Red Sea State Tourist Guide Application "Designing an application for users and a website for management tourist and service areas in the Red Sea State"

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Abstract:

This scientific paper showcases the design of an innovative Android application that serves as a comprehensive tourist guide, featuring an array of attractions and service locations, supported by a robust website for effective management.

Our proposed tourist guide application is expertly crafted to tackle the challenges facing tourism in the Red Sea State by actively promoting key attractions and service facilities. It is designed to meet the needs of today's travelers, enabling users to effortlessly explore numerous tourist and service areas, access detailed information, and view precise geographical locations on a map. With clear guidance on routes and estimated travel times, the application ensures users can navigate with confidence. Moreover, the ability to save favorite spots and search for specific locations, along with the option to update personal information, enhances the overall user experience.

The accompanying website empowers administrators to efficiently add or remove tourist and service areas, manage application users, and monitor their locations and usage durations. This feature greatly enhances tourist safety, particularly in the event they stray from their intended path. Developed using Flutter and Visual Studio Code, along with the Firebase database, this application is at the cutting edge of technology. The website, designed with HTML and CSS within Visual Studio Code and utilizing the Firebase database, provides users all the essential information needed for seamless and secure navigation to their desired destinations. Users can confidently embark on their journeys, knowing they have all the necessary tools at their disposal for a safe and enjoyable experience.

Keywords: Android application, Mobile application, tourism, android, web application

1. Introduction:

Communication technology is pivotal in transforming tourism services and applications. The integration of electronic services is not just advantageous but essential for the success of the tourism sector and various economic domains. By enhancing electronic services and modern applications, we effectively reduce costs and save valuable time, making this technology a vital promotional asset in a competitive market focused on modernizing tourism and marketing strategies.

Through electronic platforms and websites, we can efficiently store and manage comprehensive data about tourist attractions in a centralized database, allowing for easy retrieval and updates. These applications guarantee high levels of safety and privacy for the information they contain. When planning our travels, we naturally turn to advanced tourism and travel applications, which empower us to navigate seamlessly in our chosen destinations.

The Red Sea State, renowned for its ancient civilization and rich archaeological heritage, boasts incredible tourist potential. However, it faces challenges in its tourism sector due to insufficient information technology infrastructure and a lag in adopting modern technology for promoting its historical and tourist offerings.

By developing innovative applications to showcase its unique tourist and historical sites, the Red Sea State can significantly elevate its tourism sector and transform it into a major contributor to national income. In this light, tourism applications serve not only as a reflection of the state's cultural identity to the world but also as essential tools for generating foreign currency. This revenue can effectively address economic challenges and enhance the overall well-being of its citizens.

2. Review of the Literature:

According to the first study, Muhammad Rabie Dqash Mabrouk (2021), (The effect of smart phone applications on the performance of tourism companies, an Android application was designed to deliver orders to restaurants using Android Studio, Java, SQL database, and GPS so that the user can determine his location and send it via the application to the restaurant so that the orders can be delivered to him. This study aimed to reduce the time required to order meals and increase restaurant profits. The second study (Abdulmajeed Saud Alnaddaf and Khalid Sultan Alotaibi (2020) Car Parking Android App.) also focused on designing a tourist guide for the city of Sabha that allows users to identify the tourist areas in the city of Sabha and reduces the time to search for tourist areas. The application was designed using Android

Studio, Java language, and SQL database and solved the problem of the lack of an electronic tourist guide for tourist areas in the city of Sabha. We also find that the third study (Nguyen Doan Quoc Thien(2019)Android Mobile Application for Tour Guide System.) focused on designing an application to reserve parking spaces for cars, which reduces the time spent searching for a place to park the car and reduces congestion. The application was designed by relying on Java language and SQL database. We find that most previous studies did not focus on the tourism sector separately and all relied on the SQL database. In addition, previous studies did not provide a clear map that determines the path to reach the required area. While this paper focused on the tourist and service areas together in the Red Sea State, it was also interested in providing a map that shows both the user's location and the location of the tourist or service area, the access path and the time required to arrive. It also relied on the Firebase database, which is considered a cloud database, which saves the time required to upload the SQL database that was used in all previous studies, which contributes to the possibility of running the application for more than one user without the need for a connection between the phone and the device that has the SQL database. One of the most important features of this scientific paper is that the application keeps the last time and the last location in which the user was using the application, which contributes to providing safety for the user in the event that the return path is lost.

