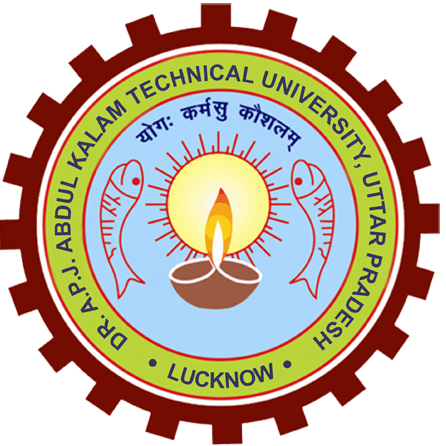
**GARBAGE MANAGEMENT SYSTEM**

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**MASTER OF COMPUTER APPLICATIONS DEGREE**



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**1. Introduction:**

Garbage management is an essential aspect of maintaining a clean and healthy environment. With the increasing population and industrialization, there has been a rapid increase in waste generation, which calls for an efficient garbage management system. Garbage management system refers to the processes and methods used to manage, collect, transport, dispose, and recycle waste materials generated by households, industries, and businesses. The aim of garbage management is to maintain a clean and healthy environment while minimizing the negative impact of waste on human health, biodiversity, and climate change.

The garbage management system involves various stakeholders, including government bodies, waste management companies, NGOs, and citizens. The system typically includes the following steps:

1. Waste generation: This refers to the creation of waste materials by households, industries, and businesses.

2. Waste collection: This involves the collection of waste materials from various sources, such as residential areas, commercial areas, and industrial sites. Collection can be done manually or by using specialized vehicles, such as garbage trucks.

3. Waste transportation: Once collected, waste materials are transported to disposal sites or recycling facilities. The transportation can be done using specialized vehicles or by using existing transportation infrastructure.

4. Waste disposal: This involves the final disposal of waste materials in landfills, incineration plants, or other facilities. The disposal method used depends on the type of waste and the local regulations.

5. Waste recycling: This involves the recovery of useful materials from waste materials, such as paper, plastics, and metals. Recycling helps to reduce the amount of waste that needs to be disposed of and can also generate revenue.

6. Waste treatment: This involves the treatment of hazardous waste materials, such as chemicals and medical waste, to ensure that they do not pose a threat to human health or the environment.

Effective garbage management systems require a comprehensive approach that includes awareness campaigns, education, and training programs for citizens and waste management professionals. Governments also need to establish regulations and policies that promote waste reduction, recycling, and proper disposal.

**1.1 Background:**

The growing population and industrialization have led to the generation of huge amounts of waste, which poses a significant threat to human health and the environment. The lack of proper garbage management systems has resulted in the accumulation of waste in open areas, leading to pollution and other environmental hazards. Therefore, there is a dire need for an efficient garbage management system. The background of the garbage management system lies in the increasing population and urbanization, which have resulted in the generation of huge amounts of waste. This waste includes various forms of solid waste such as household waste, commercial waste, and industrial waste. Improper waste disposal practices, such as open dumping and burning of waste, have led to pollution, health hazards, and environmental degradation.

The lack of proper garbage management systems has worsened the situation, leading to the accumulation of waste in open areas, which poses a significant threat to human health and the environment. Therefore, there is a dire need for an efficient garbage management system to ensure proper disposal of waste materials, minimize environmental hazards, and promote recycling of waste materials.

In addition, garbage management also involves the collection, transportation, and processing of waste materials. This process involves several challenges, such as ensuring the safety of garbage collectors, preventing illegal dumping, and managing the waste disposal sites efficiently.

Thus, the development of a garbage management system that is efficient, cost-effective, and environmentally friendly is essential to address the challenges posed by the increasing waste generation. The garbage management system should be able to streamline the waste management process, starting from waste collection to disposal and recycling, and also increase public awareness of the importance of proper garbage disposal and recycling.

**1.2 Need of System:**

The need for a garbage management system arises due to the following reasons:

- To ensure proper disposal of waste materials, minimizing environmental hazards

- To promote recycling of waste materials, which helps conserve resources and reduces the need for landfills

- To ensure the safety of the garbage collectors and other personnel involved in the garbage management process.

- To ensure that garbage collector visits only that place to collect garbage where required.

- To ensure that correct feedback is provided to agencies through peoples that help them to maintain cleanliness more.

- To ensure that proper dustbin cleaning is done in timely fashion.

**2. Objective:**

The primary objective of the garbage management system is to create an efficient, cost-effective, and environmentally friendly system for managing waste. The system aims to streamline the waste management process and ensure proper disposal of waste materials, minimize environmental hazards, and promote recycling of waste materials. The following are the specific objectives of the garbage management system:

1. Efficient waste collection: The garbage management system aims to provide efficient waste collection services to ensure the timely and effective removal of waste materials. This includes creating a schedule for waste collection, optimizing the route taken by garbage collectors, and using GPS tracking to monitor the location of garbage trucks.

