results:

The system tests following types of waste.

1. Metal waste

S.no	Type of waste	Discarded?
1	Battery	Yes
2	Coin	Yes
3	Keys	Yes
4	Small screw	Yes
5	Safety pin	Yes

Table 1: result of metallic waste separation

2. Wet waste

S.no	Type of waste	Discarded?
1	Wet tissue	Yes
2	Wet cloth	Yes
3	Wet wood	Yes
4	Vegetable feel/fruit feel	Yes
5	Leftover food	Yes

Table 2: result of wet waste separation

3. Dry waste

S.no	Type of waste	Discarded?
1	Glass	Yes
2	Plastic	Yes
3	Paper	Yes
4	Cloth	Yes

5	Small bottels	Yes

Table 3: result of Dry waste separation

The user of segregator uses their particular RFID card which gets scanned by the low-power radio waves of RFID reader to communicate with user and store data Base. The RFID reader then displays the users ID on the LCD display. Based on some experiments it will detected dry cloth, wood pieces, plastic wastes, cardboard pieces etc. as dry waste. Banana peel, wet cloth, lemon, etc. is detected as wet waste. Keys, tin lid, aluminium sheet pieces, etc. are detected as metallic waste.As well as it will display the credits on lcd for segregated waste such as for dry waste it will display the credits 2,for wet waste credits will be 3, and for metallic waste credits will be 5 and it will display the count of user.

Conclusion:

This project enhances the cleanliness of the smart cities by the practical application of "automatic waste management and segregation system using IoT". With urbanization and increasing population, disposal of waste is a major concern. This proposed system is an effective waste segregation system that has no human intervention or interference to separate dry, wet and metal waste. It provides timely collection and disposal. The proposed system can be deployed on a domestic scale in household or a large scale in public places.

Future scope:

The waste segregator can be improvised to include the segregation of wastes such as plastics, biomedical wastes etc., Following are some of the improvements that can be done in adopting the system:

- Sensitivity of sensors can be increased.
- Provisions can be made for on-spot decomposition.
- Provision can be made for the segregation for 2-3 different types of waste at the same time.
- Power generation and biogas generation can also be done at the bins.

What is the innovation in the project?

Automated waste segregation of different wastes and allocation of rewards based on the type of waste.