

PROJECT TITLE : Proximate Finder : Location-Based Services

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Project Title : Proximate Finder-Location Based Services

Report Summary:

Proximate Finder is a location-based service (LBS) designed to help users locate essential facilities such as hospitals, pharmacies, libraries, schools, police stations, and ATMs/banks. By entering a ZIP code or Thana name, users can access real-time information about these facilities, including operating hours, contact details, and distances. The project aims to bridge the gap in localized data, improve accessibility to essential services, and enhance community well-being. This report outlines the objectives, methodology, system model, and future scope of the project

Introduction:

Location-Based Services (LBS) have become an integral part of modern life, offering real-time, location-specific information to users. Proximate Finder leverages LBS to provide a user-friendly platform for locating essential facilities. In emergencies, such as medical crises, timely access to nearby hospitals or pharmacies can save lives. Similarly, in daily life, finding libraries, schools, or government offices can be challenging without accurate, localized data. Proximate Finder addresses these challenges by offering a centralized, real-time solution.

3.1 Motivation

With the increasing reliance on location-based services, many people struggle to find essential services near them. Existing solutions often lack real-time updates, a unified platform for multiple facility types, or localized search options. This results in difficulties when trying to quickly locate hospitals, pharmacies, or emergency services in urgent situations.

Key motivations behind Proximate Finder include:

- **Emergencies:** Quick access to hospitals and pharmacies can be life-saving.
- **Convenience:** Users can save time by finding nearby essential services effortlessly.

- **Bridging the Gap:** Many existing solutions lack real-time, localized, and multi-category service listings.
- **Community Impact:** Improved accessibility to essential services enhances public well-being.

3.2 Problem Statement:

The primary challenges that **Proximate Finder** aims to solve are:

- **Lack of a centralized platform** for multiple essential services (hospitals, pharmacies, schools, etc.).
- **Outdated or missing real-time data** on operating hours, availability, and facility details.
- **Limited localized search functionality** based on ZIP codes or Thana names.
- **Difficulty in navigation** due to missing map integration.

3.3 Objectives:

1. Develop an application that provides a comprehensive list of essential facilities based on ZIP code or Thana name.
2. Ensure real-time updates on facility availability, opening hours, and contact information.
3. Integrate an interactive map-based navigation system to improve accessibility.
4. Offer filtering and searching options for users to quickly find relevant services.

Background Statement:

4.1 Understanding Location-Based Services (LBS):

LBS applications provide users with information relevant to their geographic location. These services utilize GPS, geocoding, and mapping technologies to deliver real-time and location-specific results.

4.2 Importance of LBS in Everyday Life:

LBS is widely used in:

- **Navigation & Transportation:** Google Maps, Uber, ride-hailing services.
- **Healthcare:** Finding nearby hospitals, pharmacies, and emergency services.
- **Retail & E-commerce:** Location-based promotions and store locators.
- **Emergency Response:** Disaster alerts and optimized emergency dispatch services.

4.3 Existing Gaps in LBS Applications:

Despite the widespread use of LBS, there are several limitations in existing applications:

- **No centralized platform** that includes multiple essential services.
- **Lack of real-time updates** for facility availability.
- **Limited local search** based on ZIP codes or Thana names.
- **No navigation features** integrated for facility directions.

4.4 How Proximate Finder Addresses These Gaps:

- **Multi-category search:** Users can find hospitals, pharmacies, libraries, ATMs, and more.
- **Real-time updates:** Live availability of hospital beds, pharmacy stocks, and opening hours.
- **Localized search:** Search by ZIP code or Thana name for better accuracy.
- **Integrated navigation:** Google Maps API helps users get directions to the nearest facility.

