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# Smart City Issue Reporting and Management System

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**ABSTRACT:** The world is upgrading right now, but there is one major issue that needs to be resolved. Trash! We frequently see images of trash cans being overfilled to the point that everything spills out. As a result, there are more illnesses, insects, and mosquitoes that breed there. Solid waste management is a major issue in urban areas, not just in India but in the majority of other nations as well. Therefore, it is necessary to design a system that can either completely eliminate or drastically lessen this issue. The waste management system project is an online program. PHP was used to develop the front end, and MySQL was used to design the back end.

**KEYWORDS:** Smart city, Garbage collection, corporation.

## I.INTRODUCTION

To provide a comfortable place for people to live, smart cities combine a variety of web or mobile applications. Providing an eco-friendly, effective, and efficient waste management system is one of these answers. The current waste collection system involves regular garbage trucks making daily or weekly rounds, which not only doesn't cover the entire city but also represents an utterly unproductive use of public funds. The suggested system would allow an administrator to oversee the trash app and do comprehensive online monitoring and system analysis. Her administrator deals with bins, drivers, user complaints, and driver job reports. This article suggests a mobile or web-based system that is affordable for the government to use in order to effectively manage the massive volumes of rubbish that are collected every day, as well as offering a better solution for the nuisance that comes with garbage disposal for the general public. A driver completes this, and an app generates suggested and guided routes for garbage trucks. Data will be gathered after the driver updates the status of the work completed. For the people and workforce, an android or web app is being developed. Its main feature allows the user to create available smart bin complaints.

### 1.1 REVIEW:

A comprehensive platform called the "Smart City Issue Reporting and Management System" aims to close the communication gap between the public and local government. This method intends to improve the efficiency and openness of municipal services by making it easier to report urban concerns and to streamline the process of addressing them. Comparable systems have been put into place in a number of places across the globe, showing notable increases in public satisfaction and responsiveness. A system like this might be put in place to improve citizen engagement, allocate resources more effectively, and resolve issues more quickly.

### 1.2 PROBLEM DESCRIPTION:

Every morning, workers make their way to their desks. There are just not enough trash cans to accommodate everyone. In a minute or two, hundreds of people pass the same spot on metropolitan city streets. The apparent fix for this is for the cleaning crew to remain close to the trash cans each day until they are full in order to clean them. This isn't a workable fix. When taking into account that the trash cans are never empty, there are a few noteworthy adverse impacts. One of the main impacts is that the area around the source begins to smell bad. People place their rubbish on the sides of the garbage bins when they are full.

### 1.3 GOAL:

"Smart City Issue Reporting and Management System"'s major objective is to improve city maintenance and service operations' effectiveness, accountability, and openness. Among the specific goals are making sure that citizen-reported urban issues are handled efficiently and quickly. cutting down on the time it takes to report and resolve issues.

supplying citizens with up-to-date information on the progress of their reports. aiding in the prioritization of jobs by city officials according to their urgency and resource availability.

## **II. PROPOSED SYSTEM**

The system overview that is suggested for this system. The three main categories of solid waste management are transportation, collection, and segregation. The data will be gathered by the server and stored solely in a database. The workforce and clients will be able to view the two dashboards where this data is shown after analysis. Reports generated by data analytics will be visible to administrators via the admin dashboard. Make an effective route through all required trash cans based on the data gathered, and arrive at the disposal location.

### **2.1 ADVANTAGES OF PROPOSED SYSTEMS:**

- Real-time data regarding the dustbin's fill level.
- Dustbin placement determined on actual needs.
- Resource efficiency and cost reduction.
- Reduces odours and enhances the quality of the environment
- Smarter service management in urban areas; cleaner cities.
- Making good use of trash cans.

## **III. MODULES**

### **1. Administrator**

- Login
- Assign worker to complaint
- View Complaint from public
- View feedback from public
- View Water tax

### **2. General public**

- Register
- Login
- Register Complaint
- My complaint & status
- Add feedback
- Add tax

### **3. Worker**

- Login
- Check daily work update
- Update status

### **3.1 MODULES DESCRIPTION:**

#### **1. ADMINSTARATOR**

##### **1.1 ADMIN LOGIN**

The admin login page is the primary activity within the application. This login page is the next module after the other modules. Only the admin's password and credentials are stored in this module.

##### **1.2 ASSIGN WORKER TO COMPLAINT**

The worker may be assigned by the administrator to collect trash. The best worker will be allocated to rubbish collecting duties.

