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A Project Report
On
Travel Management Application

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ABSTRACT

This project introduces a user-friendly tourist application built with C++, Qt, and SQL to simplify and enhance travel planning by combining everything you need for your trip – booking cabs, hotels, and tour guides – into one convenient platform. Using C++ ensures smooth and reliable performance, while Qt provides a visually appealing interface across various devices, and SQL securely manages all booking details and personal information. With this app, users can effortlessly search for book cabs, hotels, and guides that suit their preferences and budget. The cab service allows for booking rides and viewing details, the hotel module provides comprehensive accommodation information, and the guide service offers professional tour guides to enhance the travel experience. The goal is to streamline the entire travel planning process, making it more convenient and efficient by integrating essential travel services into one app, catering to modern travelers seeking hassle-free, well-organized trips. This project showcases the effective use of modern programming technologies to create a valuable tool for anyone who loves to travel, combining a unified booking platform, an intuitive interface, efficient data management, comprehensive service information, and an enhanced overall travel experience.

Keywords: Qt(framework for GUI) , SQL(Sequential Database Language) , GUI(Graphical User Interface).

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LIST OF ABBREVIATION:

OOP	Object Oriented Programming
GUI	Graphical User Interface
SQL	Sequential Query Language
DBMS	Database Management System

1.INTRODUCTION:

1.1.Background :

The tourism industry is rapidly evolving with the rise of digital technology, making travel planning more efficient and integrated. Traditional methods of booking through travel agents or individual providers are being replaced by modern applications that combine multiple services into one platform. This project leverages the power of C++, Qt, and SQL to create a user-friendly application that simplifies the process of booking hotels, cabs, and guides. By offering a one-stop solution, the app saves users time and effort, providing personalized recommendations, and seamless management of all travel needs. This innovative approach not only enhances the convenience of travel planning but also aims to revolutionize the way people organize their trips, making the experience more enjoyable and hassle-free.

1.2.Motivation:

Being ourselves fond of traveling we had face difficulty to manage hotel, vehicle and guide during our tours. With an ambition to provide a solution to the travel freaks, we have decided to make comprehensive travel management app. We all know how difficult it is to find a whole package of hotel, cab, guide and so on during travel time. So, we came up with an idea to develop application using C++ as core language, qt for user interface and MySQL as a database to store the information. And also to learn object, class and other programming topics we have thought about developing a project which can teach the fundamental concept of programming. This project is mix of solution to travelers and learning concepts of programming.

1.3.Objectives:

The project aims to fulfill following:

1. Simplify travel bookings with an all-in-one platform for hotels, vehicles, and guides.

2. Ensure secure data storage and efficient performance using C++ and Qt.

2. LITERATURE REVIEW

Literature Review for Tourist Application Project

Introduction

Tourist applications play a pivotal role in enhancing travel experiences by providing users with access to essential services such as hotel booking, guide booking, and car booking. This literature review explores existing research, technological frameworks, and key components relevant to the development of a tourist application incorporating these features.

Evolution of Tourist Applications

Tourist applications have evolved significantly with advancements in technology and changing consumer preferences. According to Gretzel and Fesenmaier (2013), the proliferation of smartphones and mobile apps has transformed how travelers plan and experience their trips. Tourist applications offer convenience, personalization, and real time access to information, enabling users to make informed decisions and optimize their travel experiences.

Technological Frameworks

1. Database Management:

- Relational databases like MySQL and PostgreSQL are widely used for storing and managing data in tourist applications. Wang and Liu (2016) discuss the benefits of relational databases in handling structured data such as user profiles, bookings, and location information.

2.C++

-C++ is a low level programming language used majorly for the logic development in the application development. It is a cross-platform language that can be used to create high performance applications.It was developed by Bjarne Stroustrup, as an extension to the C language.It gives programmers a high level of control over system resources and memory.

3.Qt

-Qt is a C++ framework that supports the WOCA (Write Once, Compile Anywhere) principle, which means Qt is a cross-platform framework. It's mainly used to develop applications and graphical user interfaces (GUIs) that can run across different operating systems

Key Components of Tourist Applications

1. Hotel Booking:

Hotel booking functionality allows users to search for hotels, view availability, and make reservations. People emphasize the importance of seamless hotel booking processes in tourist applications to enhance user satisfaction and loyalty.

