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**Kingdom of Saudi Arabia**

**Ministry of Education**

**King Faisal University**

**College of Computer Sciences & Information Technology**

**Software Requirements Specification**

**for**

***Car Rental System***

**by**

|  |  |
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**February, 2023**

**ABSTRACT**

*With the widespread use of technology and electronic devices in recent times, most people prefer to use smart devices to solve their daily problems. This system helps users to easily search for cars and rent them from their phones without the hassle of going to search for car rental centers themselves.*

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# Introduction

With the widespread use of technology and electronic devices in recent times, most people prefer to use smart devices to solve their daily problems. That enables the customers who require temporary cars to search from their phones without the need to go to the car rental center. because the user will ensure that the car is available in advance. The user needs to go to the car rental center only when paying and receiving the previously selected car through the application.

## Purpose

The purpose of this document to present a detailed description of a system that enable the Customers to reserve their vehicles anywhere and anytime due to the Car Rental System. Primarily, the car rental system serves people who require temporary vehicles without the need to go to the car rental center.

## Intended Audience and Reading Suggestions

This is a project for the advance software engineering subject, implemented under the supervision of college lecturers. This project is useful for Car rental centers and shops which can beneficial them in many aspects. This document comprises an overview description of the system. Also, the document will contain the features, user classes, design and implementation, and assumptions then follows by detailed explanation of the system’s features.

## Problem statement

A car rental is a car that may be rented for a fee and used for a specific time. Getting a rental car makes it easier for people to move around when they do not have access to their own car or do not own one at all. A person who needs transportation must go to rental car company or center and sign a contract. This method can be difficult and cost a lot of money because the costumer in first place does not have car, so the customer needs to use other ways to reach the rental car company or center without knowing if the car that customer need is available or not.

## Product Scope

These days, many companies and stores are looking for ways to make their services more accessible to users. Many companies tend to build applications to provide their services to their users. The car rental system facilitates the process of renting cars for the user. The car rental system will allow users to view different types of cars and some other details and can book the right car.  The car rental system will make it easier for the user to rent a car from anywhere and at any time, without the need to go to car rental centers, because the user will ensure that the car is available in advance. The user needs to go to the car rental center only when paying and receiving the previously selected car through the application. Other benefits of the car rental system are reducing pressure and congestion on centers, as well as abandoning paperwork that has many drawbacks, as all information will be saved in a database.

# [Methodology](https://docs.google.com/document/d/14jhqXjeIeI3JW3EDMeXhNAno18ft3lPb/edit#heading=h.3dy6vkm)

## Diagrams

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Figure 1: sequence diagram

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Figure 2: context diagram

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Figure 3: class diagram

Table

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Figure 4: Layered Architecture pattern

## Architectural designs overview

Diagram

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Figure 5: Activity diagram

## Technologies used in application

### Mit app inventor

MIT App Inventor is an integrated development environment that allows creating application software (applications) for the Android and iOS operating systems (OS). It’s a cloud-based tool, which means you can create apps for phones or tablets right on your web browser. For testing you can use Android phone, iPhone, or tablet for live testing, or the emulator.

We chose to use an Android app and test it with an emulator.

### Firebase Database

Firebase Realtime Database is a cloud hosted database. Data is stored in JSON format. Firebase deal with Apple and Android platforms and the JavaScript SDK. They are synced in real time so that each connected client can share a single Realtime Database instance and automatically receive updates with the latest data.

# Detailed Project Requirements

## Functional Requirements

### User Requirements

#### **Sign Up or log in**: This function will enable the user to create new account or enter an existing account. For creating new account, the user will be asked to enter a username and password.

#### **View and Rent**: This function will enable the user to view the cars that is available in the system and see some other details like the color, name, model, and price of renting the car for specific period. After that the user can rent the car by adding the mobile number to verify the reservation.

#### **Search for the reserve car**: This function will enable the user to see the reserve car, the user can search about the cars that have been reserved. The search done by writing the mobile number in the search page.

#### **Sign Up or log in for staff and admin:** This function will enable the staff to create new account or enter an existing account. By using this function, the admin can add or remove any car.

#### **Modify or cancel their reservation:** This function will enable the user to cancel or modify their reservation.

#### **View profile:** This function will enable the user to see the information that already taken such as: mobile number, the cars that have been rented, and other details.

### Hardware Requirements

#### **Mobile:** The mobile the user use should be connected to Wi-Fi.

#### **Mobile Number:** The user use should have mobile number to complete reservation.

#### **Mobile operating system:** The user should have a mobile has an android operating system.

## Non-functional Requirements

### Consistency

The application has a consistent color scheme, font size, and color.

### Reliability

The application will perform correctly all the time. all the generated result will be correct.

### Usability

The application has a flexible and responsive user interface that makes it easy to learn at short period of time.

### Availability

The application will be available all the time when there is an internet connection.

### Security

The application will be secure so that the user can put the personal information comfortably.

### Safety

The application will have low probability of system failure and risk tolerant.

