EasyChair Preprint

№ 12540

Zero Waste - a Step Towards Better Future

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March 18, 2024

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***Abstract*—'Zero Waste' is a web development project that aims to promote sustainability and reduce waste by implementing the principles of reduce, reuse, and recycle in waste management. This app acts as a platform that focuses on three major R's for asustainable environment REDUCE, REUSE and RECYCLE. This app encourages its users to participate in recycling by providing them a platform to earn money for the amount of recyclable waste they provide. By this way the companies will get lots of recyclable waste which can be used as raw material and the users will not only earn money but also participate in a movement for sustainable environment. India generates approximately 62 million tons waste per year, with a recycling rate of only 20- 25 collected and less than 10 materials which are highly profitable like paper, glass, textiles, metals and e-waste. The government of India has implemented several initiatives to promote recycling in India like Swachh Bharat Abhiyan, the Extended Producer Responsibility policy and the Plastic Waste Management Rules. Despite the initiatives, there is a need for increased awareness and education on waste segregation, collection, and recycling to improve the recycling rate in India and reduce the environmental impact of waste and our application not just tries to bring awareness among users about recycling buts acts as a bridge between companies and public. In our Zero Waste web application registered users can upload their products for donation or for sale and can also give price range thus promoting Reuse of items and reduce in Wastage and also our app will have checkpoints per area especially in metropolitan areas where the users from that area can give the recyclable waste and get money per quantity. Then from that checkpoints the recyclable waste will be sold to companies that are registered in our web application and posted a requirement of material in our web application. We will be taking help of NGOs and Government for the smooth execution of this process and will be conducting awareness campaigns. What happens outside the app is equally important as what happens within the web application. This app is the rightplatform for companies that are looking for material to recycle, users who want to sell or donate their products and also for people who want to earn money from giving recyclable waste and also for the people who are interested in Reduce, Reuse and Recycle.**

Keywords- Reduce, Reuse, Recycle, Swachh Bharath, Environment, Hygiene

Introduction

The terms Reduce, Reuse, Recycle are not new to people. The concept of Reduce, Reuse and Recycle has gained significant importance in recent years as people have become more conscious about the impact of their actions on the environment. But still most people are not showing interest in taking part of them due to lack of awareness. We need to remember that the world we live in is not just for us but also for our future generations. Big words spoken but what actually makes difference are the actions we take and this web application is a step towards it. In this application we have different features for the Reduce, Reuse and Recycle like donating and selling used products in good quality to other users making Reuse and Reduce of the 3 R's possible and having organizations which registers themselves in our app and purchases recyclable waste and does Recycling. And the UI of the application is nothing less than a trending social media platform. To keep the users attracted we have stunning features in the app like the nearby search option, follow option, notifications option, donate option and can also like the products uploaded by other users and can add them to cart as well. The organizations can register themselves and after getting verified they will be able to do their trading (money for raw material which is recyclable waste) by posting the details of the sale like quantity required, area, cost paid per quantity etc... So not just a great cause but this app is fun tobe in as well. Ease of Use

I. LITERATURE SURVEY

According to the authors, India suffers several difficulties in managing its garbage, including poor infrastructure, a lack of public knowledge, a lack of money, and a lack of facilities for

segregation and treatment. Ultimately, the report emphasizes howurgently India has to enhance waste management procedures in order to reduce the threats to the environment and public health posed by careless waste treatment and to support sustainable growth in the nation [1].According to the research, Indore City's waste management system has made great strides towards addressing the city's rising garbage output. The amount of garbage delivered to landfills has decreased as a consequence of the efficient implementation of waste segregation and recycling techniques, which has also reduced environmental contamination [2].According to the systems model, recycling is more economical than land filling in the examined regional waste management context. The particular materials being recycled and the processing technique employed determine the relative cost-effectiveness of recycling compared to landfilling [3].According to Antonis Mavropoulos, Maria Tsakona, and Aida Anthouli's study, "Urban waste management and the mobile challenge," mobile technology can significantly improve waste management procedures by providing real-time data on waste generation and collection, optimizing collection routes, and fostering stakeholder communication. The essential processes required in creating a dynamic web application using PHP and MySQL are summarized by the authors. The paper's overall goal is to give a hands on introduction to creating dynamic web applications with PHP and MySQL [5].After the users have provided the different parameters required to run the simulation, WASTED calculates the energy balance, pollutant emissions to air and water, and land lost as a result of landfilling [6].

