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Ministry of Higher Education and Scientific Research

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Graduation Project Report

License 3rd And Final Year

Hospital Finder Mobile App

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Abstract

In many regions, private medical clinics and hospitals are widespread, making it difficult for residents and visitors to locate suitable healthcare facilities quickly.
Patients often struggle to find nearby hospitals, determine the best routes, or identify available medical services, especially in emergencies. This challenge is particularly significant for individuals unfamiliar with the area or those seeking specialized medical care.
To address this issue, we propose the development of a mobile application that enables users to geolocate hospitals and medical clinics efficiently.

The application integrates mapping services to provide accurate locations and essential details about healthcare institutions. Additionally, it allows users to contact clinics directly via phone for inquiries and appointments.

By offering a user-friendly interface and real-time location-based services, this application aims to enhance accessibility to healthcare facilities, improve navigation for patients, and support better healthcare decision-making.

Keywords: Mobile Application, Android, Geolocation, Google Maps.

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1. Introduction

1.1 Project Presentation

In today's fast-paced world, **access to healthcare services** is a fundamental need. However, finding the right hospital at the right time remains a **challenge** for many individuals. Whether it is for **emergency cases, routine check-ups, or specialized consultations**, people often struggle to locate nearby healthcare facilities that match their needs.

Traditional methods of searching for hospitals—such as **word-of-mouth recommendations or general internet searches**—are often **inefficient, time-consuming, and unreliable**. They rarely provide crucial details such as:

- **Hospital specialties**
- **Available doctors and their expertise**
- **Operating hours and emergency services**
- **Real-time availability of services**

To address these challenges, we propose the development of a **Hospital Finder Mobile Application**. This app aims to help users **quickly and efficiently** locate nearby hospitals based on various criteria such as **location, specialty, available services, and real-time availability**. By integrating **modern technologies like geolocation, search filtering, and live data updates**, our system provides an **intelligent, user-friendly, and accessible solution** for patients and healthcare professionals.

1.2 Application Objectives

The primary goal of this application is to **simplify the process of finding hospitals and healthcare facilities** while ensuring users receive the most relevant and **real-time** information. Specifically, the application aims to:

- **Improve Accessibility to Healthcare Services:** Provide an intuitive platform for users to locate hospitals, clinics, and medical specialists.
- **Enhance Patient Decision-Making:** Offer users hospital **ratings, available doctors, specialization areas, and real-time service availability**.

- **Reduce Search Time:** Optimize search and filtering functionalities to help users find the best hospital quickly.
- **Integrate Geolocation Services:** Enable real-time location tracking to suggest **the closest and most relevant medical facilities**.
- **Facilitate Patient-Hospital Communication:** Provide direct contact options such as **phone calls, appointment booking, and navigation assistance**.

By implementing these objectives, the **Hospital Finder Mobile Application** seeks to **enhance healthcare accessibility** and **reduce the time required to locate medical facilities**.

1.3 Methodology and Adopted Formalisms

To develop the **Hospital Finder Mobile Application**, we followed a structured approach, combining:

- **Theoretical Study**
- **Technical Analysis**
- **Practical Implementation**

Our methodology consists of the following key steps:

1. **Preliminary Study and Research**
    - Analyze existing hospital-finder applications and their **limitations**.
    - Identify key **user needs and expectations** through research and surveys.
2. **Requirement Specification and System Analysis**
    - Define the **functional and non-functional requirements** of the system.
    - Develop **use case diagrams, system architecture, and database design** to ensure a structured implementation.
3. **Design and Development**
    - Implement a **cross-platform mobile application**.
    - Utilize **Flutter for the front-end** to ensure compatibility with both Android and iOS.

- Store and manage data using **Firebase and a structured database**.

4. **Testing and Validation**
    - Conduct rigorous **functionality, performance, and security** testing.
    - Gather **user feedback** and refine the app based on real-world usage.
5. **Deployment and Future Enhancements**
    - Deploy the application for public use, ensuring **a smooth user experience**.
    - Plan for **future updates**, including:
        - **AI-based hospital recommendations**
        - **Telemedicine features**
        - **Integration with electronic health records (EHR)**

Chapter 1

Étude Théorique et Choix Techniques

1.1 Introduction

In today's digital age, access to precise and reliable healthcare information is essential. Many existing applications provide hospital location services, but they often lack **detailed and accurate clinic information**. This chapter explores the theoretical aspects of our **Hospital Finder Mobile Application**, analyzes existing solutions, and presents our improved approach.

1.2 Étude Préliminaire

1.2.1 Étude des solutions existantes : Géolocalisation, Recherche sur Google Maps, ...

Several solutions exist for finding hospitals and clinics, but they have **significant limitations**:

- **Google Maps:** Google Maps is the most widely used mapping service, offering general hospital searches. However, it **lacks precise information on clinics**, including doctors' availability, specialties, and operating hours.
- **Hospital Finder by Darshan University:** This global application **only fetches hospital data from the Google Maps API** without allowing clinics to **add or modify their information**. Additionally, its **user interface is outdated**, making navigation difficult.

- **Local Availability:** Currently, **no local application** provides a **dedicated hospital and clinic management system** that allows clinics to **register themselves, update details, and display real-time doctor availability**.

1.2.2 Critique de l'existant et solution proposée

Limitations of Existing Solutions:

- No **custom clinic registration** or modifications
- Outdated UI and poor **user experience**
- No **detailed doctor profiles and schedules**
- Google Maps data is **too general** and lacks **localized clinic information**

Proposed Solution: To overcome these limitations, our **Hospital Finder Mobile Application** introduces:

- **Enhanced Geolocation** $\rightarrow$ Provides **precise clinic locations** added by clinic administrators themselves.
- **Clinic Registration & Management** $\rightarrow$ Clinics can **create, modify, and update their information**.
- **Detailed Doctor Profiles** $\rightarrow$ Displays **doctor specialties, working hours, availability, and schedules**.
- **Nearby Hospital & Clinic Recommendations** $\rightarrow$ Suggests hospitals and clinics **based on real-time location**.
- **Modern UI & Better User Experience** $\rightarrow$ A **new, intuitive, and visually appealing interface**.

1.3 Conclusion

The existing hospital location solutions fail to provide **detailed, precise, and user-friendly** hospital and clinic information. Our **Hospital Finder Mobile Application** bridges this gap by offering:

- A **better geolocation system** for **more accurate clinic placement**.

- The ability for **clinics to register and update their details**.
- **Comprehensive doctor profiles**, making hospital visits more efficient.
- **A modern UI** with an intuitive design for easy navigation.

This enhanced system will significantly improve **healthcare accessibility** and provide a **better user experience** compared to existing solutions.