

# Clean-it Application for Smart City

Mansi Thakare

Department of Information Technology  
S.B Jain Institute of Technology Management and Research  
Nagpur, India

Shrutika Gajbhiye

Department of Information Technology  
S.B Jain Institute of Technology Management and Research  
Nagpur, India

Mahima Warade

Department of Information Technology  
S.B Jain Institute of Technology Management and Research  
Nagpur, India

Sanskriti Diyevar

Department of Information Technology  
S.B Jain Institute of Technology Management and Research  
Nagpur, India

**Abstract**— The Metropolitan cities integrate multiple mobiles to builds something which makes human habitation. One of these solutions is to provide an eco-friendly, effective, and efficient garbage management system. “Clean it” The current garbage collection includes add ons garbage cart doing rounds weekly, which only covers a specific zone of the city but is completely not an efficient use of government revenue. This Project proposes a mobile App system for the government to using the available revenue to efficiently manage the amounts of garbage collected every single day, "Clean it" also providing a better flow of garbage disposal for the citizens. An android app is developed for the workflow and the common people, which initially provides the routes for the workflow and finds the nearest available bin for citizens.

**Keywords**— *Android, Mobile, Location, Cleanliness, Environment, Awareness, Swacha Bharat Abhiyan.*

## I. INTRODUCTION

### A. Problem Background

Clean IT is a basic requirement in any kind of environment. Usually cleaning in this environmental cleanliness is done in the morning. On the streets of metropolitan cities, hundreds of people pass the same location around few seconds Around 95% of people are carrying food covers, polythene bags, and plastic bottles. If the waste disposes all of them at once, the bins will be filled in several minutes. When bins fill up people just throw their trash around the garbage bins because there is nowhere else to put them. The solution to this is for the cleaning staff to stay near garbage bins every day till they fill up to clean them. This is not a real solution. It takes more cleaning staff and a lot of money can be wasted. So, it is impractical. One of the main effects is the surrounding area starts smelling and be very unpleasant. The App Clean It will create ease for the common people who always wait for garbage carts to come and dump the bins waste. By means of this app one can communicate with the local authority and by pinning the location itself the garbage will get collected as soon as possible. The Local Authority can keep the track the record of garbage cart which area it covered and which is not. So that the garbage cart can go there and collect the Garbage. In the app there will also be a feedback system, a complaint box for complains (i.e., Cart forgot to collect the garbage etc.). A Step toward Swachh Bharat Abhiyan.

### B. Problem statement

In these days of a pandemic due to coronavirus, we all are facing major problems i.e., cleanliness we just want to keep our home clean but the garbage cart does not come daily to collect the garbage. There are some extremely negative effects when the garbage bins always being full. It leads to an unpleasant aroma. it was the major issue faced by our community. Every Morning People waiting for the garbage cart was really a very serious issue. Bin was not get cleaned daily that simply was leading towards the unpleasant aroma of the locality to reduce this problem we came up with some research and decided to create an app which will help local peoples in terms of cleanliness.

### C. Proposed Solution

The intent of our project is that the users (general public) should be able to communicate with administrator (NMC), update information of worker. Communication is possible among the workers, general public and administrator. In the life of the software development, problem analysis provides a base for design and development phase. The problem is analyzed so that sufficient matter is provided to design a new system. Large problems are sub-divided into smaller once to make them understandable and easy for finding solutions. Same in this project all the task is sub-divided and categorized.

## II. MODULES

### A. Administrator

- Login: In log in page, admin can manage all information. They can update or edit any information.
- Create Garbage bin: Admin can create the garbage available in the city with details and location
- Update/Delete garbage bin: Admin can View and update the garbage available in the city with details and location
- Assign best route for drivers: Admin can update the garbage best route to reach the bin of the city quickly
- Manage driver: Admin can Create & View and update the driver login details.
- View Garbage Report: Admin can View work report of garbage all updates from the driver.
- View complaints from public: Admin can View the complaint and update status of the complaints.

**B. User**

- Register: User can register to garbage application
- Login: User can login to garbage application
- Register complaint: User can register to complaints about the cleaning of the garbage
- My complaint & status: User can view the status of the complaints about the cleaning of the garbage.

**C. Driver**

- Login: Drive can login to garbage application
- Check daily work updates: Drive can update the daily work route: Drive can view the route for the garbage bins status
- Choose best route: A driver will choose the best route of corresponding areas. Then driver can choose the shortest root of areas.
- Update garbage load: Drive can update the load for the garbage.

**System Architecture**

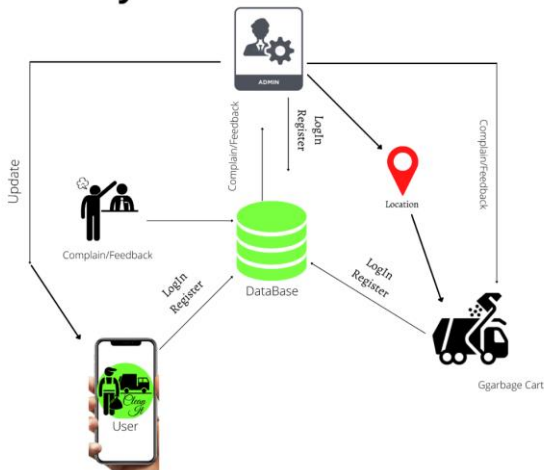


Fig.2.1. System Architecture

The primary focus of our application is that the users (general public) should be able to communicate with administrator (NMC), update information of working. Communication is not always possible among the workers, general public and administrator (NMC). General public can register their complaints and it will be check by the NMC admin and will be providing the respective updates.

