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(AN AUTONOMOUS INSTITUTION)

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ONLINE MONITORING OF UNAUTHORIZED CONSTRUCTION ACROSS THE CITY

BATCH – 20

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PROBLEM STATEMENT

- ▶ Urban development is growing fast, but unauthorized constructions are also increasing.
- ▶ These illegal buildings break zoning rules and put pressure on city infrastructure.
- ▶ Right now, finding and managing such constructions mostly depends on:
 - Manual inspections
 - Complaints from the public
 - Disconnected reporting systems
- ▶ There is no single system to monitor these activities in real time.
- ▶ This causes delays in action, missing records, and difficulty in spotting patterns of violations across the city.

ABSTRACT

- ▶ In cities, some constructions happen without permission, which causes problems like:
 - Safety risks
 - Traffic issues
 - Unplanned city growth
- ▶ This project plans to build a smart system to monitor and detect illegal construction activities automatically and in real time.
- ▶ The system will use **AI and machine learning** to study real-time data like: Photos, Videos and Reports.

LITERATURE SURVEY

S.No	TITLE	AUTHORS	TECHNOLOGY USED / ALGORITHM	ADVANTAGES	DISADVANTAGE
1.	Smart Monitoring System for Illegal Construction	K. Manjula et al. (2020)	IoT sensors, Cloud computing, Android app	Real-time alerts, easy mobile access	Limited coverage area, expensive sensor setup
2.	Satellite-Based Construction Monitoring	N. Sharma, R. Kumar (2019)	Remote Sensing, GIS, Image Processing	Large area coverage, historical data tracking	Not real-time, high satellite data cost
3.	AI for Smart City Construction Regulation	A. Patil et al. (2021)	Deep Learning, Drone Imagery	Automated detection, high accuracy	Drone deployment and privacy concerns
4.	Digital Building Permission System (DBPS)	MCGM Initiative (2020)	GIS Integration, Online Workflow	Transparent process, faster approvals	Focused on permissions, not violations

EXISTING SYSTEM

- ▶ City authorities mostly use **manual or partly digital methods** to track illegal constructions.
- ▶ Some cities have **basic online complaint systems**, but they often: Don't provide real-time updates, Lack location tracking, have no proper reporting tools.
- ▶ Technologies like **GIS** and **drone surveillance** are being tested in big cities. But these are **not widely used** due to high costs and tech limitations.
- ▶ So, there is a **strong need** for a **smart, real-time system** that:
 - Focuses on tracking unauthorized constructions
 - Uses modern tech like AI, ML, and satellite/drones
 - Fills the current gaps in monitoring effectively.

PROPOSED SYSTEM

- The proposed system uses **AI and Machine Learning (ML)** to automatically monitor and detect illegal construction in cities in **real-time**.
- It combines data from:
 - **Building permit records from city offices, Location (geospatial data)**
 - Using advanced computer vision methods like:
 - **Convolutional Neural Networks (CNNs)**
 - **Change detection algorithms**
 - **Object detection models** (like **YOLO** or **Faster R-CNN**)
- Overall, this system helps city officials enforce building rules more efficiently and keep cities well-planned.

OBJECTIVES

- ▶ The main goal of this project is to create an **online, real-time system** to report and manage **illegal construction** in cities.
- ▶ The system will help with:
 - **Reporting** unauthorized buildings.
 - **Tracking** each case.
 - **Managing** actions taken on reported violations.
- ▶ This will help authorities to:
 - Focus on problem areas
 - Act faster
 - Work more efficiently
 - Increase transparency and accountability in city management.

METHODOLOGY

▶ System Design & Development

Meetings with municipal authorities, urban planning departments, and end-users to gather functional and non-functional requirements.

▶ Technology Integration

Implement a dynamic user interface with real-time updates for reporting and tracking violations. Develop backend services using Python (Django/Flask) to manage business logic, APIs, and database connectivity.

▶ Testing & Deployment

Test individual modules like form submission, data upload, and case tracking.