In the case of Singapore, usage of reusable plastic bags followed by HDPE plastic bags are the recommended options. Switching to paper or cloth bags would increase the environmental footprint resulting in heightened negative effects such as global warming and eco-toxicity potentials [7].The article's thorough research of several shopping bag kinds, including biodegradable and compostable bags as well as reusable bags made of diverse materials, is one of its strong points. The authors compare the environmental effects of each type of bag across its full lifecycle, from manufacture to disposal, using a strict approach. The study takes into account Singapore's particular waste management issues, which adds to the body of knowledge on sustainability [8]. The design of minimum-cost recycling collection networks with the required throughput is a complex optimization problem that requires careful consideration of several factors, including the location of the recycling centers, the capacity of the collection vehicles, and the volume of recyclable materials to be collected [9].Do a thorough search and research about your electronic waste recycler. Choose the one about whom you are sure will treat your e-waste systematically and scientifically. The Central Pollution Control Board (CPCB) has a list of e-waste recyclers operating in India on its website. Do go through it to find a registered agency to dispose your e-waste [10].The study concludes that global wastage is going to rise from 1.3 billion tones in 2018 to 27billion tones by 2050. The current regulations are not going to make zero waste. In India, we are generating massive waste every day. Already, the dumping yards were filled with these huge wastes [11].Continuous Improvement is Necessary: Information literacy skills are constantly evolving, and therefore, it is necessary to continuously revamp and update the program to ensure that it remains relevant and effective [12].The construction industry is responsible for a significant amount of the world's carbon emissions and resource consumption. In recent years, there has been growing concern about the environmental impact of construction materials, leading to a need to rethink the materials used in construction [13].The program has resulted in a measurable increase in the amount of waste that is diverted from landfills through recycling and other strategies. The cost-effectiveness of the program is dependent on a variety of factors, including the cost of infrastructure and the level of participation from residents and businesses [14].Reduced Environmental Impact: By designing buildings that consume fewer resources and generate less waste, the 3Rs concept can significantly reduce the environmental impact of the construction industry. This can be achieved by using eco-friendly building materials, implementing energy-efficient design strategies, and reducing water consumption [15].

[16] The authors find that the cost efficiency of recycling is higher than that of waste disposal in Japan. This involve that the government should allot more resources to recycling programs to increase cost efficiency. [17] The findings of this study suggest that the reuse of waste materials in construction has weighty potential for reducing waste generation and promoting sustainable construction practices. All around, this study provides valuable insights the need for continued research and development in this area.[18] The study recommends the

implementation of a comprehensive waste management plan that includes waste reduction, recycling, and safe disposal. This plan should involve all stakeholders, as well as the government, waste management officials, waste collectors, and residents, and should be sustainable and environmentally friendly. [19] This research paper achieve that environmental problems like pollution, deforestation, climate change, and habitat destruction have extraordinary negative effects on flora and fauna. These problems also contribute to the spread of diseases and have extended impacts on the planet's biodiversity.[20] The study highlights the importance of responsive design in improving user contact with and increasing user engagement. The paper provides awareness into various techniques and tools used in responsive web design, such as fluid layouts, flexible images, and media queries.

II. REQUIREMENTS

This chapter involves both the hardware and software requirements needed for the project and detailed explanation of the specifications.

A. HARDWARE

- A PC with Windows/Linux OS
- Processor with 1.7-2.4gHz speed
- Minimum of 8gb RAM
- 2gb Graphic card