2. Guide Booking:

Guide booking features enable users to find local guides, view their profiles and ratings, and book guided tours or experiences. Fuchs, Ricci, and Cantoni (2010) discuss the role of personalized recommendations and social interactions in guide booking platforms to enhance user engagement and trust.

3. Car Booking:

Car booking functionality allows users to search for rental cars, compare prices and features, and make reservations. Rysman (2009) highlights the importance of transparent pricing, flexible booking options, and reliable customer support in car rental services to attract and retain customers.

Existing Systems and Comparative Analysis

Several studies have evaluated existing tourist applications, comparing features, usability, and performance. Han, Yuan, and Li (2014) provide a comparative analysis of popular travel apps, highlighting strengths and weaknesses in areas such as user interface design, search functionality, and booking processes. Such analyses help identify best practices and areas for improvement in tourist application development.

Conclusion

Tourist applications play a crucial role in facilitating travel planning and enhancing tourist experiences. By leveraging advanced technologies, robust back end infrastructure, and user-centered design principles, tourist applications can provide users with seamless access to hotel booking, guide booking, car booking, and other essential services. Future research and development efforts should focus on improving professionalization, accessibility, and integration with emerging technologies to further enhance the utility and effectiveness of tourist applications.

3. METHODOLOGY

3.1 Git & GitHub

GitHub played a pivotal role in our development process, offering robust version control and collaboration capabilities. Issue tracking on GitHub helped us identify, prioritize, and resolve issues effectively, ensuring a smoother development workflow.

3.2 Functions and Conditional Statements

Functions are used in almost every step of development of this game. Any activity to be performed if handed out to the respective functions which makes the program readable as well as efficient. These functions are accessed from specific classes some of which are public where as some are protected in the class. What is to be done when something specific happens is governed by the conditional statements in the programming world. They make programming easier by branching out a single statement with multiple outcomes.

3.3 CMake

While CMake is primarily a build system, it is an integral part of the development toolchain. It significantly contributes to the efficiency and portability of the development process, ensuring that the project can be built consistently across different environments. Including CMake in the development toolset is recommended, especially when working on C++ projects where build configuration and dependency management are critical aspects of the development process.

3.4 Class

A class in C++ is composite data type declaration that defines a physically grouped list of variables under one name in a block of memory, allowing the different variables to be accessed via a single pointer or by the struct declared name which returns the same address. Various classes are used along with API's which is the core of the entire game or similar to blueprints. Majority of the classes are described under header files where as some on the cpp file itself. Those header files along with the class they contain has been specifically divided according to our need which means that each header file has its own purpose different than the later.

3.5 DB Browser for SQLite

DB Browser for SQLite is a high-quality, open-source tool designed to help users manage SQLite databases. It provides an intuitive graphical user interface (GUI) for creating, editing, and visualizing SQLite database files without requiring extensive SQL expertise. The tool allows developers to design database schemas, execute queries, import/export data, and manage database records efficiently. Its simplicity and accessibility make it an ideal choice for lightweight applications and projects that use SQLite as the backend database.

3.6 Qt Creator

Qt Creator is a powerful, cross-platform integrated development environment (IDE) designed for building applications with the Qt framework. It supports C++ and other languages, providing robust tools for designing user interfaces, debugging, and managing projects. With features like an integrated UI designer, code editor, and support for multiple platforms, Qt Creator simplifies the development of modern, high-performance applications. Its versatility and user-friendly interface make it a popular choice for both beginners and experienced developers.

