Project Proposal

On

POLLUTION MANAGEMENT SYSTEM

Guided By:-

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ANP-D2405

ITPR

Table Of Contents

PROJECT TITLE:

Pollution Management System (Terminal-Based) Using Java, JDBC, MySQL

OBJECTIVE

- 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 category.
- It is a terminal - based software application.
- Core Java is used as the primary level programming language.
- Java Database Connectivity is used to connect Database with Java.
- MySQL is used as the Relational Database Management System.
- It demonstrates CRUD (i.e., CREATE, READ, UPDATE, DELETE) operations.

Analysis

Modules and Description:

- **Module-1: Users**
  I. User_id
  II. Username
  III. Password_hash
  IV. Full_name
  V. Area
  VI. Role
  VII. Created_at
- **Module-2: Category**
  I. Category_id
  II. Category_name
  III. Description
- **Module-3: Air Readings**
  I. Reading_id
  II. User_id
  III. Pm2_5_value

IV. Pm10_value
V. Locality

- **Module-4: Noise Readings**

I. Reading_id
II. User_id
III. Sound_level
IV. locality

- **Module-5: Indoor Readings**

I. Reading_id
II. User_id
III. Pm2_5_value
IV. Co2_value
V. Co_value
VI. Locality

- **Table-6: Status**

I. Status_id
II. Status_name

- **Table-7: Air Results**

I. Result_id
II. Reading_id
III. Category_id
IV. Status_id
V. Value

- **Table-8: Noise_Results**

I. Result_id
II. Reading_id
III. Category_id
IV. Status_id
V. Value

- **Table-9: Indoor_Results**

I. Result_id
II. Reading_id
III. Category_id
IV. Status_id
V. Value

- **Table-10: Causes**

I. Causes_id
II. Category_id
III. Status_id
IV. Description

- **Table-11: Suggestions**

I. Suggestion_id
II. Category_id
III. Status_id
IV. Description

- **Table-12: Activity_log**
  I. **Log_id**
  II. **User_id**
  III. **Action**
  IV. **Action_time**

Table-1: users

Fields	DataType	Properties
user_id	varchar(30)	primary key
username	varchar(50)	not null
Password_hash	varchar(30)	not null
full_name	varchar(100)	not null
area	varchar(100)	not null
role	enum(admin,user)	not null
created_at	timestamp	default current timestamp

Table-2: category

Fields	DataType	Properties
category_id	varchar(30)	primary key
category_name	varchar(100)	not null
description	varchar(400)	not null

Table-3: Air_readings

Fields	DataType	Properties
reading_id	varchar(30)	primary key
user_id	varchar(30)	Foreign key
Pm2_5_value	int	not null
Pm10_value	int	not null
locality	varchar(100)	Not null

Table-4: Noise_readings

Fields	datatype	properties
Reading_id	varchar(30)	Primary key

User_id	Varchar(30)	Not null , foreign key
Sound_level	int	Not null
locality	Varchar(200)	Not null

Table-5: Indoor_readings

Fields	datatype	properties
Reading_id	Varchar(30)	Primary key
user_id	varchar(30)	Not null ,foreign key
Pm2_5_value	Int	Not null
Co2_value	Int	Not null
Co_value	Int	Not null
locality	Varchar(200)	Not null

Table-6: Status

Fields	DataType	Properties
status_id	varchar(30)	primary key
status_name	varchar(100)	not null

Table-7: Air Results

Fields	datatype	properties
result_id	varchar(30)	**Primary key**
Reading_id	Varchar(30)	Not null ,foreign key
Category_id	Varchar(30)	Not null ,foreign key
Status_id	Varchar(30)	Not null ,foreign key
value	int	Not null

Table-8: Noise_result

Fields	DataType	properties
Result_id	varchar(30)	primary key
Reading_id	varchar(30)	not null, foreign key
Category_id	Varchar(30)	Not null ,foreign key
Status_id	Varchar(30)	Not null, foreign key
value	int	Not null

Table-9: Indoor Results

Fields	datatype	properties
result_id	varchar(30)	primary key
reading_id	varchar(30)	Not null , foreign key
Category_id	Varchar(30)	Not null, foreign key
Status_id	Varchar(30)	Not null ,foreign key
value	int	Not null