Related Project Work:

Project Name	Limitations	Our Contribution
Hospital Management System	No real-time updates, lacks navigation	Added direction, real-time status, and updates
Pharmacy and Hospital Finder	Only covers hospitals, no ZIP code search	Improved accuracy, added more categories
Local Health Development Services	No updated data on availability	Integrated live data updates
Best Hospitals Near San Francisco Canyon	No ZIP code search, outdated availability info	Improved real-time data

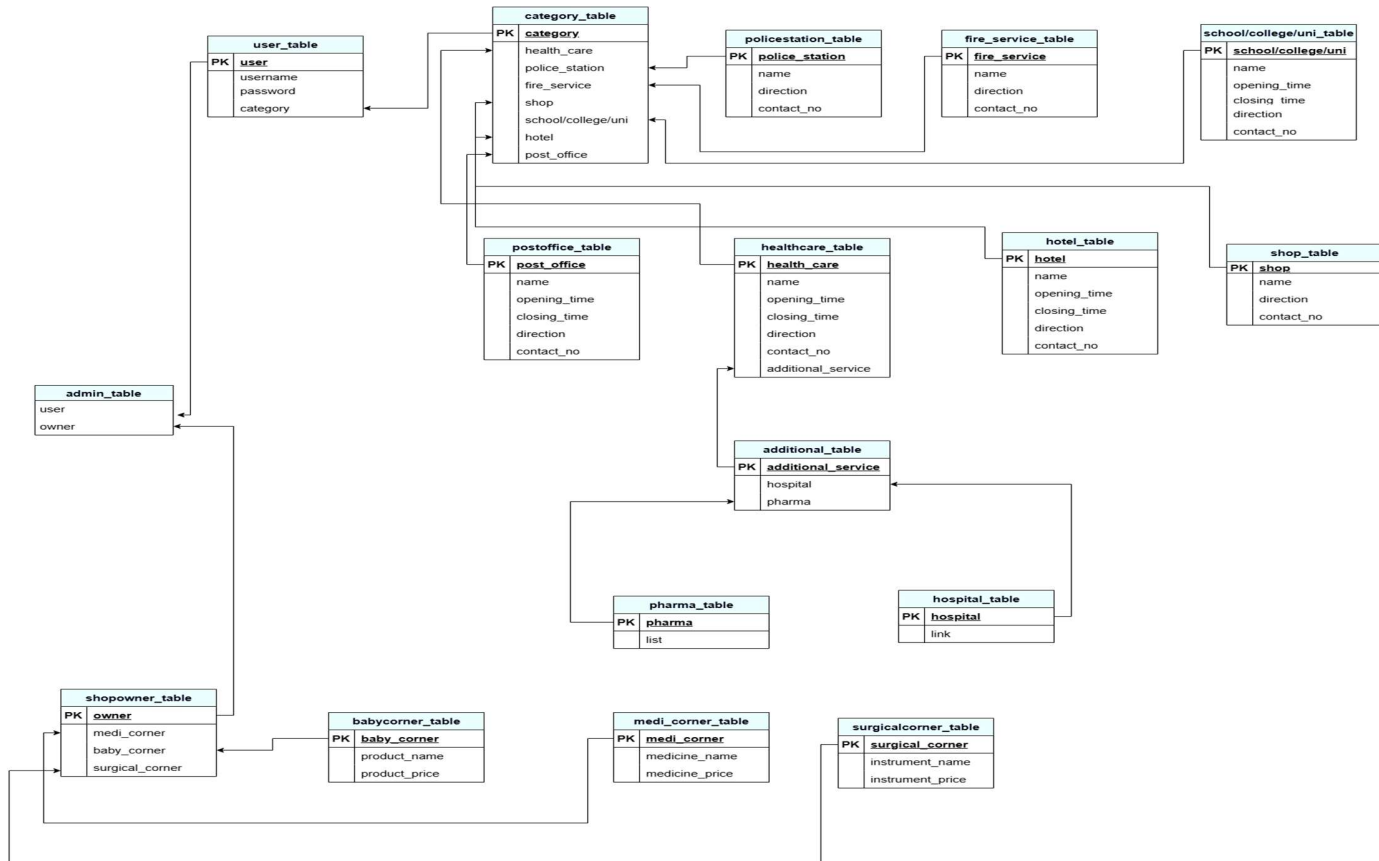
Methodology:

6.1 System Workflow

1. **Input:** User enters a ZIP code or Thana name.
2. **Backend Processing:** The system queries a MySQL database for relevant facility information.

3. **Output:** Displays a list of nearby facilities with details like name, contact info, distance, and real-time availability.

6.2 Relational Diagram



This relational diagram showcases the database structure for the project, "Proximate Finder: Location-Based Services for Essential Facilities." It includes various entities, their attributes, and the relationships among them. Here's a detailed, step-by-step description:

1. Core Tables and Their Purpose:

1. user_table:

- Attributes: username, password, category.
- This table stores user credentials and their assigned category (e.g., admin, shop owner, etc.).