The above architecture describes the complete view of the app and its usage in the perfect manner. It also shows the working of all the actors

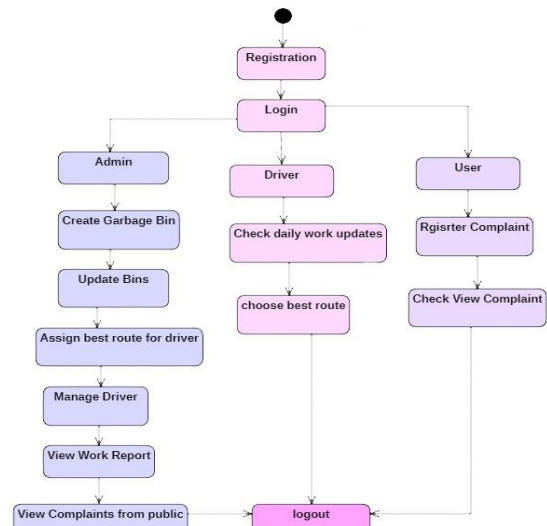


Fig 2.2: Flowchart

Above we have shown the flow of our Project. In this the user have to register and login. The Admin & Driver will Login. The User will Register Complaint and check the update. Admin will create the Bin, update it, Manage Driver, assign best route to the driver, View Complaints and update the Status. The Driver will Check daily work and get the best route which is assigned by the Admin and then after completing the task Driver will update th/K.”

**III. CONCLUSIONS AND FUTURE WORK**

In this project, we have designed an application and completed its development by applying engineering knowledge which provides an approach in building a platform where the users (general public) should be able to communicate with administrator (NMC), update information of worker. Communication is possible among the workers, general public and administrator. We have investigated the available application to find out the new solutions and updates. We have used modern tools Android Studio and GPS for the implementation of the app. During the development of the project, we understood the importance of individual and teamwork while project development and management. While showcasing our project through various seminars we enhanced our communication skills and displayed professional ethics which results in lifelong learning

Clean It App can tell us through the complaint section who is complaining and from which area the complaint has come with the help of this real time information we can monitor the bins and once the bins are full the workers can collect the garbage and set them to empty again.

We can access from anywhere through this app that where is the garbage and whether the garbage car came in that area or not. Since this system also decrease the work of, some changes can be built in the system to take it to another level and make it more useful for the trader and the people who use it. In future, a team may be formed which will be in charge of handling and maintaining this system and also to look after its maintenance

## REFERENCES

- [1] S. Lokuliyana, J. A. D. C. A. Jayakody, L. Rupasinghe, and S. Kandawala, "IGOE IoT framework for waste collection optimization," 2017 6th National Conference on Technology and Management (NCTM), Malabe, 2017
- [2] R. Fujdiak, P. Masek, P. Mlynek, J. Misurec and E. Olshannikova, "Using genetic algorithm for advanced municipal waste collection in Smart City," 2016 10th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP), Prague, 2016
- [3] T. Anagnostopoulos, A. Zaslavsky, A. Medvedev, S. Khoruzhnikov, "Top-k Query based Dynamic Scheduling for IoT-enabled Smart City Waste Collection," In Proc. of 41 the 16th IEEE International Conference on Mobile Data Management (MDM 2015), Pittsburgh, US.
- [4] Fazio, M. Paone, A. Puliafito and M. Villari, "Heterogeneous Sensors Become Homogeneous Things in Smart Cities", 6th IEEE International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS), pp. 775-780, Palermo, Italy, July, 2012.
- [5] A. J. Jara, P. Lopez, D. Fernandez, J. F. Castillo, M. A. Zamora, A. F. Skarmeta, "Mobile digcovery: discovering and interacting with the world through the Internet of Things", Personal and Ubiquitous Computing, Springer-Verlag, 2014, vol. 18 (2), pp. 323-338
- [6] "The Advanced System for Dynamic Vehicle Routing in the Process of Waste Collection", Facta Universitatis, Series: Mechanical Engineering, 2011, vol. 9 (1), pp. 127-136.
- [7] T. Minh, T. V. Hoai, and T. T. N. Nguyet, "A Memetic Algorithm for Waste Collection Vehicle Routing Problem with Time Windows and Conflicts", Computational Science and Its Applications, ICCSA, Lecture Notes in Computer Science, Springer, 2013, vol. 7971, pp. 485-499.
- [8] M. Mes, "Using Simulation to Assess the Opportunities of Dynamic Waste Collection", Use Cases of Discrete Event Simulation, Springer, 2012, pp. 277-307.
- [9] R. Giffinger, C. Fertner, H. Kramar, R. Kalasek, N. Pichler-Milanovic and E. Meijers, "Smart Cities: Ranking of European medium-sized cities", Centre of Regional Science (SRF), Vienna University of Technology, Vienna, Austria, 2007, Online: <http://www.smart-cities.eu> [Cited on 27 November 2014].