### **1.3 VIEW COMPLAINT FROM PUBLIC**

The administrator can view the public complaints. The administrator will then address the complaints.

### **1.4 VIEW FEEDBACK FROM PUBLIC**

The administrator can view the public comments. The administrator will then correct the feedback.

### **1.5 VIEW WATER TAX**

Details about a user's location, name, connection number, date, and tax amount are viewable by the administrator. These particulars are obtained from a database.

## **2. GENERAL PUBLIC**

### **1. REGISTER**

To use this application service, the general public must first register their basic information..

### **2. LOGIN**

After registering, users must log in to use the service when needed.

### **3. REGISTER COMPLAINT**

The public may be aware that our neighbourhood's trash can is overflowing because it hasn't been cleaned in some days. The stench of the rotting waste products was so strong that the locals had to cover their noses with scarves.

### **4. MY COMPLAINT AND STATUS**

The public has access to the complaint and can view its status.

### **5. ADD FEEDBACK & TAX**

Any user can contribute feedback. The administrator can read the feedback and these details are recorded in a database. By providing information such as location, name, connection number, date, and tax amount, the public user can pay water tax. The administrator can read the feedback and these details are recorded in a database.

## **3. WORKER**

### **1. LOGIN**

The worker login page is the primary activity within the program. This login page is the next module after the other modules. Only the worker and their password are stored in this module.

### **2. CHECK DAILY UPDATES**

After reviewing the daily work updates, an employee will move to make room for rubbish collection.

### **3. UPDATE STATUS**

An employee will update the container's garbage load. How much will be included each day. The admin will receive an update.

## **IV. HARDWARE SPECIFICATIONS**

PROCESSOR	:	Intel i3 Processor 2.5GHZ
HARD DISK CAPACITY	:	400 GB
MONITOR	:	15 "SAMTRON MONITOR
INTERNAL MEMORY CA	:	4 GB
KEYBOARD	:	LOGITECH OF 104 KEYS
CPU CLOCK	:	1.08 GHz
MOUSE	:	LOGITECH MOUSE

## **V. SOFTWARE SPECIFICATION**

OPERATING SYSTEM	:	WINDOWS 7
FRONT END	:	PHP

BACK END : MYSQL

## 5.1 SOFTWARE ENVIRONMENT

### PHP:

PHP stands for Hypertext Preprocessor. The Apache or Microsoft IIS servers run PHP scripts. PHP and the Apache server are both free. The coding for PHP is really easy. PHP is the most widely used server-side programming language. PHP files contain both HTML and PHP scripts. PHP files have the extensions "php", "php3", "php4", or "phtml".

### USING PHP:

Create dynamic websites. PHP can display different content to different visitors at different times of the day.

Handle the contents of the HTML forms. PHP can be used to retrieve and reply to data entered into an HTML form. Capable of creating Web Pages that are driven by databases. A PHP software can insert new data or retrieve pre-existing data from a database like MySQL.

### WORKING OF PHP:

A PHP file is a typical HTML page that has been enhanced with additional functionality. Like any other standard HTML file, PHP includes HTML tags that a web browser may parse and display. Anything that is normally placed in an HTML file, such as Java applications, server side scripts, blinking text, and so on, can be utilized with PHP. However, there are three main reasons that set PHP apart. Numerous server side scripts and built-in objects are included with PHP.

### HTML:

The Standard Generalized Markup Language (SGML), which was accepted as an international standard in 1986, is used in HTML applications. Hyper documents can be interchanged by encoding them using SGML. Document markup systems can also be properly described using SGML, another meta language. In actuality, HTML defines a language that characterizes the interconnectedness and structure of a WWW hyper page using SGML. In 1990, TBL brought HTML to the world after it had endured the hardships of SGML. Since then, a lot of us have found it to be user-friendly but occasionally extremely restrictive. The World Wide Web Consortium (W3c) at MIT is working to address these constraints. However, HTML had to start somewhere, and its popularity suggests that its early years weren't too bad.

### DATABASE:

Like a phone book, a database is basically a collection of frequently accessed data. The MySQL database contains a variety of objects, including forms, tables, and queries.

### TABLES:

Similar data sets are gathered and stored in MySQL tables. Although each table may have a distinct layout and primarily different content, they must all be contained in a single database file. We might have an information file named "video store," for example, holding member-named tables, tapes, reservations, and other items. Since these tables are frequently combined to generate reports that aid in filling out on-screen forms, they are kept in a single database file.

### RELATIONAL DATABASE:

A relational database is MySQL. There are three key ways that relational database systems, such as Access, can assist us in managing information.

