

PROJECT REPORT
ON
POLLUTION MANAGEMENT SYSTEM

SUBMITTED TO

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ABSTRACT :-

The **Pollution Management System** is a terminal-based software application developed using **Core Java, JDBC, and MySQL**.

The purpose of this system is to manage pollution-related data in an organized and efficient way. It helps to store, update, and retrieve information about pollution sources, pollution levels, and control measures. The system reduces paperwork, saves time, and improves accuracy. It also helps authorities and users to analyze pollution data and take necessary actions to control pollution.

INTRODUCTION :-

The Console Based Pollution Management System is a software application developed to monitor, manage, and control pollution-related data efficiently. This system helps in recording pollution levels, managing pollution sources, and maintaining reports through a console-based interface. It reduces manual work, improves data accuracy, and provides quick access to pollution information. The system is mainly designed for educational and small-scale management purposes.

OBJECTIVES :-

- To provide a system that stores pollution data reliably in a database.
- To allow users to insert, update, view and manage pollution readings.
- To calculate pollution levels in percentage.
- To improve efficiency in environmental data handling.
- To maintain proper records of pollution sources and readings.
- To contribute towards environmental awareness and cleaner surroundings.
- To build a scalable system for future enhancement.
- To make pollution monitoring easier and faster.

PROJECT CATEGORY :-

This project belongs to the **Database Management System (DBMS)** category.

It is a terminal-based application developed using **Core Java**.

JDBC is used to connect Java with the **MySQL** database.

The project demonstrates **Create, Read, Update, and Delete (CRUD)** operations.

SYSTEM ANALYSIS :-

System analysis involves understanding user requirements and designing a system that fulfills those needs.

The **Pollution Management System** is designed to manage pollution using readings and provide result efficiently.

The system is divided into different modules to simplify functionality and improve maintainability.

MODULES DESCRIPTION :-

1. User

User_id, username, fullname, password_hash, role, area

2. Category

Category_id, category_name, description

3. Air Readings

Reading_id, user_id, PM 2.5 value, PM10 value, locality

4. Noise Readings

Reading_id, user_id, sound_level, locality

5. Indoor Readings

Reading_id, user_id, PM 2.5 value, co2 value, co_value locality

6. Status

Status_id, status_name

7. Air Results

Result_id, reading_id, category_id, status_id, value

8. Noise Results

Result_id, reading_id, category_id, status_id, value

9. Indoor Results

Result_id, reading_id, category_id, status_id, value

10. Causes

Causes_id, category_id, status_id, description

11. Suggestions
 Suggestion_id, category_id, status_id, description
12. Activity log
 log_id, action, user_id, action_time

DATABASE DESIGN :-

The database is designed using **MySQL**.

It consists of tables such as:

- User authentication
- Readings
- Category
- Results
- Activity log

Each table is designed with proper **primary keys** and **foreign keys** to maintain data integrity and relationships.

ENTITY RELATIONSHIP DIAGRAM :-

The **ER Diagram** represents relationships between entities such as **User, Category, Readings, Status, Results, Causes, Suggestions and activity log.**

It shows one-to-many relationships where one member can issue multiple books.

DATA FLOW DIAGRAM :-

The **Data Flow Diagram (DFD)** illustrates how data flows within the system.

- Zero Level DFD
- First Level DFD
- Second Level DFD

It shows interaction between user, system, and database.

PROCESS LOGIC :-

The system follows a simple process logic:

1. User register.
2. Add category.
3. Give readings.
 4. Give permission to get results and check results.
 5. Get result and uses activity block to check history.

PLATFORM USED :-

Hardware Requirements :

- Intel i3 or higher
- 4GB RAM
- 500MB Storage

Software Requirements :

- JDK 8 or above
- MySQL Server
- Eclipse IDE
- JDBC Driver

IMPLEMENTATION DETAILS :-

The project is implemented using a layered architecture.

The **DAO (Data Access Object)** pattern is used to separate business logic and database operations.

Prepared Statement is used to prevent SQL injection.

Exception handling ensures system stability and error handling.

TESTING :-

Testing ensures that the system works as expected.

Unit testing is performed on each module.

Test cases include:

- Given readings as input are valid.
- Check status and give suggestion.
- Show result.

All modules were tested successfully.

RESULTS :-

The **Pollution Management System** successfully manages pollution by using readings.

It provides fast data retrieval, secure storage, and accurate transactions.

The terminal-based interface is user-friendly and efficient.

ADVANTAGES :-

- Easy to use
- Reduces pollution by spread awareness
- Accurate data management
- Secure and reliable
- Scalable system

LIMITATIONS :-

- Terminal-based interface
- No graphical user interface
- Limited user roles

FUTURE SCOPE :-

- Live pollution data intergration
- Adding a Graphical User Interface (GUI) for better user experience.
- Location based tracking
- Waste and noise modules
- Automatic report generation

CONCLUSION :-

The **Pollution Management System** successfully automates pollution readings and provide result efficiently.

It demonstrates the practical implementation of **Java, JDBC, and MySQL**.

The project fulfills all objectives and provides a strong base for future enhancements.

THANK YOU