3. METHODOLOGY

This research uses the applied descriptive approach using Android Studio and Visual Studio Code To design a mobile application ،GPS To determine tourist points ،Visual Studio Code Application To design the site And a database firebase.

4. METHODS:

Data analysis which is the examining and reshaping data and storing it to enable us to reach information in light of which proper decisions and data analysis can be made many different methods, including applied descriptive analysis, exploratory analysis, deductive analysis, causal analysis, predictive analysis, mechanical analysis.

The data analysis process aims to prepare the model of system data, which is considered one of the main activities of the system analysis, and the data modeling is often through the use of the graphical models that similar to the data flow diagram to a large extent and the data modeling process is done in several stages or steps so that the first step is done in the analysis stage The system is recognized by the quality and amount of the required data , Then

the stage of collecting data from different sources, whether from people, from modern technologies, or others, and then the stage of data regulation and distribution in the form of tables, and examine the data so that the resulting information is not any errors and then the conceptual model of data is prepared in a course that reflects the main topics For data and their relationship to each other and Then the relationships are analyzed by designing entities in a way that limits the recurrence of data and then the database design phase in which the convert the relational model to a database.

Through this study, the researchers want to design an electronic system that includes all attractions and tourist and service areas in the state and classified according to the services provided to the visitor So that the visitor can get sufficient and detailed information about the tourist areas once registered in the system, which makes access to tourist areas easy where provides the visitor with the ability to search for the areas he wants with ease and It provides a set of pictures about tourist or service areas And an introductory overview about it and its locations on the state map And a path or road to reach it Contrary to the current tourist system Which is considered a traditional system and depends on the paper tour guide And paper publications to promote the tourist areas It does not include all tourist and service areas.

To determine the locations of tourist areas in the system the researcher have chosen Google map ،to determine new points for a tourist or service area and add its location on the map the researcher used the GPS device, The Google map was chosen to display the state map for ease of implementation in the Visual Studio Code environment.

We use the Flutter language, renowned for its effectiveness in designing mobile applications within Android Studio and Visual Studio Code environment. The integration with the Firebase database streamlines the process of connecting these interfaces for seamless application design. For our website, we use HTML and CSS in the Visual environment, also leveraging the Firebase database to connect the website with application. The data was analyzed using Unified Modeling Language (UML), which uses precise diagrams to clearly illustrate the functionality of a system. This approach defines the steps and actions that occur between the user and the system in a logical sequence, effectively guiding the user to a useful outcome and has many diagrams.

Use case diagram

Enable software developers to identify key system features and proactively address any potential problems.

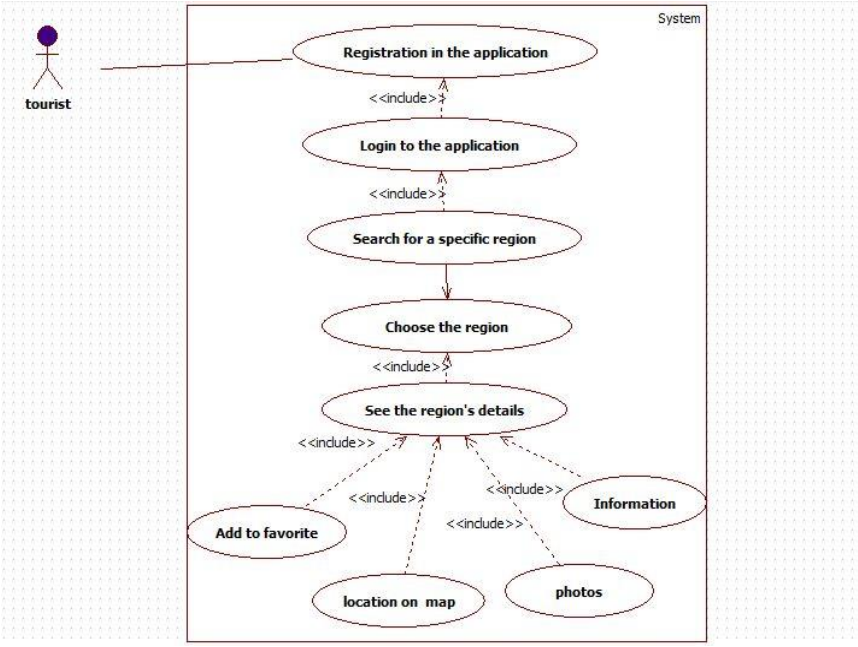


Fig 1: A diagram showing the actions that the user can perform within the application.