2. admin_table:

- Attributes: user, owner.
- Represents administrative users or shop owners, linking with the user_table.

3. shopowner_table:

- Attributes: owner, medi_corner, baby_corner, surgical_corner.
- Tracks shop owners and their relevant services.

2. Categories and Services:

4. category_table:

- Attributes: category (e.g., healthcare, police_station, fire_service, etc.).
- Central table defining service categories.

5. additional_table:

- Attributes: additional_service (e.g., hospital, pharma).
- Additional information related to the healthcare category.

3. Subcategories by Category Type:

6. healthcare_table:

- Attributes: name, opening_time, closing_time, direction, contact_no, additional_service.
- Stores data on healthcare facilities like hospitals and pharmacies.

7. pharma_table:

- Attributes: pharma, list.
- Subtable for pharmacies, providing a detailed list of medicines or services available.

8. hospital_table:

- Attributes: hospital, link.
- Represents hospitals and their associated resources (e.g., web links or real-time updates).

4. Other Facility Types:

9. policestation_table:

- Attributes: name, direction, contact_no.
- Information about police stations.

10. fire_service_table:

- Attributes: name, direction, contact_no.
- Stores fire service details.

11. postoffice_table:

- Attributes: name, opening_time, closing_time, direction, contact_no.
- Information about post offices.

12. school/college/uni_table:

- Attributes: name, opening_time, closing_time, direction, contact_no.
- Tracks educational institutions.

13. hotel_table:

- Attributes: name, opening_time, closing_time, direction, contact_no.
- Details about nearby hotels.

14. shop_table:

- Attributes: name, direction, contact_no.

- Represents shops in the database.

5. Product and Service Details:

15. medi_corner:

- Attributes: medicine_name, medicine_price.
- Details about medicines available in medical shops.

16. surgical_corner:

- Attributes: instrument_name, instrument_price.
- Tracks surgical items.

17. baby_corner:

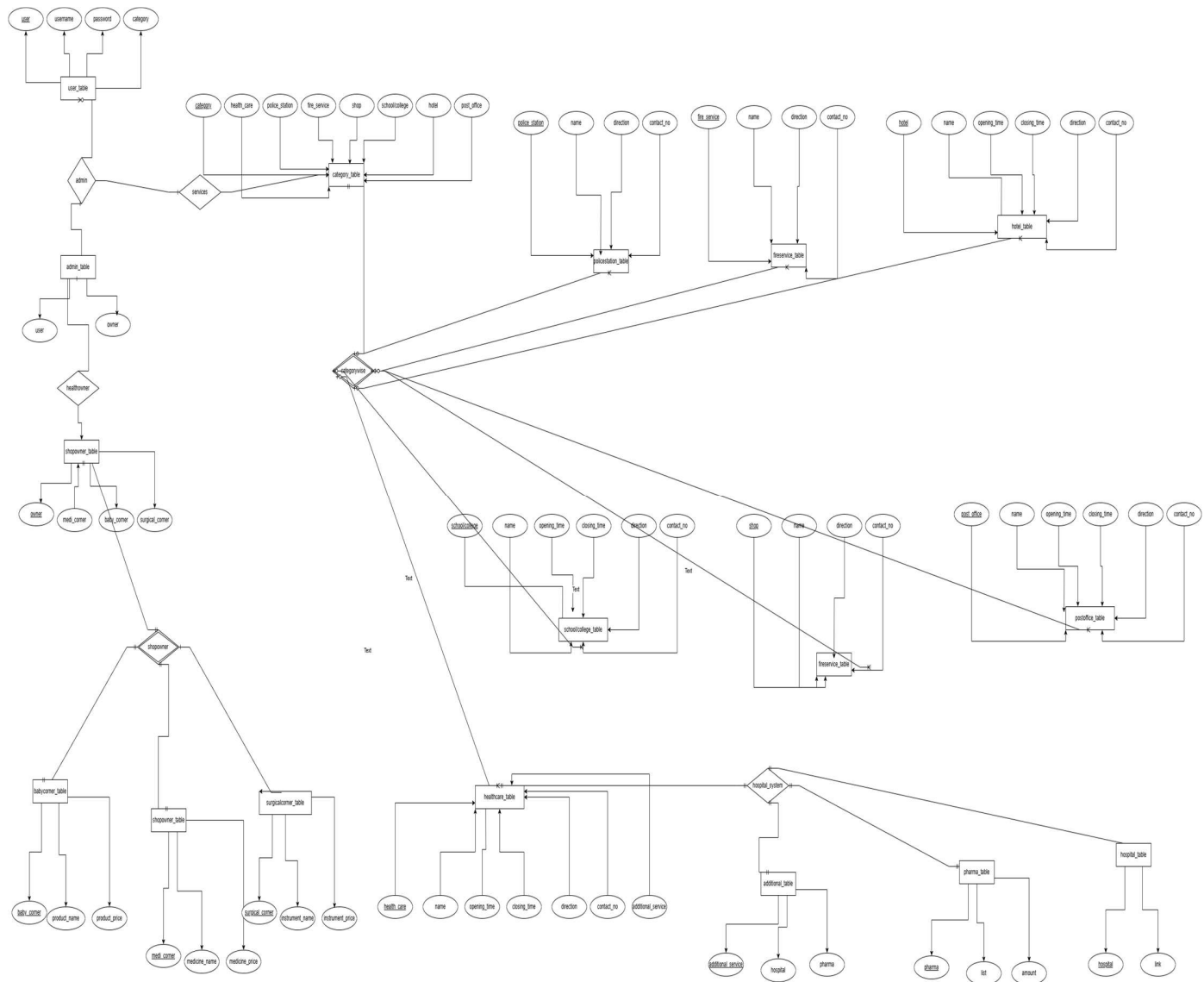
- Attributes: product_name, product_price.
- Information on baby care products.