Table-10: Causes

fields	datatype	properties
Causes_id	varchar(30)	Primary key
Category_id	Varchar(30)	Not null ,foreign key
Status_id	Varchar(30)	Not null , foreign key
description	Varchar(200)	Not null

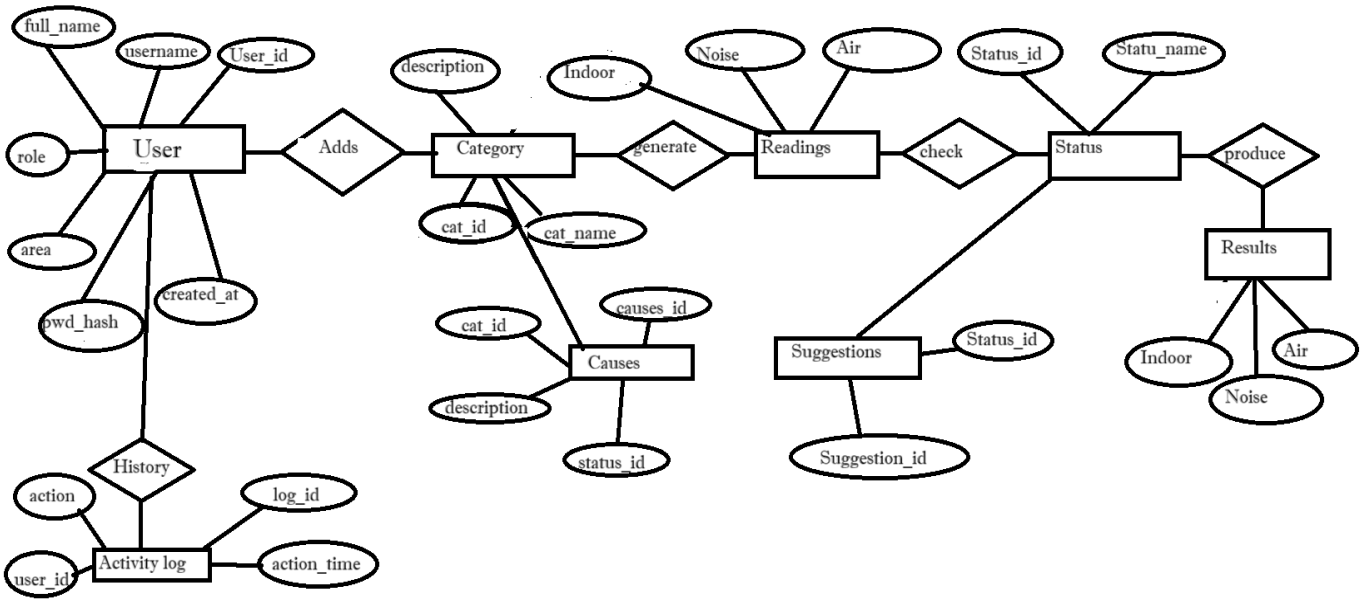
Table-11: Suggestions

fields	datatype	properties
Suggestion_id	varchar(30)	Primary key
Category_id	Varchar(30)	not null ,foreign key
Status_id	varchar(30)	Not null , foreign key
description	Varchar(2000)	Not null

Table-12: Activity_log

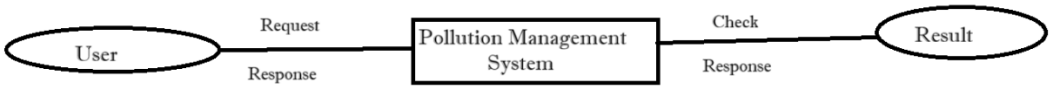
fields	datatype	properties
Log_id	varchar(30)	Primary key
User_id	Varchar(30)	Not null, foreign key
Action	Varchar(500)	Not null
Action_time	timestamp	Default current_timestamp