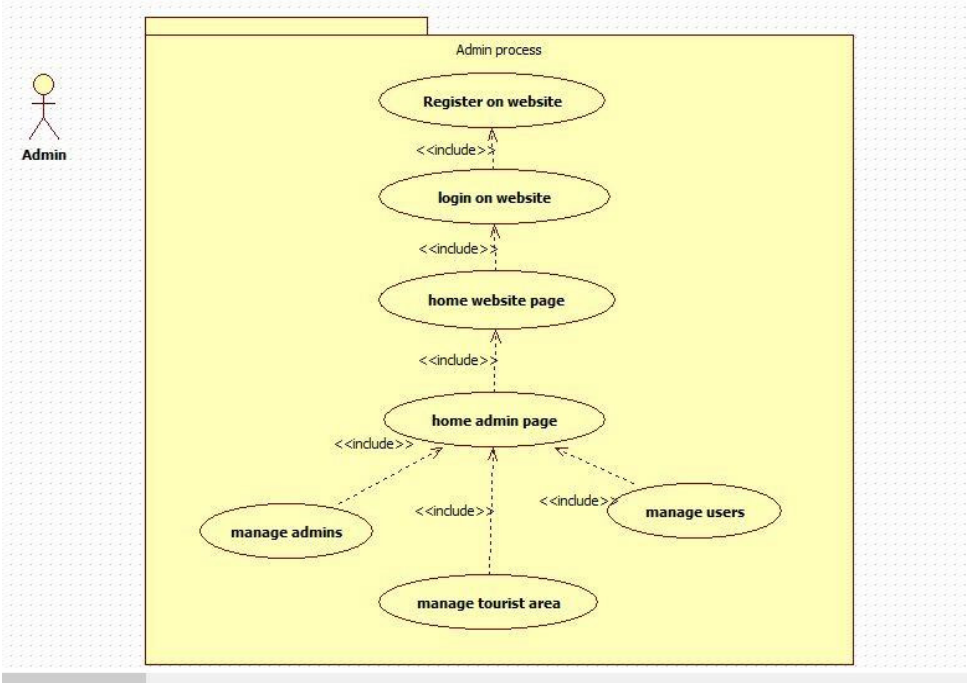


Fig 2: A diagram showing the actions that an admin can perform within the website.

Class diagram:

It is an important part of the UML language, and it is a structural scheme whose basic mission is to display the classes in the system with clarifying the relationships between it and this scheme helps to see problems clearly and this scheme consists of a group of Class (6).