WORKING

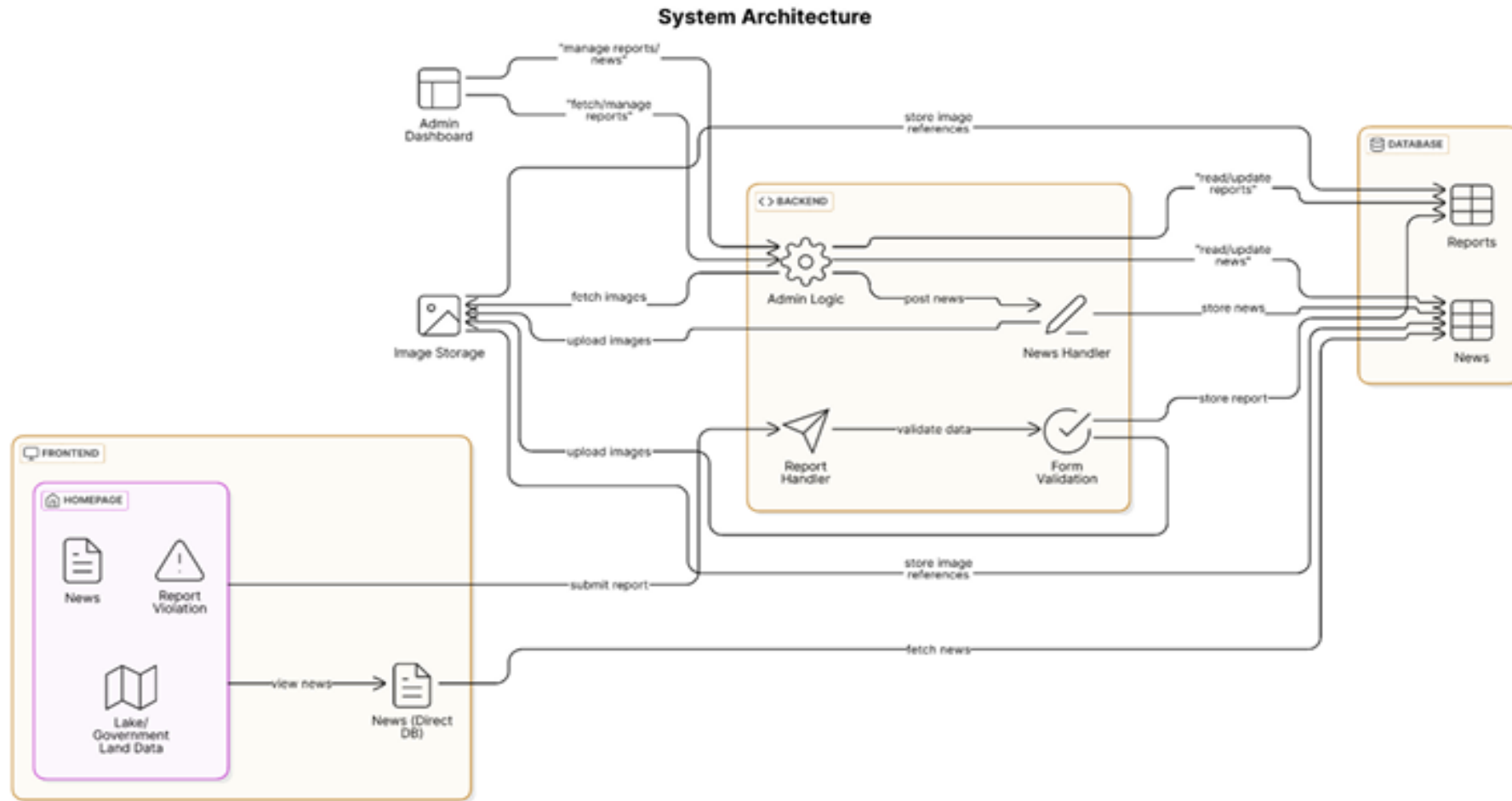
▶ **Requirement Analysis and Planning :**

- Identify project goals, data sources (satellite images, drone footage, CCTV), and system requirements.
- Define roles, responsibilities, and timelines.

▶ **Frontend Development:** Implement a dynamic user interface with real-time updates for reporting and tracking violations.

▶ **Backend Development:** Develop backend services using Python (Django/Flask) to manage business logic, APIs, and database connectivity.

SYSTEM ARCHITECTURE



UML DIAGRAMS

Unified Modelling Language (UML) diagrams are used to visually represent the design and structure of a software system. For the system, UML diagrams help stakeholders, developers, and administrators understand how the system behaves, how users interact with it, and how components are structured and communicate internally.

User:

Attributes: User ID, Name, Email, Phone, Role (Citizen/Officer/Admin).

Document: Represents documents uploaded for a particular application.

Case Action:

Attributes: Action ID, Report ID, Officer ID, Action Taken, Timestamp.