ENTITY RELATIONSHIP(ER) DIAGRAM

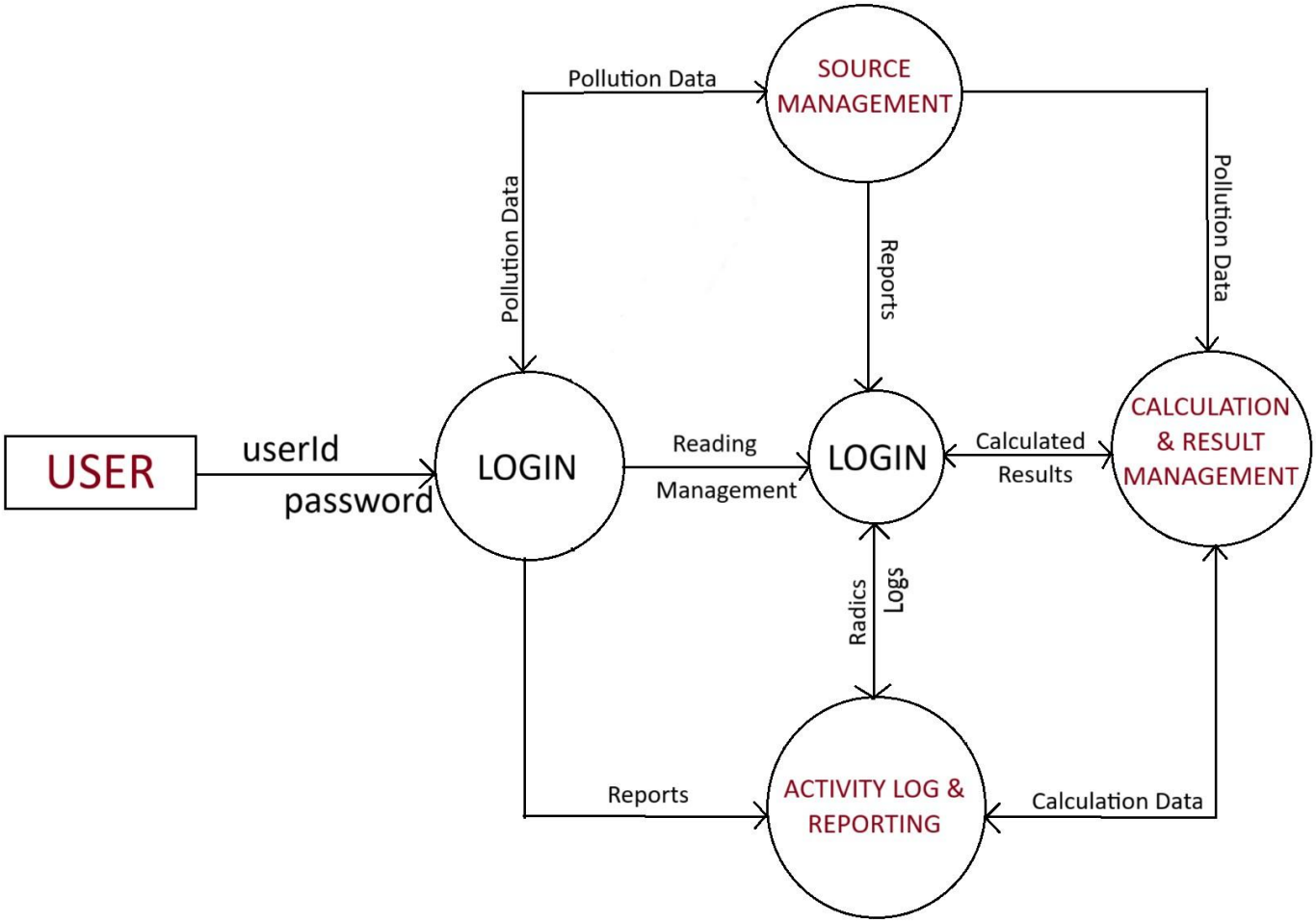


DATA FLOW DIAGRAM

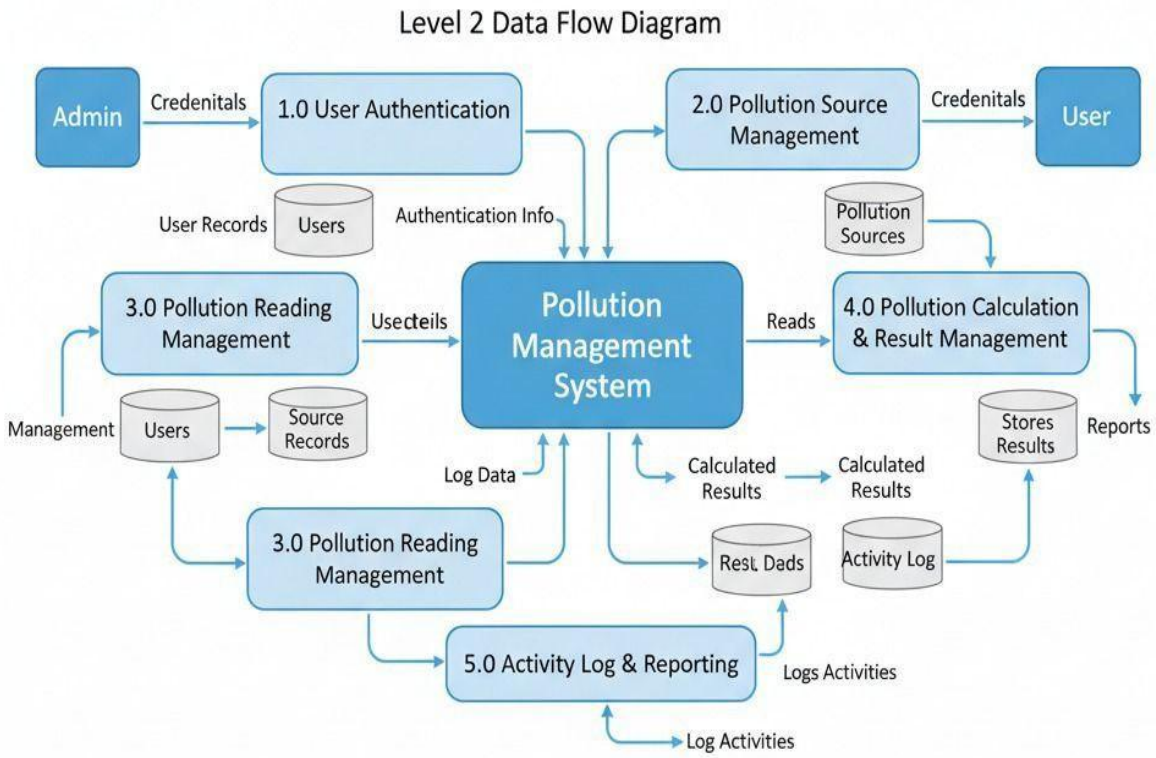
0-level DFD:-



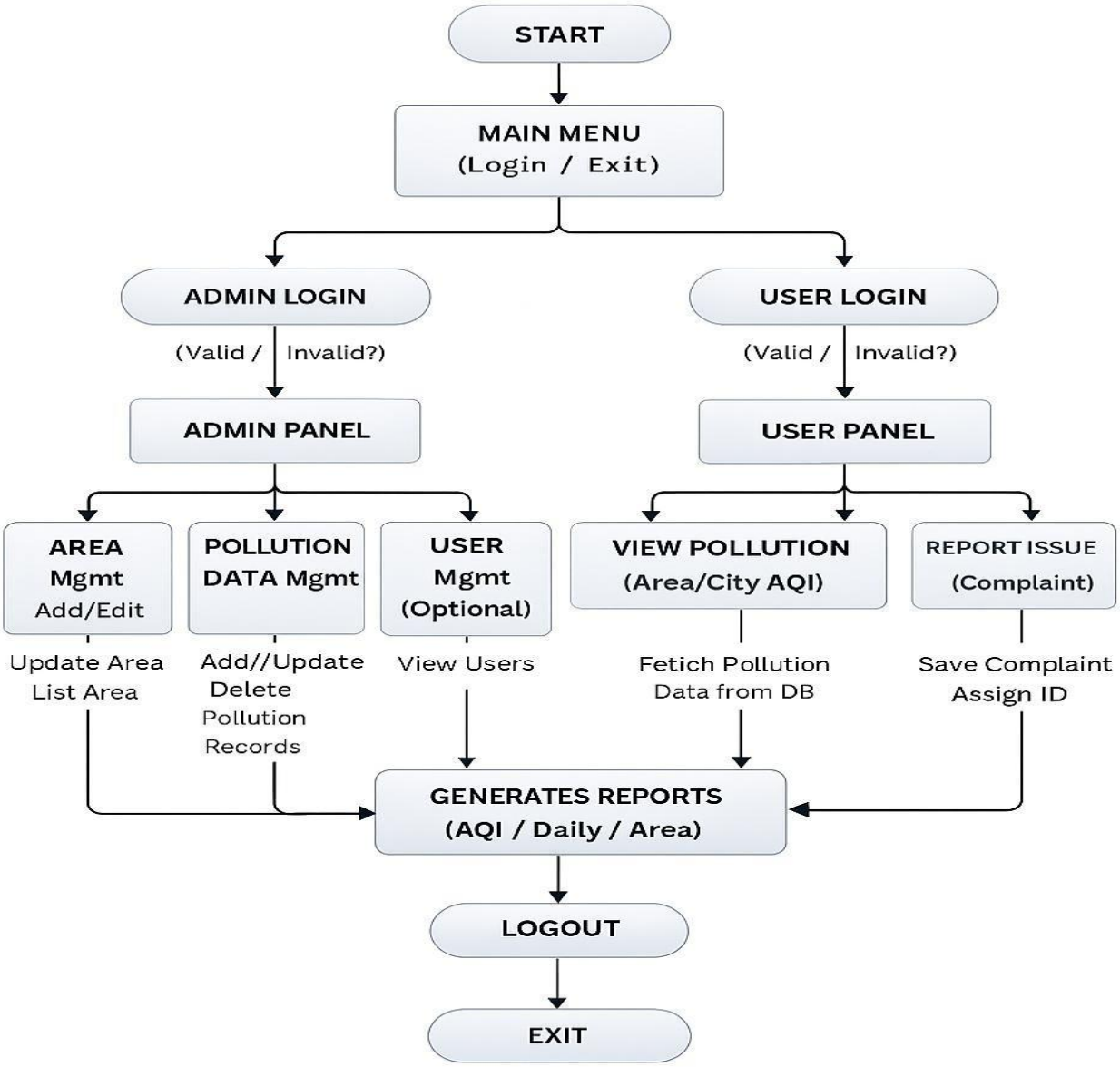
1-level DFD:-


SOURCE MANAGEMENT
Pollution Data
Pollution Data
Reports
Pollution Data
USER
userId
password
LOGIN
Reading
Management
LOGIN