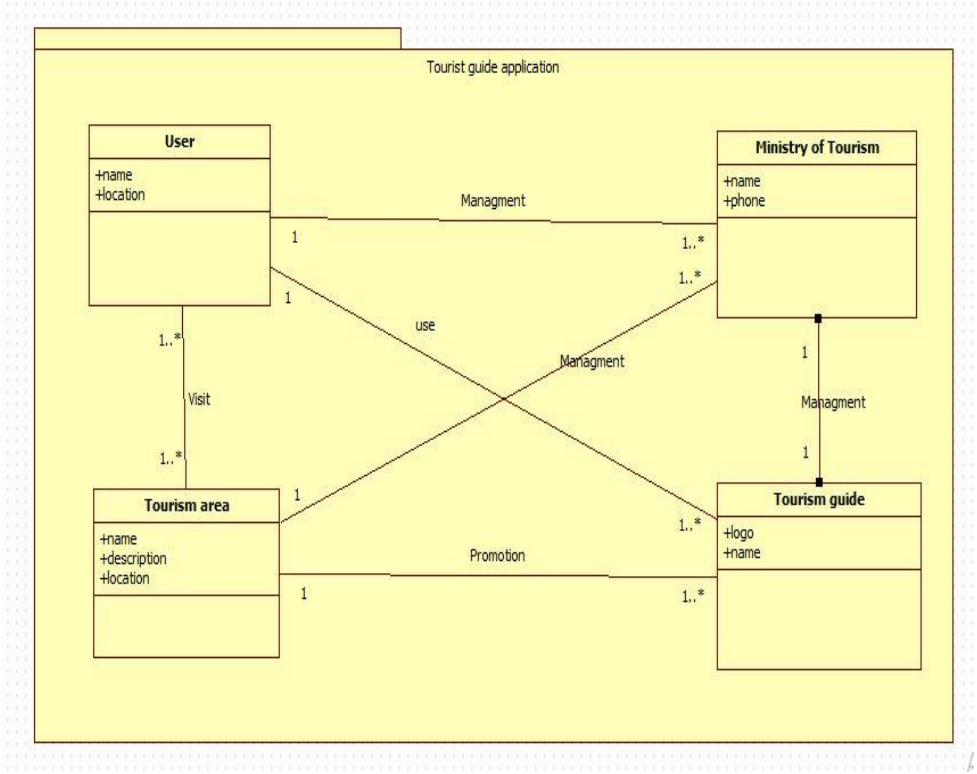


Fig 3: A diagram showing the procedures and relationships between the user (tourist), the tourist areas, the website (dedicated to the administration by the Ministry of Tourism) and the tourist guide application.

5. Result:

The application provides the ability to view all tourist and service areas in the Red Sea State with the ability to search for a specific area, which reduces the time required to reach a specific area and provides many details about the selected area in addition to the ability to display it on the map and clarify the path to reach it with complete accuracy, which makes planning trips easier and more flexible and saves a lot of time. In addition to the application dedicated to phones and users, a website has been designed dedicated to managing the application and its users completely, which provides effective

management of the application.

A B C

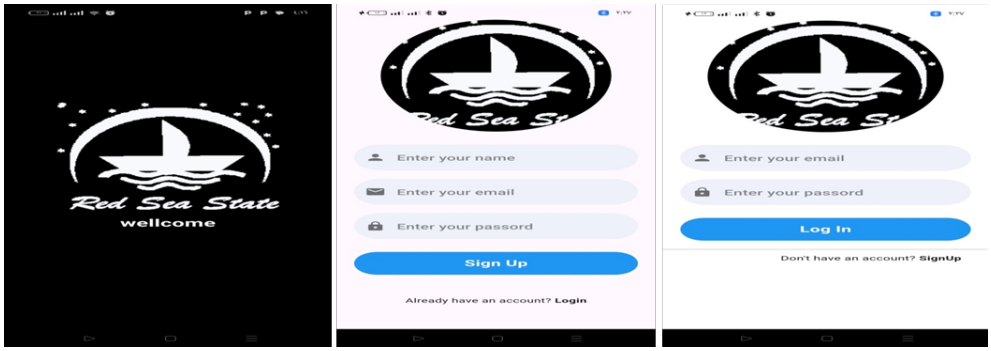


Fig 4: (A) User welcome screen (B) Possibility of registering as a new user who does not have a previous account in the application (C) login to the application to navigate between interfaces.