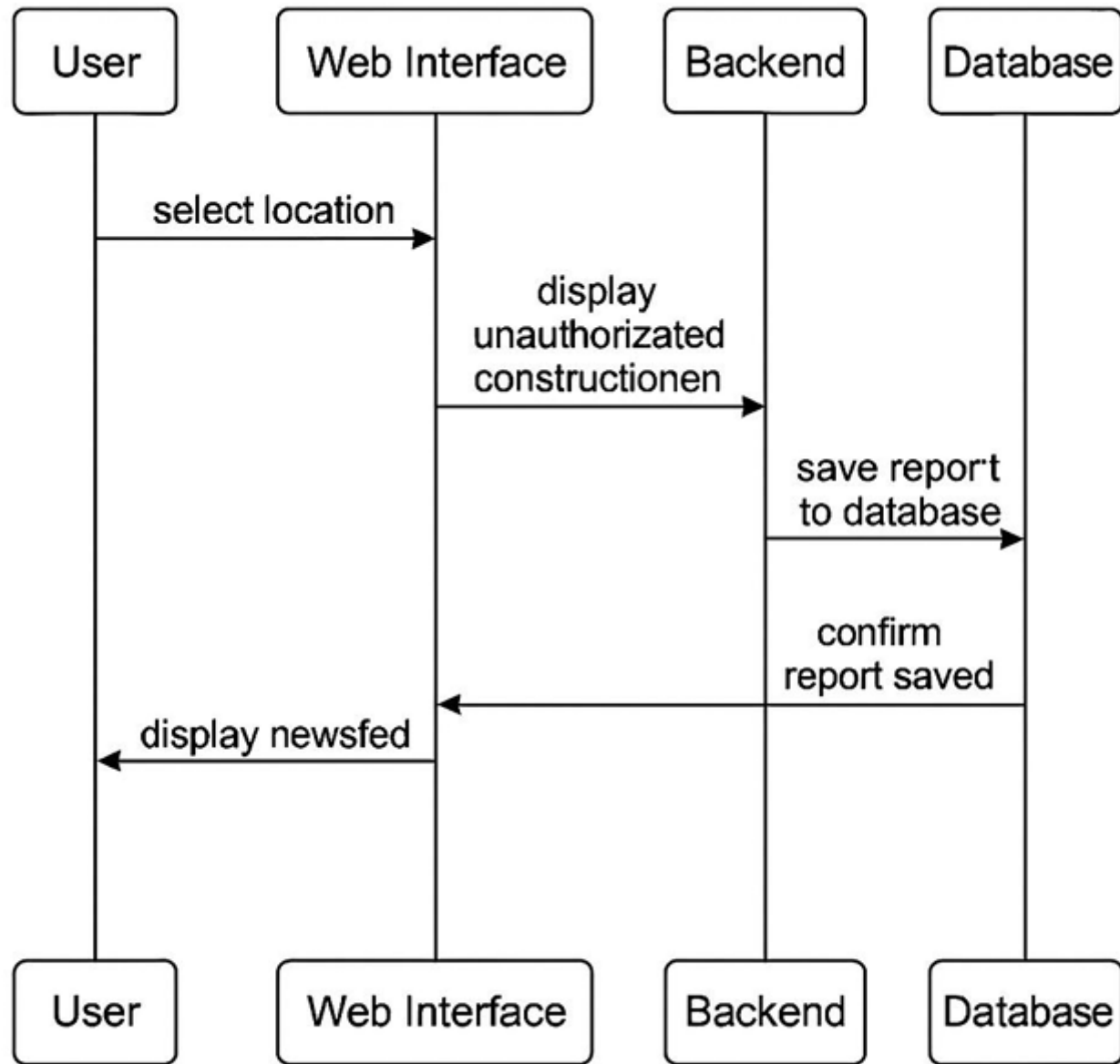
Enumerations: Used to represent the predefined values for user roles, certificate types, and application status.

► CLASS DIAGRAM:



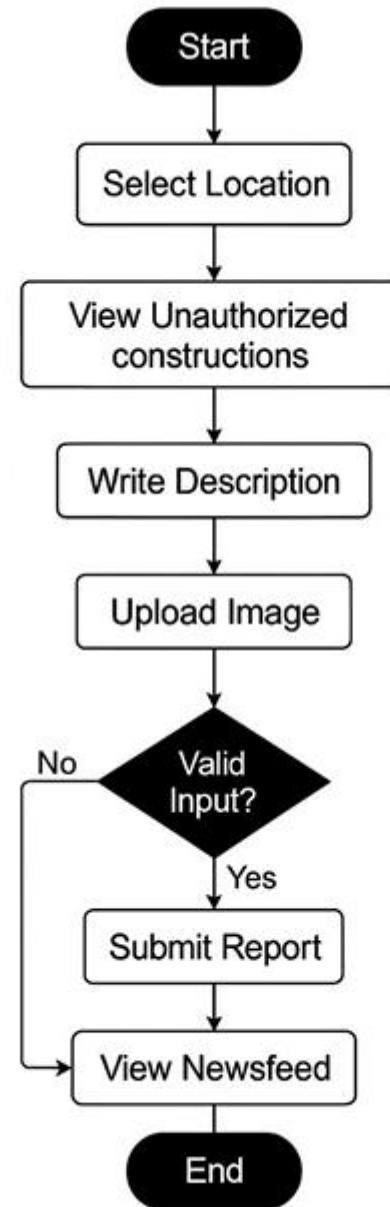
► SEQUENCE DIAGRAM:

- The Citizen logs in to the platform.
- The Portal sends credentials to the Server for validation.
- Upon authentication, the Citizen submits a violation report.
- The Server saves the report and associated images in the Database.
- The System sends a confirmation back to the Citizen.
- Officers are notified and can retrieve the report for field verification.



► ACTIVITY DIAGRAM:

- The process begins when a Citizen logs in or registers on the Gov-Certify portal.
- The Citizen fills out the application form, selects the desired certificate type, and uploads supporting documents.
- Upon submission, the application is routed to the responsible Officer for review.



RESULTS

Testcase1: User Interface

The main page of the Unauthorized Construction Monitoring System serves as a welcoming and intuitive entry point for users looking to report illegal constructions or explore government land records online. Designed with user friendliness in mind, the platform's mission is clear: to simplify citizen participation in urban governance by providing a fully digital and streamlined alternative to traditional complaint mechanisms.

Unauthorized Constructions

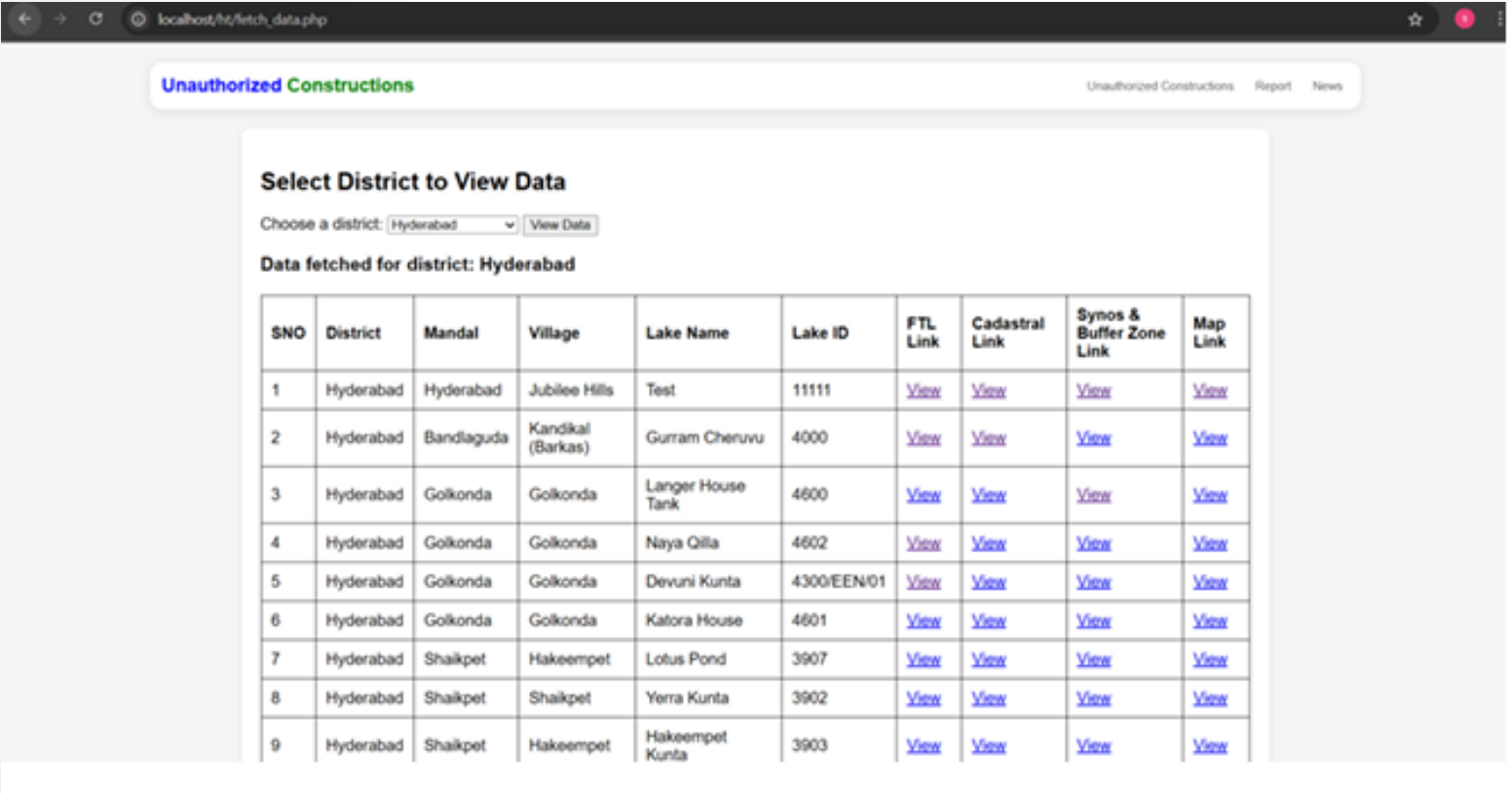
Our platform is dedicated to monitoring and managing unauthorized constructions. Here's how we help:

- The data on our platform is sourced from official government records.
- We provide an easy-to-use system for citizens to report unauthorized constructions in their areas.
- You can monitor unauthorized constructions in your area.

[View Data](#)

Testcase2: Database of lakes and Govt Data

This page provides access to a centralized database containing official government land records across different districts. Citizens can select a district and retrieve detailed information about public lands, reserved areas, and ownership details.



Testcase3: Services

The report submission form empowers citizens to become active participants in urban monitoring by allowing them to report illegal construction activities around them. Users can enter key details such as the type of violation, exact location (with Google Maps integration), a short description, and upload photographic evidence or supporting documents.

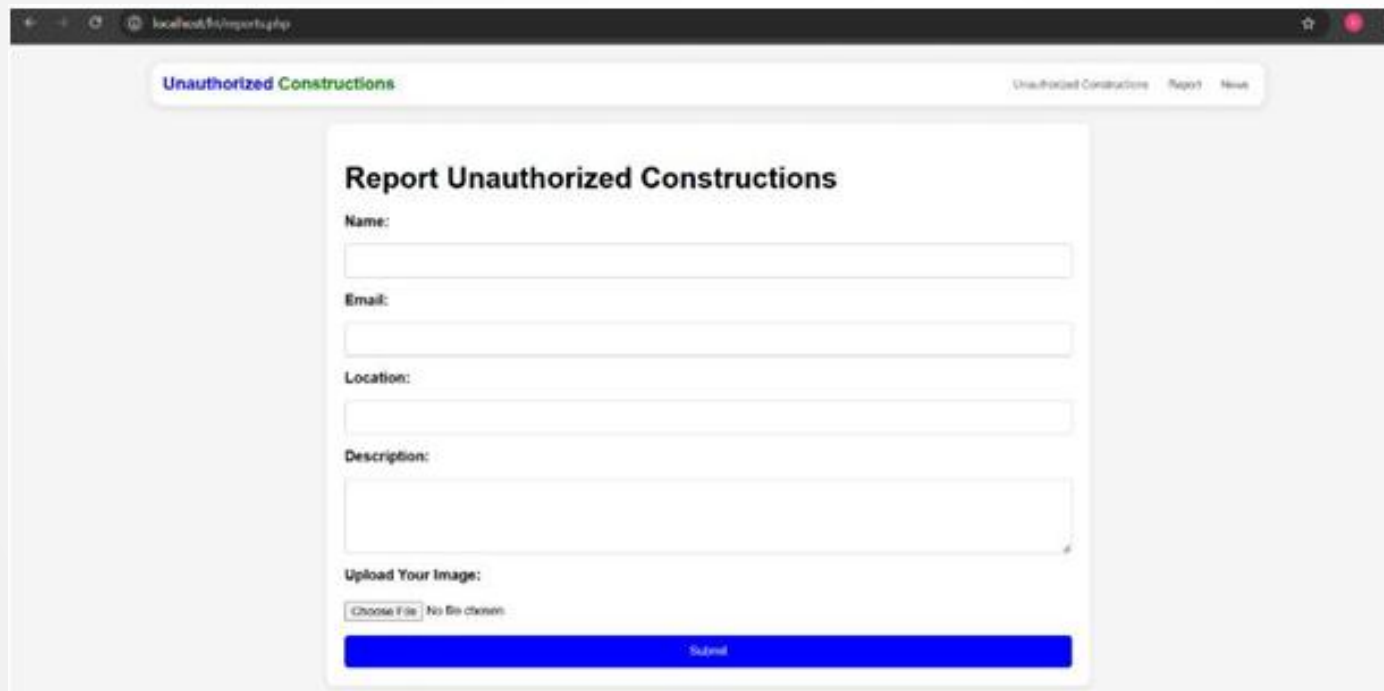
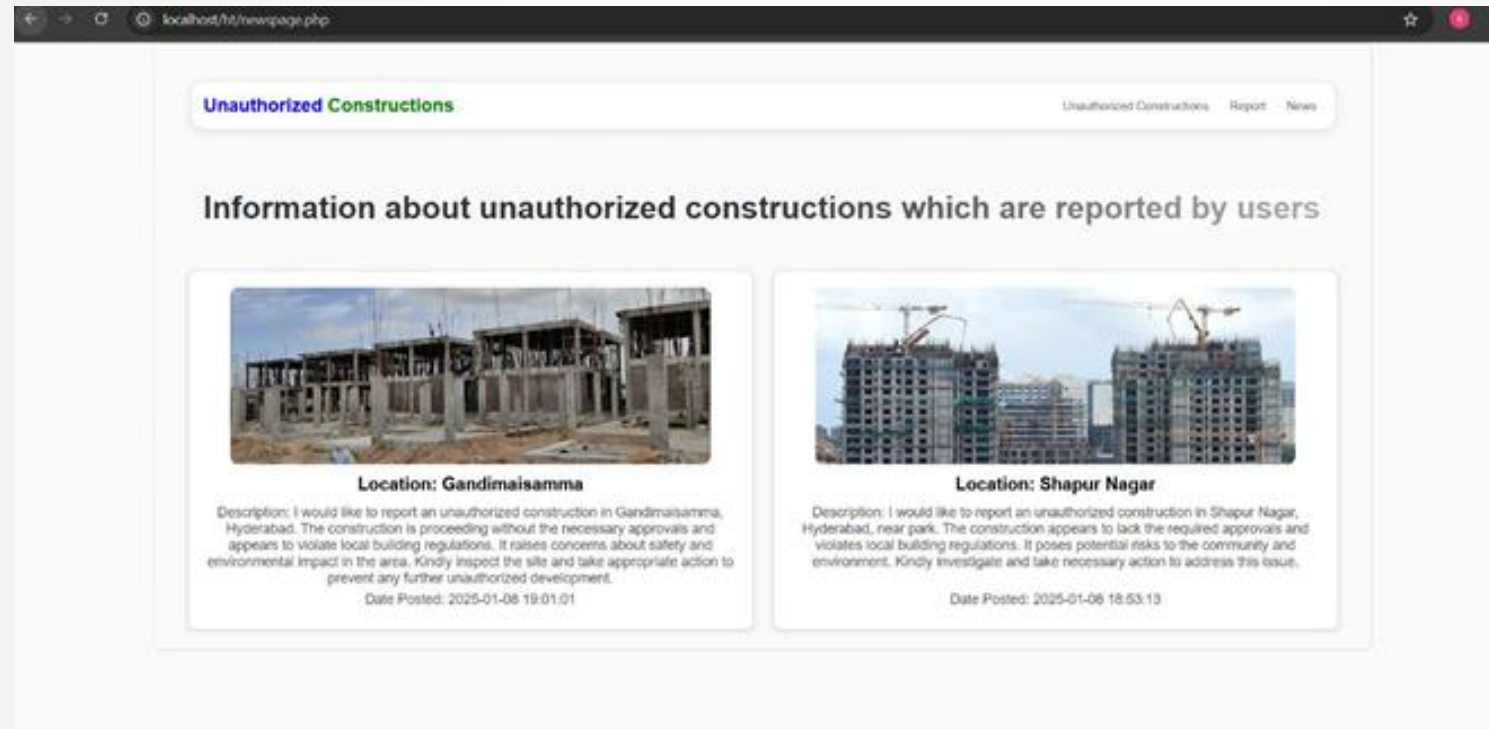
The image shows a web browser window with the address bar displaying 'localhost:8080/report.php'. The page has a header with 'Unauthorized Constructions' in green text on the left and 'Unauthorized Constructions Report News' in a light blue box on the right. The main content area is titled 'Report Unauthorized Constructions' in bold. Below the title are five input fields: 'Name:', 'Email:', 'Location:', 'Description:', and 'Upload Your Image:'. The 'Upload Your Image:' field includes a 'Choose File' button and the text 'No file chosen'. At the bottom of the form is a large blue 'Submit' button.