4.SYSTEM DESIGN

4.1 System Design or Block Diagram:

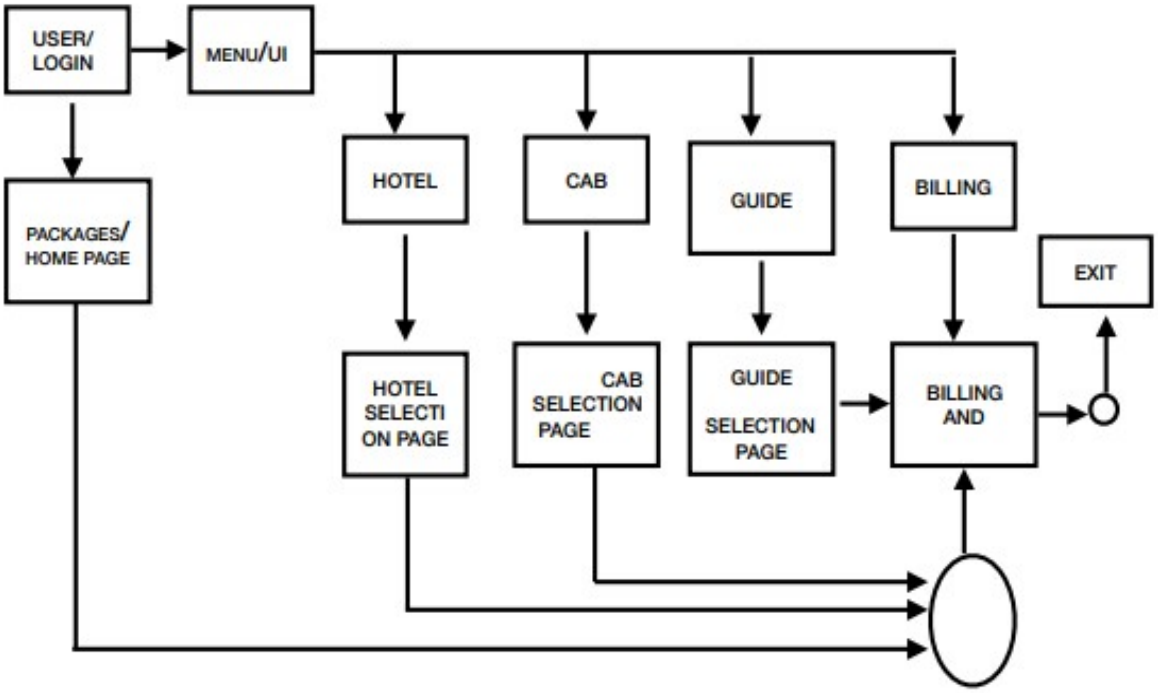


Figure 3.1 Block Diagram of System Architecture

4.2 Parts of Program

4.2.1 Login

The login page will have an username and password container. Where a user can log in to the application if his/her account is registered if not then account should be registered. This part help us to keep the security system strong.

4.2.2 Menu UI

There will be four options in menu i.e hotel, cab, guide and billing which have it's own application. You just need to click in those menu you can open a new window where you can book.

4.2.3 Packages

There would be different packages for user so that the user can select a best option as per their needs and priorities.

4.2.4 Hotel

If user wants to manage their traveling in detail and not interested in readymade packages. They can book hotel individually from this option of the menu.

4.2.5 Cab

If user wants to manage their traveling in detail and not interested in readymade packages. They can book or rent vehicles individually as per their need from this option of the menu.

4.2.6 Guide

If user wants to manage their traveling in detail and not interested in readymade packages. They can book guide as per their need from this option of the menu. The contact of guide are given to users so, that users can be familiar to guide and ask for them-self, if guide is the one for them.

4.2.7 Profile

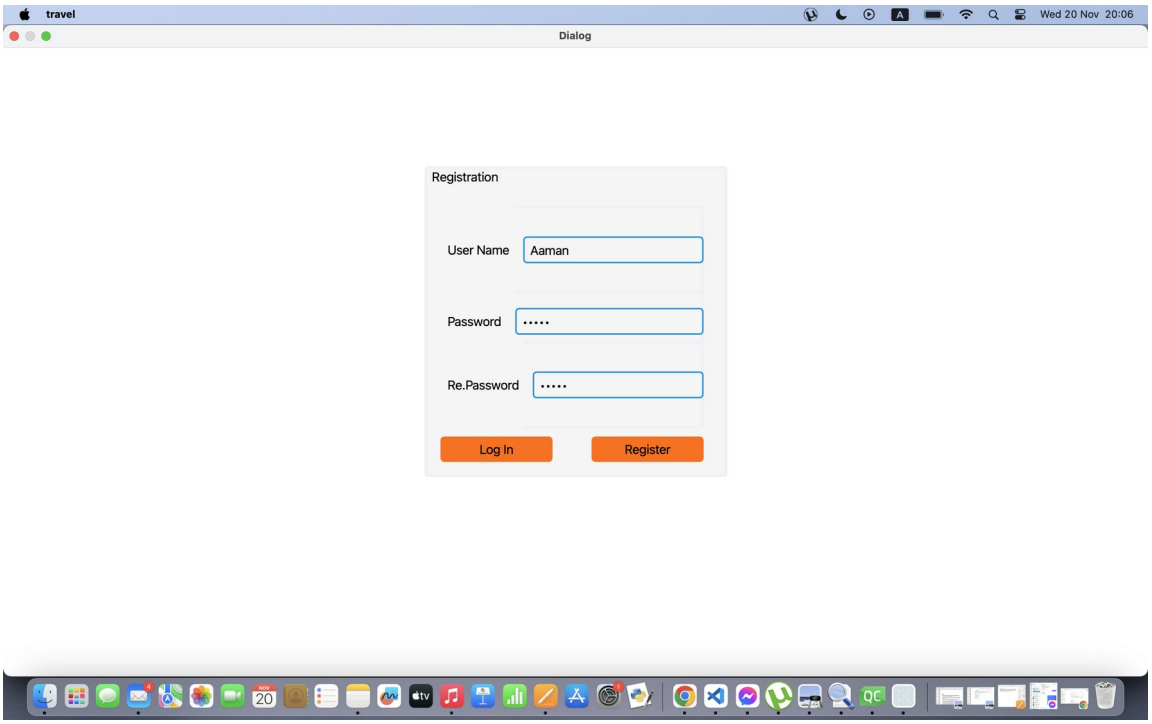
In this part user can find the booked package, cab, hotel, guide details. User can pay the price to the hotel, cab and guide personally in offline but the price will be as in the billing page. And there will be no worry of the booking of selected facilities.