- Minimize redundancy
- Promote information exchange
- Maintain data accuracy.

### FIELDS:

A table's fields are locations where we store discrete pieces of data.

### DESIGN AND DEVELOPMENT:

A new system is created using a "how to" method known as system design. System design is divided into two stages. They are - Design logic - Design physics

- Reviewing the current physical system, logical design creates input and output requirements, modifies security and control standards, and more.
- The physical system's components, plans, implementation, test, and implementation strategy are all mapped out in the physical design.

#### **DESIGN PROCESS:**

The process of transforming the user-oriented is called input design. into a format that is computer-based. Encouraging rational, error-free data entering is the aim of the input design. The input design controls errors in the input data. The system output's quality is determined by the input's quality. Every data entry panel is interactive, allowing the user to input data directly in accordance with the messages that are displayed. Additionally, the user can enter data directly in accordance with the prompted prompts. Additionally, users have the option of choosing a suitable input from a list of values. The following goals are taken into account during input design: One of the most crucial stages of system design is input design. The practice of planning and designing input into a system to obtain the information needed from users while removing unnecessary data is known as input design. The goal of input design is to guarantee the highest levels of accuracy while also making sure that the user can access and understand the input. The component of the overall system design that needs the greatest consideration is the input design. Inaccuracies in the data entering the system will be amplified by the processing and output.

The following goals are taken into account during input design:

- Input processing nature;
- Validation rules' flexibility and comprehensiveness.
- Managing the properties in the incoming papers.
- Screen layout to guarantee precision and effectiveness of the input connection with files.
- Controls, batching, validation processes, and error handling are all important aspects of thoughtful input design.

#### **DATA FLOW DIAGRAM (DFD):**

Drawing a data flow diagram is the first phase (DFD). Larry Constantine created the DFD first as a graphical means of communicating system needs. the goal of a DFD, commonly referred to as a "bubble chart," is to make system requirements more clear and to pinpoint significant changes that will be included into system design programs. Thus, it is the point at which the needs specifications are functionally broken down to the most basic level throughout the design phase. A DFD is made up of several bubbles connected by the system's data flows. Data flow diagrams are meant to act as a conceptual bridge between system engineers and users. The diagrams are:

Hierarchical, displaying systems at any degree of detail;

- Graphical, cutting out hundreds of words;
- Logical representations, modeling WHAT a system does rather than physical models illustrating HOW it does it; additionally
- less technical, enabling user comprehension and review.

To have a model of a system that is widely understood is the aim of data flow diagramming. The foundation of organized systems analysis is the diagrams. Other structured systems analysis tools, such data structure diagrams, dictionaries for data, and procedure-representing techniques like choice tables, choice trees, and structured English, assist data flow diagrams.

#### **OUTPUT DESIGN:**

The system output is available as printed copies or on a screen. The goal of output design is to convey the information that users have processed. The reports are produced in accordance with user requirements. The reports must be produced at the proper levels. The outputs of our project are produced as HTML pages using ASP. Because of how user-friendly the web application output is constructed, this will typically be through a screen.

#### **CODE DESIGN:**

The primary goal of code design is to obtain greater performance and error-free quality while making the coding simpler. The script is set up so that each column's validation manager is visible and the internal processes have greater importance. The variables are coded such that anyone who isn't the package developer may comprehend why they are there.

The project is built so that the majority of field validation is done client side, which will be more efficient and reduce server burden.

**DATABASE DESIGN:**

The construction of tables that are saved as files in a physical database is part of the database design process. They exist independently. Every table is made up of rows and columns, where each row can be seen as a record containing related data and each column can be seen as a field containing the same sort of data. Additionally, some positions in the table are structured to allow for null values. The project's database is constructed with values maintained in a normalized fashion and without redundancy.

**DEVELOPMENT APPROACH:****TOP DOWN APPROACH:**

The new system is significant since it has an improved user interface and is easy to use for users. Both the security issue and the issues with the manual system might be resolved by it. The incremental technique to building the program structure is known as the top-down approach in software development. Starting with the main control module, modules are integrated by progressing via the control hierarchy. The structure incorporates subordinate control modules into the main control modules either in a depth-first or breadth-first fashion.

1. There are five modules that make up the main software module, all of which are managed by the main control module.
2. Selected subordinate stubs are replaced one at a time with actual components based on the top-down method.
3. When each component is merged, tests are carried out.
4. A real-time component replaces another stub after every test is finished.