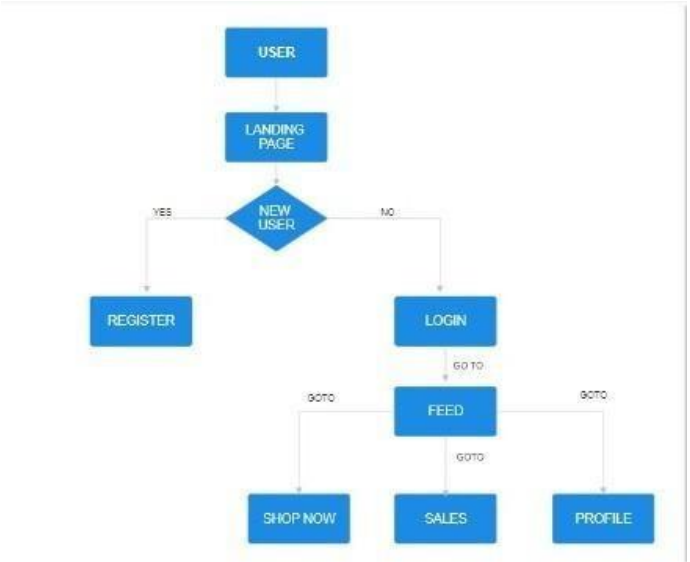
B. SOFTWARE

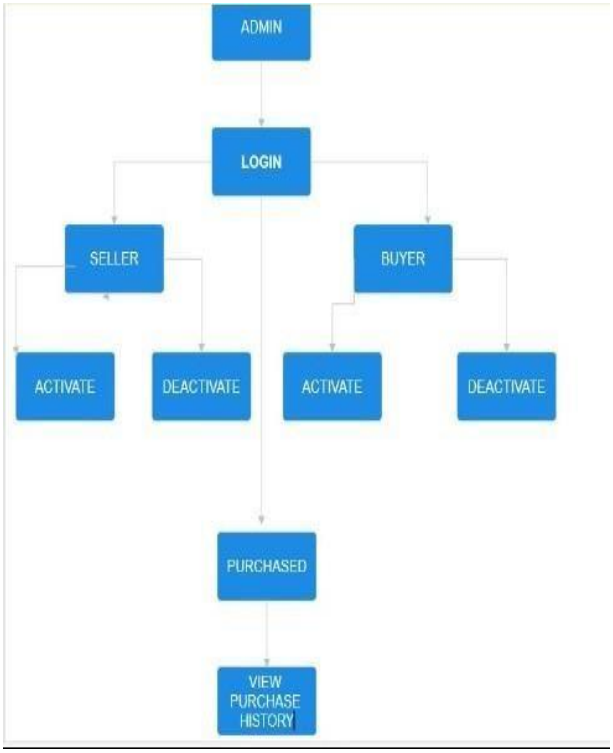
- Text Editor (e.g.: -VS-code)
- Front end tools like HTML, CSS, JS
- Python libraries and framework of Django
- SQLite3

III. PROJECT FLOW AND METHODOLOGY

In the proposed system we are trying to give a platform in which we implement all three major R's which are required for environmental sustainability; Reduce, Reuse and Recycle. Here users can create their account, login and then they can upload the images of the products they want to sell or donate through the upload option. They can view the products and posts uploaded by others in the home section and will be provided with like, share and comment option. Users can discuss about their views in this forum as well. In the search section users can search for profiles, locations and there will be an option called 'find your nearest checkpoints'. Through that users can contact the website checkpoints near them and sell their recyclable waste and earn money. Also, they can find the accounts of NGOs and social workers in this app that are working for the same cause and help them. There will be many welfare organizations like orphanages, shelter homes that will be willing to take the products the user wants to donate. Through these steps we can implement Reduce, Reuse and Recycle. Now the companies plays a crucial part of the website as we need them to buy the recyclable waste and recycle it for good. So they will be invited to register themselves in our app and after verification they will be able to upload their sales, where they need to give the details of the material they want, approximate quantity and amount per unit quantity and then they can post it. Then the admins of our checkpoints will contact the company, lock the deal and transports the material to the company. Checkpoint admins acts as the mediator between the users and companies. The users willreach out to the checkpoints and the checkpoints will contact companies. But other private dealers, NGOs etc. will be allowed to do the task as well. But at the end of the day, it's the decision of the companies and users on whom to contact. The users can rate the mediators and these ratings help for a better decision making for the users and organizations. One more important feature is the donation feature where they can donate money for the recycling purpose if they're interested.

FLOW CHART:





IV. CONCLUSION

In this project, the website provides a platform to implement three major R's that are required for environment sustainability. At the end of the day, through this website we promote Reduce, Reuse and Recycle, and generate money and bring awareness among people. All of this will be integrated together in a visually striking UI with lots of appealing features.

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