5.Results and Analysis

The Travel Management System was successfully developed using Qt and SQL. The application efficiently manages essential travel-related functionalities, such as hotel booking, cab booking, and guide management. Users can interact with a user-friendly interface to input and retrieve data from the database, ensuring smooth operations. Overall, the project met its objectives, providing a functional and reliable solution for travel management.

5.1 User registration and authentication:

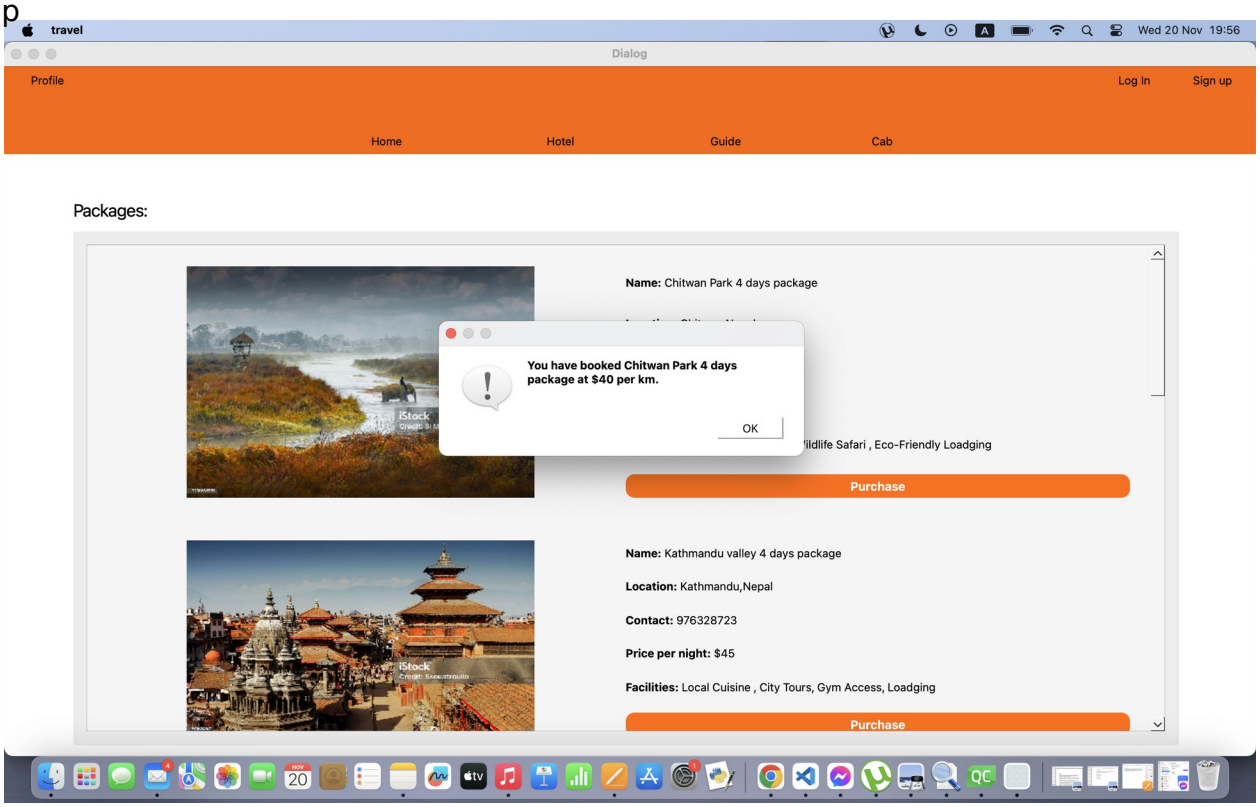
Our system successfully utilizes QT(C++) and SQL language to implement the registration process and user authentication. When user register with username and password ,these details are saved in the database and are used while login process.