Calculated
Results
CALCULATION & RESULT MANAGEMENT
Radics
Logs
Reports
ACTIVITY LOG & REPORTING
Calculation Data

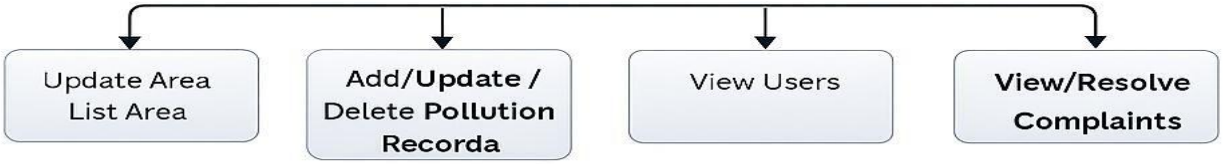
2-level DFD:-



Process Logical Diagram



Logical Process Flow



PLATFORM USED

HARDWARE REQUIREMENTS:-

- Processor: Intel i5
- RAM: 4GB min
- Hard Disk: 500 free space

SOFTWARE REQUIREMENTS:-

- JDK17
- Eclipse IDE
- MySQL Server

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

BIBLIOGRAPHY

- WEB Resources:-

1. Oracle Java Documentation
2. MySQL official documentation
3. JDBC API Guide
4. Reference books on DBMS and Java Programming
5. Online educational resources (GeeksforGeeks, TutorialsPoint, JavaTPoint)