Figure 6.3 online reporting for Unauthorized Constructions

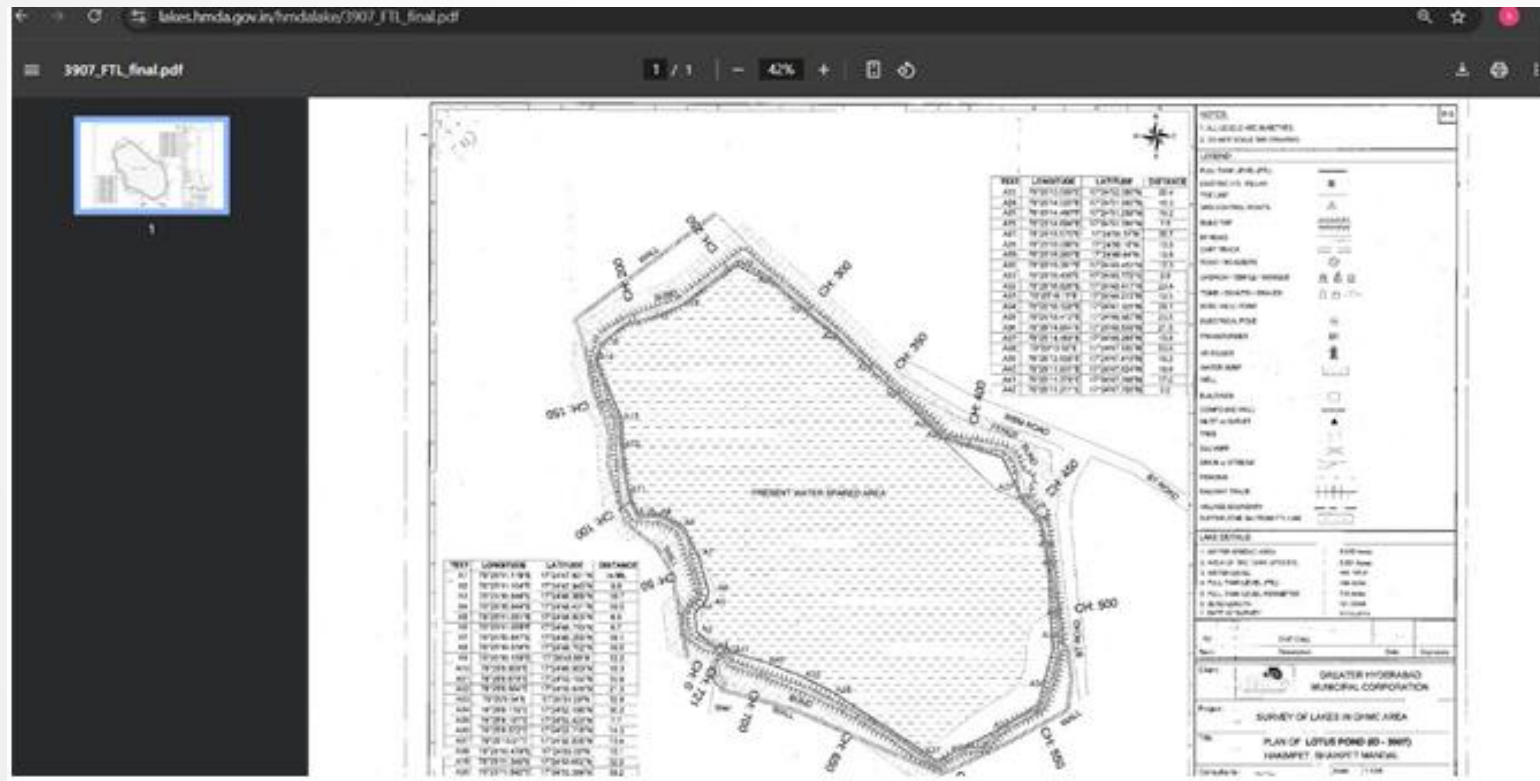
Testcase4 News and Updates Section



The report submission form is a multi-step dynamic form designed to capture complete details necessary for verifying a complaint.