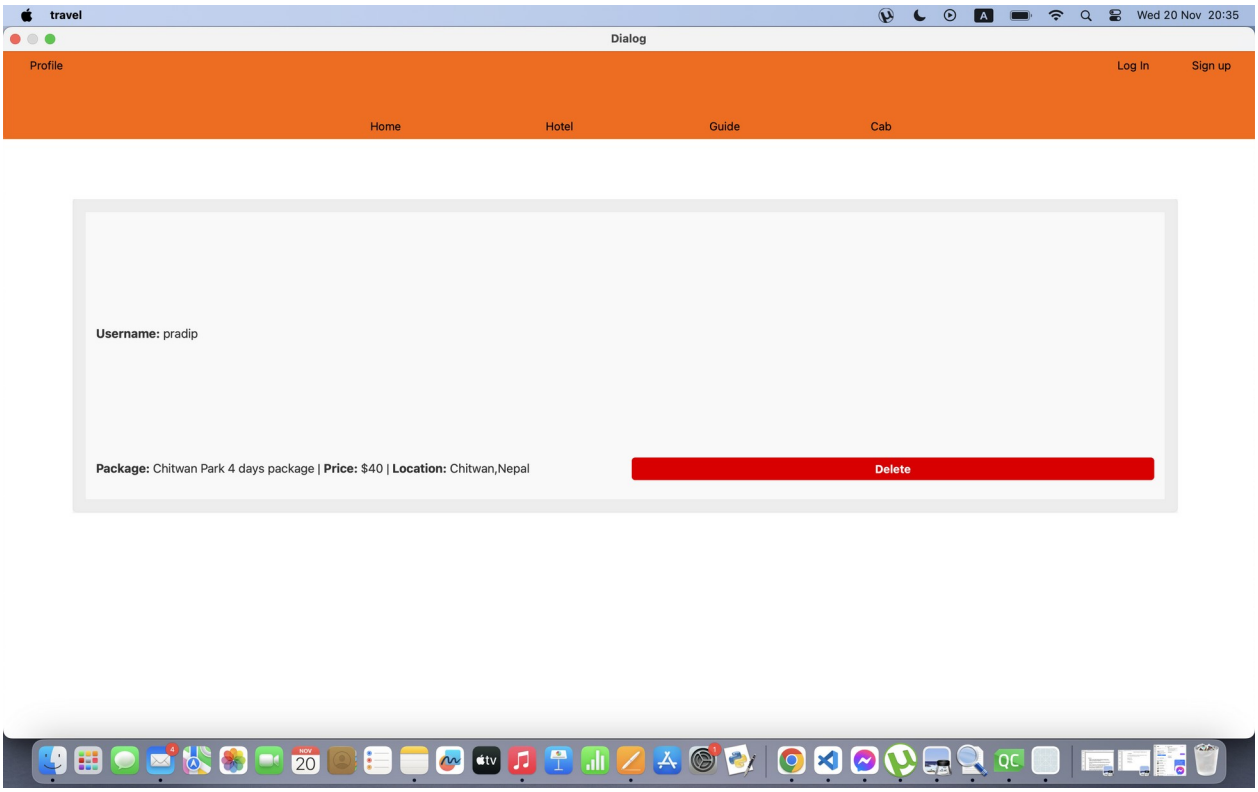


	user_id	username	password	hotel_name	hotel_price	hotel_location	cab_drivername	cab_vehicletype	cab_price	guide_name	guide_number	guide_price	total_price	package_name	package_price	package_location
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
1	5	pradip	12345	desert Oasis	$150	Cairo, Egypt	Amelia Smith	Sedan	$4.5	John Doe	976328723	$35	NULL	Chitwan Park 4 days package	$40	Chitwan,Nepal
2	6	rohan	12345	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
3	8	Aaman	12345	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