6. Relationships Between Tables:

- The user_table links with the admin_table, enabling user role identification (e.g., admin or owner).
- The category_table acts as the parent to other category-specific tables like healthcare_table, shop_table, hotel_table, etc.
- The healthcare_table links to the additional_table for further details about hospitals or pharmacies.
- The shopowner_table connects to product-specific tables (medi_corner, surgical_corner, and baby_corner) for inventory tracking.

This diagram represents the relationships between various entities in a database, with each table representing a different entity. The PK (Primary Key) column uniquely identifies each record in the table. The relationships between tables are indicated by shared columns, ensuring data integrity and efficient organization. It provides a clear and normalized representation of our database, ensuring data integrity and easy retrieval for the Proximate Finder system.

6.3 ER Diagram



Environment Setup and Implementation:

7.1 Technologies Used:

- **Frontend:** Java Swing (for a cross-platform mobile interface).
- **Backend:** MySQL (for storing facility data).
- **API Integration:** Google Maps API (for navigation and geolocation).

7.2 Implementation Steps:

1. **Database Setup:** Created tables in MySQL for storing facility data.
2. **Frontend Development:** Built the UI using Java Swing with interactive search filters.
3. **API Integration:** Integrated Google Maps API for real-time navigation.
4. **Testing & Debugging:** Ensured data accuracy and optimized system performance.

Final Result Preparation:

The final output of Proximate Finder is a user-friendly platform that:

- Lists nearby essential facilities based on user input.
- Provides real-time updates on availability and operating hours.
- Includes map-based navigation for ease of access.

Limitations & Future Work:

9.1 Limitations

- **Internet Dependency:** Requires an active internet connection for real-time updates.
- **Data Accuracy Issues:** Facility information relies on external sources, which may not always be up-to-date.
- **Limited Coverage:** Initial implementation covers only selected regions.
- **Real-time Data Constraints:** Some facilities do not provide open API access for real-time updates.

9.2 Future Work

- **Offline Mode Support:** Implement offline data storage for basic facility information.
- **AI-Based Predictions:** Use AI to recommend the best facilities based on real-time traffic, availability, and user preferences.
- **Smart City Integration:** Work with government agencies to improve accessibility to public services.
- **User Feedback System:** Enable users to **report incorrect data** or suggest facility updates.
- **Expanded Coverage:** Add more regions and introduce **multilingual support** for wider accessibility.

Conclusion:

- Proximate Finder bridges the gap between users and essential services through a real-time LBS system.
- The platform enhances accessibility to critical facilities, particularly in emergencies.
- Future enhancements include AI-based recommendations, offline support, and city-wide expansion.

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