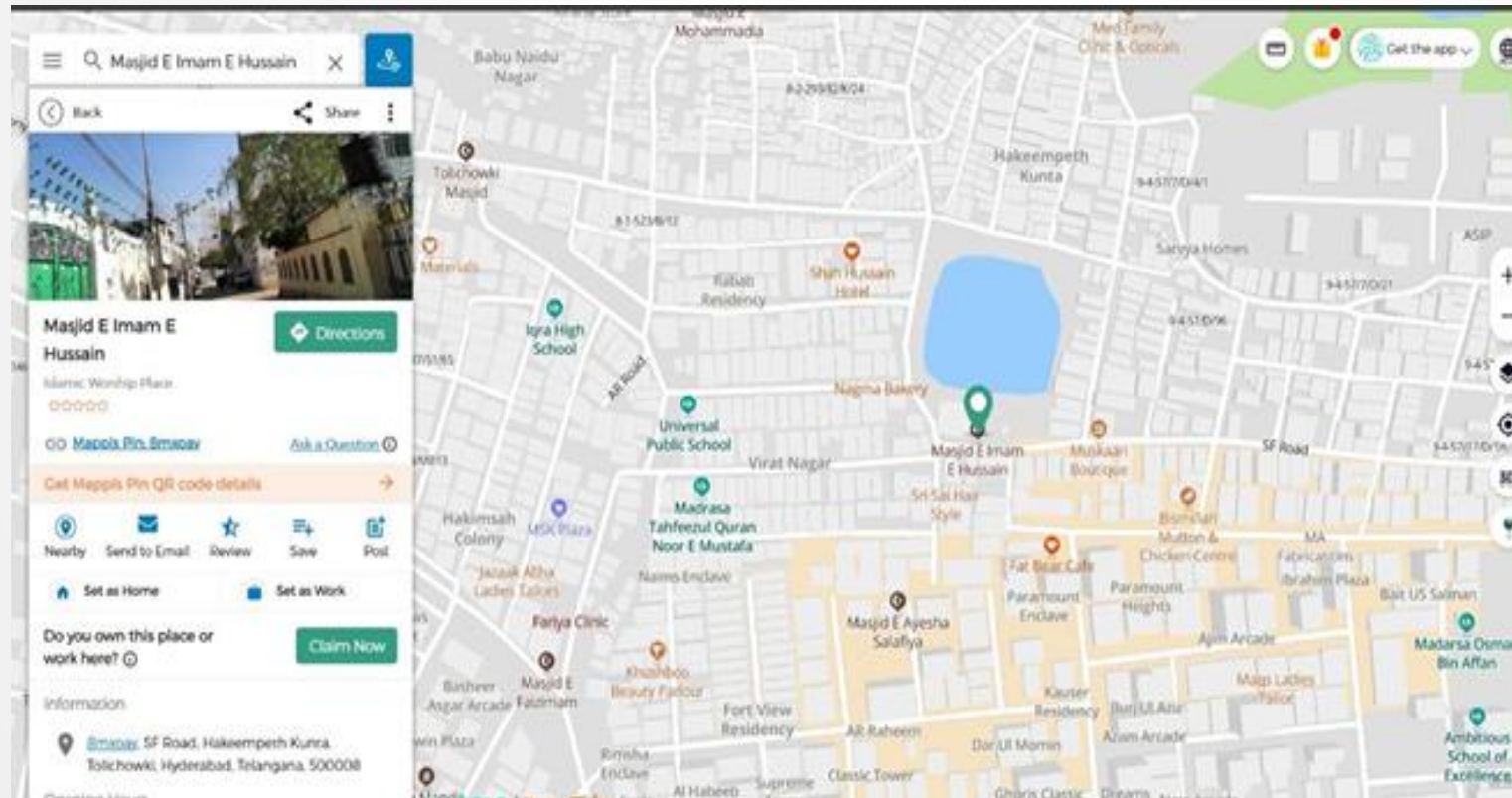
Testcase5 Viewing Original Government Land Maps

This feature provides access to the original, officially issued government land maps. By clicking on specific links, users can view detailed land ownership information, zoning boundaries, and protected areas. It helps citizens verify whether a reported construction falls under unauthorized zones, government properties, or restricted lands.



Testcase6: Location Viewing after clicking link

The location viewing feature allows users to pinpoint the exact geographical location where an unauthorized construction was reported. Integrated with Google Maps, it provides a visual reference for better understanding and verification.



CONCLUSION

•The new **Unauthorized Construction Monitoring System** solves these problems by offering a full digital solution with:

- Live dashboards** for updates
- Automated alerts** for new violations
- Location-based reporting**
- Notifications to citizens**
- Centralized land record access**

•The system makes sure all illegal constructions are:

- Detected quickly**
- Tracked properly**
- Handled transparently and on time**

•Overall, this project creates a **scalable, modern, and citizen-friendly platform** that helps protect public land and ensures legal urban development.

•It supports the larger goals of **smart city development** and **digital governance**.

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THANK YOU