8.2 Booking process:

Our system takes the data from table like guide, cab, hotel and shows in the window and there is a booking button .If the user click on the button then the detail of the booking is saved in the database and show in the profile window.





	user_id	username	password	hotel_name	hotel_price	hotel_location	cab_drivername	cab_vehicletype	cab_price	guide_name	guide_number	guide_price	total_price	package_name	package_price	package_location
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
1	5	pradip	12345	desert Oasis	$150	Cairo, Egypt	Amelia Smith	Sedan	$4.5	John Doe	976328723	$35	NULL	Chitwan Park 4 days package	$40	Chitwan,Nepal
2	6	rohan	12345	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
3	8	Aaman	12345	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

6.CONCLUSION AND FUTURE ENHANCEMENTS

6.1 CONCLUSION

The Travel Management Application simplifies travel planning by integrating multiple services into a single platform. It ensures efficient performance, user-friendliness, and secure data handling using C++, Qt, and SQL. This project demonstrates how modern technologies can revolutionize the tourism industry, making travel more convenient and enjoyable for users.

6.2 LIMITATIONS

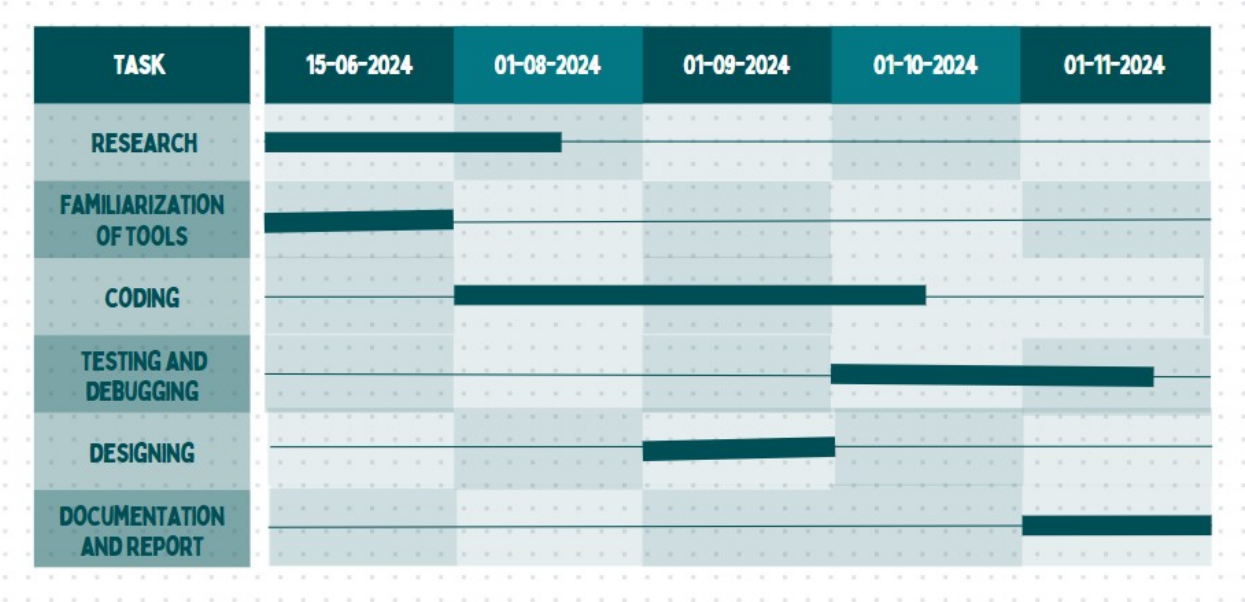
- Currently lacks online payment integration for bookings.
- Limited to desktop platforms; no mobile app available.
- Dependent on a stable internet connection for functionality.
- Scalability is restricted without advanced server-side infrastructure.

6.3 FUTURE ENHANCEMENTS

- Introduce mobile app integration for better accessibility.
- Add multilingual support to cater to diverse users.
- Implement AI for personalized travel recommendations.
- Enable real-time analytics for tracking and predicting travel trends.
- Integrate secure online payment options for seamless experience.

7. APPENDICES

Appendix A: Gantt Chart



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