It's possible to perform regression testing to make sure the new faults haven't been introduced.

**TESTING AND IMPLEMENTATION****SYSTEM TESTING**

It is the act of testing software with the goal of identifying and, eventually, fixing bugs. Because web-based systems and applications are network-based and compatible with a wide range of operating systems, browsers, hardware platforms, and communication protocols, this basic idea does not alter for web apps. Therefore, one of the biggest challenges for web apps is error searching.

**TESTING ISSUES:**

1. Client GUI ought to be taken into account.
2. Platform and target environment considerations
3. Considering distributed databases .
4. Taking distributed processing into account

**TESTING AND METHODOLOGIES**

System testing is the stage of implementation that aims to make sure, prior to the start of live operation, that the system functions accurately and efficiently as expected. It attests to the cohesiveness of the entire set of programs. A test plan comprising multiple essential tasks and procedures for conducting program, string, system, and user acceptability testing is necessary for system testing. The successful adoption of a new system depends on the newly designed package being implemented.

An essential step in the creation of software is testing. When a system test is implemented, it should serve as both an opportunity to verify that everything is accurate and to demonstrate to the users that the system functions as intended. In the process of developing software, it makes up the most portion of the technical effort. The development process that verifies the code in accordance with the functional specifications is called the testing phase. In order to accomplish the system's objectives, testing is essential. Finding mistakes is the aim of testing. A number of test steps, including unit, integration, validation, and system tests, were prepared and carried out in order to achieve this goal.

Unit testing, integration testing, debugging, and coding

The four types of tests that a developer will usually run on a unit of code

1. A functional examination
2. Evaluation of performance
3. Stress Exam
4. Examination of structure

In a functional test, the code is run with nominal input values, boundary values, and special values when the expected outcomes are known.

Testing uses put and response times as well as the program's use of the device to determine how much time is spent executing each section of the unit program.

Sensitivity testing is a type of stress testing where, under the same circumstances, an extremely narrow range of information contained in a limit of valid data may result in severe, even incorrect, processing or significant performance deterioration.

The goal of structured testing is to exercise a program's internal logic and navigate pathways. "Black box" testing refers to functional testing, stress testing, performance testing, and "white box" testing refers to structure testing.

#### **TESTING RESULTS:**

Every test ought to be able to be linked to the needs of the client. Testing will gradually go from focusing on programs to Complete testing is not feasible. Testing that has a chance of discovering faults should be conducted for greater effectiveness.

The characteristics of an effective test are as follows:

1. There is a chance that an accurate test will identify errors.
2. "Best of breeds" should be a decent test to use.
3. A decent test that is neither very easy nor difficult

#### **QUALITY ASSURANCE:**

The management tasks of reporting and auditing make up quality assurance. Giving management the data entries they need to know about the product quality in order to acquire insight and confidence that the product quality is fulfilling expectations is the aim of quality assurance. Quality assurance is necessary as organizations place a greater emphasis on quality. to play a crucial role in the creation of the information system. Checks must be made at various stages of the development process to guarantee that the finished product satisfies the initial user requirements. As a result, quality control becomes crucial to the development process. The industry standard (IEEE 1993) has it. Through validation and verification carried out at critical system development stages, the quality assurance process is incorporated into a linear development cycle during the development process. Establishing and overseeing a quality assurance program inside the development process is one of the management's objectives.

1. System validation against requirements is one of the things that quality assurance causes.
2. Verification of design documentation and the system itself for flaws.
3. Usability quality assurance.

#### **QUALITY ASSURANCE GOALS:**

- Correctness: The degree to which the application satisfies user goals and system requirements
- Reliability: The extent to which the framework consistently carries out its intended tasks
- Efficiency: The quantity of computer power needed for a program to carry out a task.
- Usability: The work involved in becoming familiar with and using a system
- Maintainability: The ability to identify and fix program errors
- Testability: In order to make sure a software is operating correctly, testing was necessary.
- Portability: The ease with which a program can be moved across different hardware configurations.
- Precision: The necessary place in input, editing, computation, and output.

#### **SECURITY TECHNOLOGIES AND POLICIES:**

Every system that is created needs to be safe from potential threats and secured. At several levels, security mechanisms are in place to stop unwanted access to databases. Users are supplied with password protection and easy



steps to alter the unauthorized access. The user can participate in the auction after entering his password and user name and having it authenticated. Otherwise, if the user is new, they must register before placing an order. After registering, they must give authentication via JPG files (such as a copy of a voter identity card or a ration card). In order to ensure that order information are shielded from unwanted access, a multi-layered security architecture including firewalls, filters, routers, encryption, and digital validation must be guaranteed in real time for this project.

