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Scrap Management System

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Abstract: In industrial, commercial, or institutional settings, the Scrap Management System is a digital solution that optimises and streamlines the collecting, sorting, tracking, and disposal of scrap materials. Scrap production is an unavoidable aspect of industrial and manufacturing operations. Ineffective operations, higher expenses, and adverse environmental effects might result from improper scrap management. In order to effectively track, manage, and reduce the amount of scrap materials generated during production, this project focusses on the creation and implementation of a scrap management system. In order to facilitate improved monitoring and decision-making, the system attempts to offer an organised method for documenting the kind, amount, and source of scrap.

Additionally, it promotes recycling and appropriate disposal methods, which help to maintain a sustainable environment. The solution supports adherence to industry standards, enhances operational efficiency, and lowers manual error rates by combining digital tools and automation. Conventional scrap processing frequently has environmental non-compliance, inefficiencies, and a lack of responsibility. It reduces human error, enhances resource recovery, and promotes sustainable practices by automating critical operations. In the end, this initiative helps to conserve the environment, cut costs, and manage trash effectively.

Index Terms **– Scrap management, Disposal.**

I. INTRODUCTION

Scrap will inevitably be produced during any manufacturing or industrial process. Remaining, flawed, or discarded materials that are no longer used in the main production cycle are referred to as scrap. Scrap can result in higher operating costs, safety risks, and environmental issues if improperly managed.

A computerised solution or systematic method for tracking, managing, and improving the processing of scrap materials is called a scrap management system. It is essential for tracking trash amounts, determining its sources, and making sure that it is disposed of or recycled properly. Industries can decrease material waste, increase resource efficiency, and encourage sustainable behaviours with the use of such a system.

Implementing a scrap management system is primarily done to reduce production losses, optimise processes, and promote environmentally friendly projects. Businesses can make well-informed decisions to enhance their procedures and cut waste at its source by gathering and evaluating data on junk generation.

A well-designed scrap management system becomes a crucial instrument for attaining cost-effectiveness, regulatory compliance, and long-term sustainability as companies shift towards smarter and greener operations. The management of waste and underused materials has grown in importance in today's manufacturing and industrial sectors. Materials that are left over, flawed, or unusable in their current state are known as scrap, and they are one type of byproduct of production operations. Scrap can result in higher expenses, ineffective operations, and environmental problems if it is not managed correctly.

The purpose of a scrap management system is to systematically monitor, manage, and minimise the amount of scrap produced during production. It aids businesses in tracking the kind and volume of junk generated, locating waste sources, and putting effective recycling, reuse, or disposal plans into action.

II. LITERATURE SURVEY

This literature review reveals the detailed work that has been carried out till date on the content scrap/ waste management system.

1) Prajwal Ratnaparkhe, Tushar Wagh, Sojwal Ingale, Chaitnya Shelke has designed metro city scrap management system.

The first online platform in India offering free door-to-door scrap collection and recycling services is Metro City Scrap Management System. It provides a clear marketplace for people, groups, and institutions to sell their used or scrap goods. Along with providing fair rates, precise weights, and a 100% recycling guarantee, the system also enables artists to purchase and modify scrap materials for usage. Within a day, the system can identify scraps.

2) Kedar Dhotre, Pranjal Ragade, Sandeep Pawar, Yashraj Mahajan, Pravin Hunchikar has designed scrap management system

The purpose of a Scrap Management System (SMS) is to effectively manage and monitor the scrap materials produced by diverse industries and operations. Its main goal is to make scrap material collecting, sorting, transportation, recycling, and disposal procedures more efficient. Real-time inventory management is guaranteed by the technology, which aids in keeping a current inventory of every scrap item. By organising and overseeing the transportation routes and schedules, it also maximises logistics. Additionally, the SMS interfaces with disposal and recycling facilities to process discarded materials in an eco-friendly way while guaranteeing adherence to federal, state, and municipal laws. The system also keeps track of scrap management's financial aspects. The technology eliminates manual labour, minimises errors, and protects the environment by automating and improving the efficiency of scrap management procedures.