2. Waste segregation and recycling: The garbage management system aims to promote waste segregation and recycling to minimize the amount of waste sent to landfills. This involves providing separate bins for different types of waste materials, educating the public about the importance of waste segregation, and promoting recycling programs.

3. Safety of garbage collectors: The garbage management system aims to ensure the safety of garbage collectors by providing them with appropriate safety equipment and training, monitoring their work conditions, and promoting safe waste disposal practices.

4. Public awareness: The garbage management system aims to increase public awareness of the importance of proper waste disposal and recycling. This involves organizing awareness campaigns, conducting workshops and training programs, and using social media and other communication channels to educate the public.

5. Cost-effectiveness: The garbage management system aims to provide cost-effective waste management services by optimizing the waste collection and disposal process, minimizing operational costs, and promoting the use of recycled materials.

**3. SDLC Model:**

The Software Development Life Cycle (SDLC) model used for this project is the Agile Model. Agile methodology is an iterative and collaborative approach to software development that emphasizes flexibility, customer satisfaction, and continuous delivery of working software.

The Agile methodology was developed in response to the limitations of traditional software development methods, such as the Waterfall model, which emphasized a linear and sequential approach to development.

The Agile approach emphasizes teamwork, communication, and rapid prototyping, with a focus on delivering small, incremental changes to the software in short timeframes called sprints. The Agile team typically includes developers, product owners, and other stakeholders who work together to create a product backlog, prioritize tasks, and deliver working software in each sprint.

The Agile methodology is characterized by the following principles:

* Individuals and interactions over processes and tools
* Working software over comprehensive documentation
* Customer collaboration over contract negotiation
* Responding to change over following a plan

Agile teams prioritize customer satisfaction and respond to changing requirements, rather than adhering rigidly to a predetermined plan. They use feedback from customers and stakeholders to guide the development process and make continuous improvements to the software.

Agile methodology is widely used in software development and has proven effective in many industries and organizations. Its flexibility, focus on customer satisfaction, and emphasis on teamwork and communication make it a popular approach for creating high-quality software products.

**4. Analysis:**

The analysis phase involves gathering and analyzing data related to the garbage management system. This phase includes studying the existing garbage management systems, identifying the challenges, and understanding the requirements of the proposed system. In addition, the analysis phase involves determining the software and hardware requirements needed for the system to function efficiently.

Analysis for a garbage management system involves studying and understanding the existing waste management practices, identifying the problems and inefficiencies, and defining the requirements for a new or improved system. The analysis phase of the development process is critical in ensuring that the garbage management system meets the needs of the stakeholders and is effective in managing waste.

Here are some key aspects of the analysis phase for a garbage management system:

1. Current Waste Management Practices:

The first step in the analysis phase is to study and document the existing waste management practices. This involves understanding how waste is collected, transported, sorted, and disposed of in the current system.

2. Technical Requirements:

I have collected the technical requirements for the system. This includes determining the hardware and software needed, the data storage and retrieval methods, and the integration with other systems.

3. Project Plan:

The final step in the analysis phase is to create a project plan that outlines the scope, timeline, and budget for the project. The project plan should include a detailed description of the user stories, the technical requirements, and the prioritization of features.

**4.1 Software and Hardware Details:**

The software requirements for the garbage management system include an operating system, a database management system, a web server, and a programming language.

|  |  |
| --- | --- |
| **FRONT -END** | HTML, CSS and JavaScript |
| **BACK-END** | NODE.JS |
| **DATABASE** | MONGODB |

The hardware requirements include a server, for that I will use Amazon AWS services such as EC2 instance for storing my application and accessing it.

**5. Project Module:**

The garbage management system is designed to have the following modules:

**- Admin module:** This module allows the system administrator to manage user accounts, garbage collection schedules, and monitor the system's performance.

**- User module:** This module allows users to access the system and request garbage collection services.

**- Garbage collector module:** This module enables garbage collectors to view and accept garbage collection requests, monitor the garbage truck's location, and update the status of the garbage collection.

**- Recycling module:** This module enables users to view and learn about recycling and also request recycling services.

**6. Design:**

The design phase involves creating a detailed blueprint of the garbage management system's structure and functionality. This phase includes creating use cases, flowcharts, and system diagrams to illustrate the system's design. The design phase also involves creating a prototype of the system to test its functionality and user experience.

Garbage generation

User Complaint

NO

YES

YES

Email or call send to Garbage collector

Is dustbin full?

Dustbin monitoring

Admin Receive complain take actions

Update The Report on portal

Garbage Collector Collect the Garbage

**7. Conclusion:**

Garbage management is an essential aspect of maintaining a clean and healthy environment. The proposed garbage management system aims to streamline the garbage management process, starting from waste collection to disposal and recycling. The system is designed to be efficient, cost-effective, and environmentally friendly. The system also aims to increase public awareness of the importance of proper garbage disposal and recycling.

In summary, garbage management systems are critical to maintaining a healthy and sustainable environment. By implementing effective waste management practices, we can reduce the negative impact of waste on our health and the environment while promoting resource conservation and sustainable development.

**8. References:**

**The garbage management system**