#### **SYSTEM IMPLEMENTATION:**

The project's implementation phase is when the theoretical design is transformed into a functional system. The most important phase is implementing the new system successfully and instilling trust in the user that it will function properly throughout the implementation phase. The stage is made up with

- The process of testing a developed program using sample data involves identifying and fixing errors as well as determining whether the system satisfies user requirements.
- Adapting as needed to user preferences.
- Personal training for users.

#### **IMPLEMENTATION PROCEDURES:**

Compared to system design, the execution phase is less imaginative. It is possible to abandon a system design at any point before implementation, however doing so gets harder once it enters the design stage. Procedural flowcharts, data layouts, and a feasible plan for converting the proposed design into an operational design are included in the implementation phase's final report.

#### **USER TRAINING:**

Its purpose is to get users ready for system conversion and testing. There are multiple ways to follow the users that they are:

- 1) User manual
- 2) help screens
- 3) Training demonstrations.

1) User manual:  
The user may receive a document that summarizes the key features of the software and system. The purpose of user training is to get the user ready for system testing and convening. The user may receive a document that summarizes the key features of the software and system.

1. Go to the http page.
  2. In the address bar, type the file's name together with the URL `index.php`.
  3. After opening `Index.php`, the current user enters their login credentials.
  4. Press the button to submit.
- 2) Help screens:

These days, this capability is included in all software packages, particularly when paired with a menu. From the menu, the user chooses the "Help" option. The system successfully provides the details or descriptions that users need.

- 3) Training demonstrations:

A training demonstration is an additional component of user training. User training is greatly enhanced by in-person, live demonstrations.

#### **OPERATIONAL DEMONSTRATION:**

Documentation is a communication tool that sets the project's performance and design standards. Descriptive information that illustrates how to use and/or operate a system is called documentation. To participate in the auction, the user must input their password and user name, if they have one. If not, the user must register if they are a new one.

Documentation is a communication tool that sets design and performance standards for project phases. Descriptive information that illustrates how the system is used and/or operates is called documentation.

- 1) Tools for documentation:

Tools for desktop publishing and document creation assist almost all facets of software development. The majority of software development companies invest a significant amount of time in creating documentation, and the process is frequently quite wasteful. It's not utilize unconventional for a documentation-focused software development project. Because of this, documentation tools offer a significant chance to boost output.

2) Reorganizing the document:

The process of creating a document takes far too long. We will make do using what we have if the system functions. Sometimes, this is the best course of action. Documents for hundreds of software applications cannot be recreated. We need to update the documentation, but our resources are limited. It might not be required to redo an application in its entirety. Instead, the extensively documented parts of the system are the ones that are currently changing. Given the system's importance to the business, all documentation has to be updated. Reducing documentation to bare minimum is a wise move even in this situation.

#### **SYSTEM MAINTENANCE:**

As crucial as it is for programmers and analysts to carry out or identify with the maintenance, maintenance is essentially the execution of the review plan. This is due to a combination of professional and psychological factors. Maintaining programs takes up a lot more time for analysts and programmers than actually building them. Fifty to eighty percent of the development of a system is maintenance. It costs a lot to maintain. Audits of software modifications and maintenance management are two strategies to lower maintenance expenses. The different kinds of maintenance are

1. Perfective maintenance
2. Preventive maintenance

#### **VI. CONCLUSION**

Because the system is designed as a platform-independent web application, it offers the advantage of quick access, allowing administrators to keep proper communication with users from any location. Since the client/user and the administrator communicate with each other only online, there is a reduction in the cost of communication as well. It is easy to use and includes the necessary options that the user can use to carry out the desired actions. Application software largely satisfies the stated information criteria. The system is highly versatile and has been created with consideration for both current and future requirements. The software accomplishes the following objectives: instant access; increased productivity; optimal resource utilization; effective record management; simplification of operations; reduced processing time and required information retrieval; user-friendliness; portability; and flexibility for future development.

#### **VII. FUTURE WORK**

This system has been successfully tested and assessed for processing. Simple code changes can be readily implemented to accommodate changes in the environment or processing in the future. It offers a very high level of security, is incredibly feature-rich, affordable, and user-friendly. It keeps unauthorized users safe. Furthermore, the system's coding is so well thought out that adding new functions is simple and requires little change. In the future, a feature to get notifications via email or SMS upon the consignment's arrival may be added.

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