III. METHODOLOGY

3.1 Components Used:

- HTML
- CSS
- JavaScript
- Online compilers
- Notepad
- Browsers like chrome, Microsoft edge
- Laptop 8GB ram
- Smartphone

3.2 Use Case Diagram:

In this case, a Use Case Diagram would represent how various users (actors) interact with the system to manage scrap. The diagram helps visualize the primary functionality of the Scrap Management System from the perspective of the system's users.

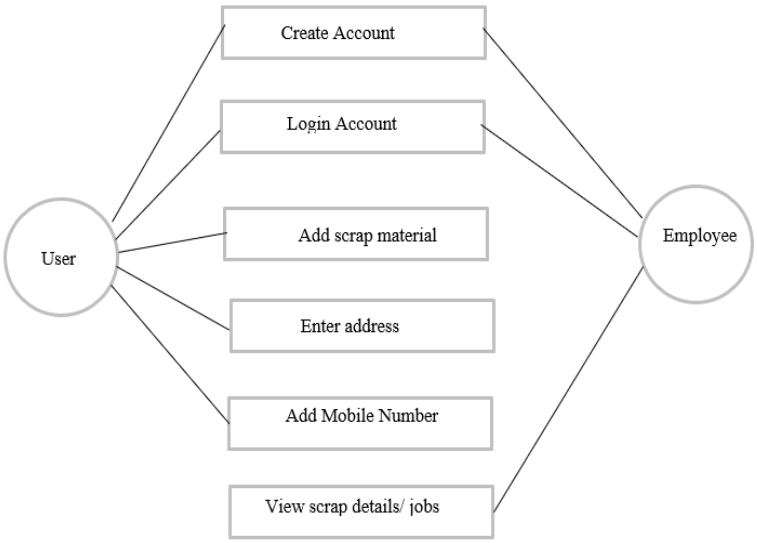

Fig 1: Use Case Diagram Of Scrap Management System

3.3 Module-wise Implementation Plan

1) Register / create account
   Users can register / create account using username and password.
   With role employee or user.
2) Login account
   Using username & password login your account as employee or user.
3) Add scrap request details
   Add scrap type name as per you want to submit in first input box ,
   enter scrap weight in kg in second input..
   Now in last input schedule pick up time for scrap in date & time format.
   After writing all details about scrap click on submit button to send scrap request.
4) Address Field
   It will prompt the address to enter. You can enter as per your requirement/ location.
5) Phone number field
   It will display the screen which will accept the phone number for contact or information.
6) Scrap request submitted successfully.
7) View scrap request details
   It can only viewed by employee no users can see. Here it will display scrap details like Name,address, phone number, scrap type, weight etc in table format. It will display only after employee does login in their home page.
8) Request Job
   Here in this if the employee want that scrap they can access it using request job button**.**

3.4 Working

After Performing Execution Of the code it will display the screen to login a user or employee account if the account is already created otherwise the second screen will display to register or to create a new account of user or employee as per their role.
Now We can login using username and password that we have entered while account creation. After login the user account it will accept input details of scrap like scrap type whether it is plastic, metal etc, weight, date & time when user want to give.

After entering this details it will promt to accept address and phone number for contact & then submit. The scrap request is submitted. By Employee login employee can view all the scrap details which users gave. And can request to job if they want that specific type of scrap

3.5 Applications

1) Manufacturing Industry
2) Automotive industry
3) Electronics and E-Waste Recycling
4) Construction and Demolition
5) Food and Beverage Industry
6) Environmental and Regulatory Compliance

3.6 Performance Analysis & Optimization

Project Performance (Speed, Efficiency, Resource utilization)

1. Speed:
   Web starts in 2-3 seconds.
   Screen navigation happens in less than 1 second.

2. Efficiency:
   Only needed data is loaded (no extra data fetching).
   UI works smoothly with no lag.

3. Resource Usage:
   CPU usage is low (20-40%).
   RAM usage is around 60-80MB.
   Battery consumption is optimized with fewer background tasks.