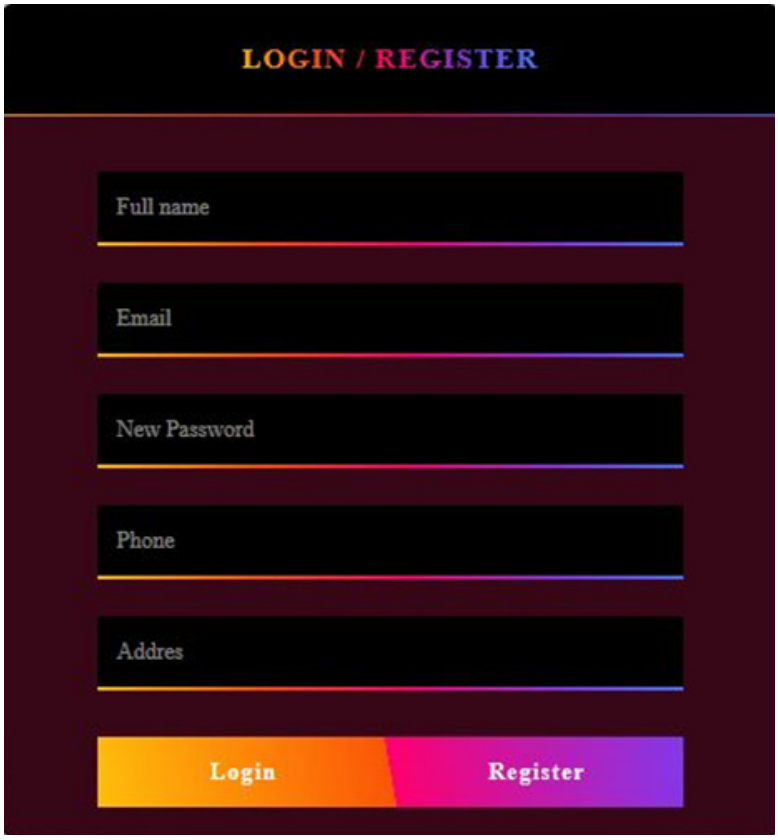
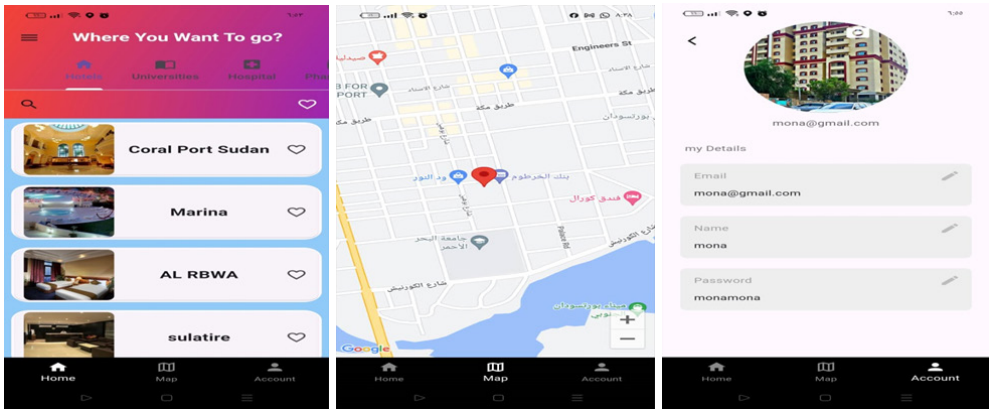


Figure No. (5) explains Register and login Admin Screen



A B C

Fig 5: (A) The main interface in the application through which it is possible to move between various tourist and service areas (B) The current location for the user of the application (C) Personal information for the application user with the ability to modify it in an easy way

A B C

Fig 6: (A) Display both location of the selected tourist or service area in addition to the user's actual location on the map to know the location of the selected area (B) A path that shows the road or roads that must be followed on the map from the user's current location to the location of the selected area, with an explanation of the time required to arrive. (C) Additional options in the application allow access to the personal data of the application user or to data about the application, as well as an option to log out of the application.

6. Results and discussions:

The application is accessed through the registration interface shown in Figure (4-B), then the user moves to the login interface shown in Figure (4-C), then the user enters the main interface of the application, through which the tourist can move between all parts of the application and search for a tourist or service area or add an area to the favorites or view the details of the photos and the arrival path and the time required to reach the area chosen by the

tourist, in addition to the application keeping the last geographical location and the last time the tourist used the application, which provides protection and security for him.

The site is accessed by the admin only through interface no. (5), then the user enters the main interface of the site, from which the admin can enter the administration section and manage all tourist and service areas and users of the application with the possibility of adding, deleting and viewing the details.

After applying both the tourist guide application and the website dedicated to its management, we reached the following results:

1- Including all tourist and service areas in the state in the tourist guide application.
2- The ability to draw a clear path between the current geographical location of the user and the geographical location of the tourist or service area, specifying the time and distance required to reach it. Shown in figure (6)
3- Storing the last geographical point of the tourist in addition to the last time the tourist was using the application, which provides security and protection for the tourist to know his location in case he loses his way.
4- Ease and flexibility of managing the application and its users through the website dedicated to it and dedicated to the admin.

7. Conclusions:

We proudly present the design and implementation of the Red Sea State Tourist Guide, a cutting-edge mobile application that empowers users to access essential tourist information anytime and anywhere. In tandem, we have developed a comprehensive website that streamlines the management of tourist and service areas, along with application users, ensuring a seamless experience.

Our smart tourist guide delivers detailed information about local attractions, enriched with engaging texts and images. It offers robust location-based information that users can easily explore through the interactive map feature. As users navigate the city, their updated location is automatically sent to the database, enabling efficient management through the website. Administrators have complete control over the platform, allowing them to confidently add, delete, and view all relevant details concerning tourist and service areas, as well as user accounts. This innovative approach not only enhances the user experience but also ensures effective management for all stakeholders involved.

8. REFERENCES:

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