3.7 Outputs

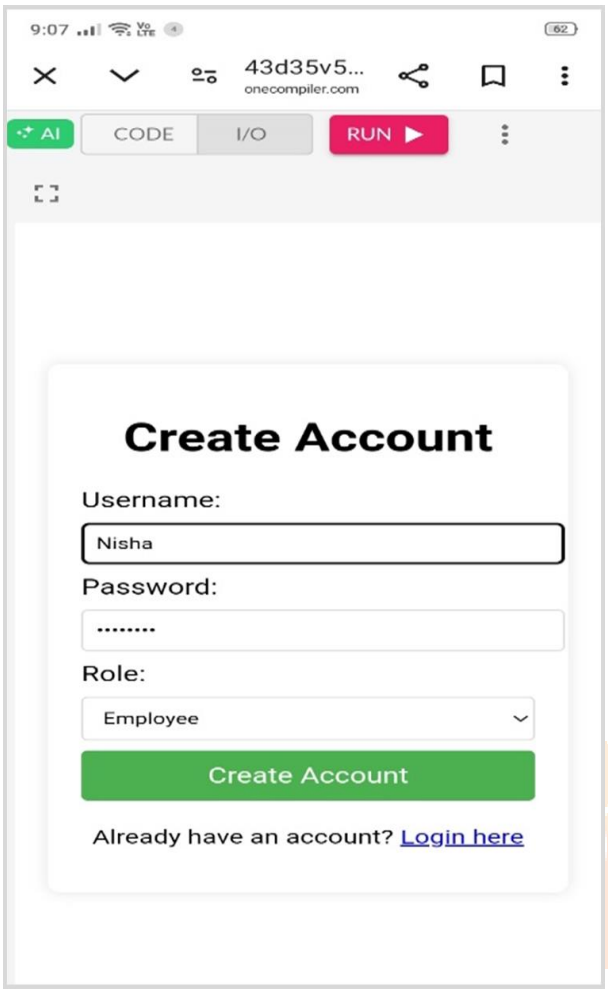

Fig 2: Create Module

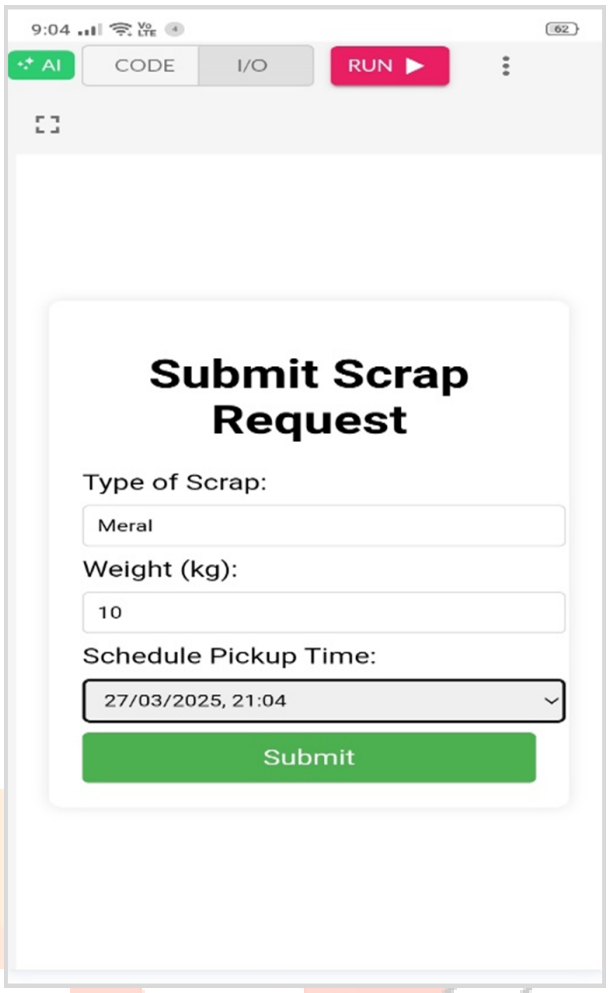

Fig 3: Submit Scrap Request

Module

Fig 4: Employee page: View & Accept Jobs

IV. FUTURE WORK

We can create a large-scale scrap management system in the future to help manufacturers, huge companies, and others manage their garbage and scrap. in order to cut down on waste.

V. CONCLUSION

A scrap management system is crucial for improving manufacturing processes' cost-effectiveness, sustainability, and efficiency. It reduces waste, enhances resource use, and supports environmental conservation. A well-designed system promotes recycling initiatives and environmental standards. Automated and digital scrap management solutions are increasingly necessary as industries transition to sustainable processes. Incorporating these systems into routine operations is essential for long-term efficiency and environmentally friendly production targets.

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