# External Interface Requirements

## User Interfaces

First, the user interface will display a page for all users when they enter our application. This page will show a welcome phrase with a logo and a start button. After clicking the start button, the login/ signup page will appear. This page will ask the user to write his/her username and password if he/ she already has an account or the user will be asked to sign up (create a new account). Then, the user interface will display a page through which the user can view cars or search for the cars that have been rented. When the user clicks on View Cars, the user can see all the cars available for rent. With each car, there are three buttons, one to show more details about the car and the other to go to the next car and the last button is to go back to the main page. When the user clicks on search button, the user can search his/her rented car by entering mobile number. In addition, there will be a Help button that will appear on all pages to help users understand any of the requirements in the application. Furthermore, there will be a button to select the language and a button to select the currency. Finally, there will be a Contact us page through which the user can communicate with the admin and inquire about what he/she wants. The user interface will be straightforward and consistent, utilizing language that the application's targeted users are likely to be familiar with. To avoid the requirement for user training for infrequent users, the application will include a straightforward interface that is consistent with the standard interface.

## Hardware Interfaces

In our application, there will not be any extra hardware interface. We will use database which will have both structured and unsecured data, whereas structured data such as usernames, car names, and car prices, and unsecured data such as the images of cars and description of cars.

## Software Interfaces

Operating system: Android-based mobile operating system that runs the android applications.

Mobile application (car rental system): Where the users can create an account to be able to rent cars from the app. Also, car rental companies can put their cars' information to be rented.

Database (Firebase): Where all information about reservations, users, and cars will be stored.

## Communications Interfaces

As we have a Contact us page, the users can communicate with the admin by using their email address from the database to send messages to the admin email address. Also, the admin can send the users about their rental using their email from the database. The application will communicate with the database that contains information of all reservations, users, and cars.

# Application Interface



*Figure: Welcome page*

The application will start with a Welcome page, which displays welcome phrase with the logo of the app and Start button to go to the Login/ Signup page.

Graphical user interface, application

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*Figure: Login/ Signup page*

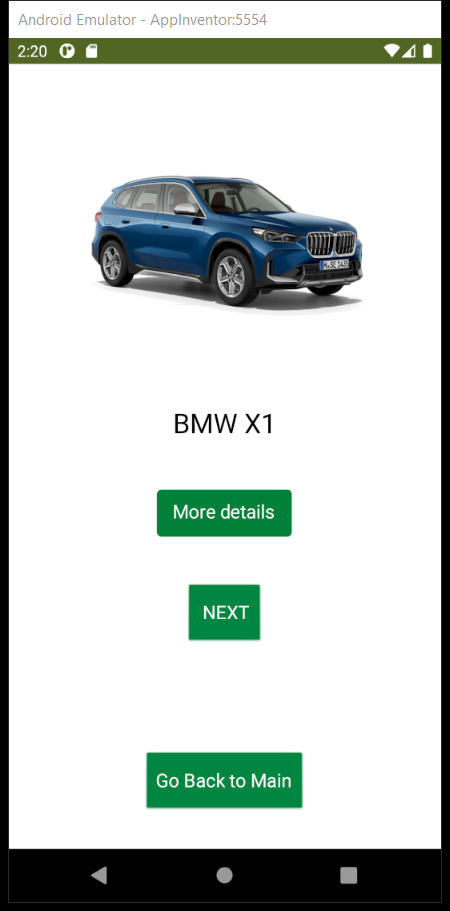
On the Login/ Signup page, the user will be asked to enter his /her name and password. If the user enters an incorrect name or password or enters an account that has not been previously registered and clicks on the Login button, a warning phrase will be displayed to inform the user about the mistake. But if the user enters a correct name and password, and clicks on the Login button, the page will go to the main page. While the user enters a name and password and presses the Signup button, a new account will be created for this user.

Graphical user interface, application, icon

Description automatically generated

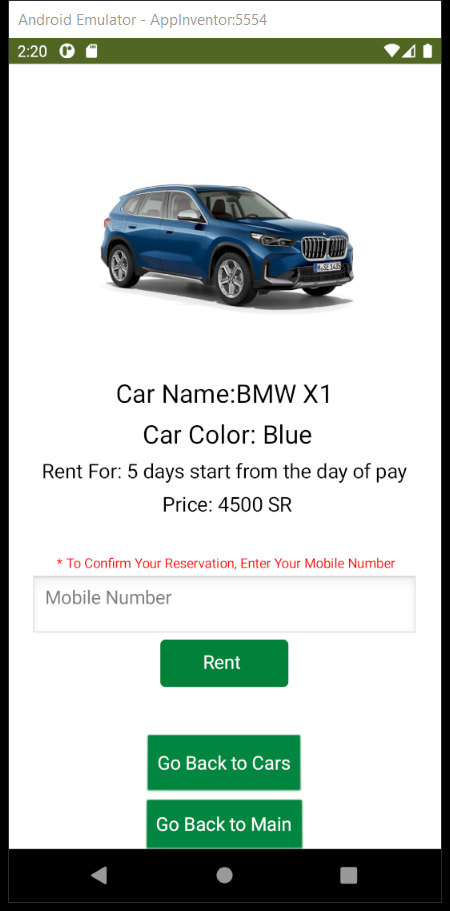
*Figure: The main page*

On the main page, there are two options for the user. The first option is View Cars, where the user can see or rent the available cars on the system. The second option is the Search button, where the user can search for his/her rent.



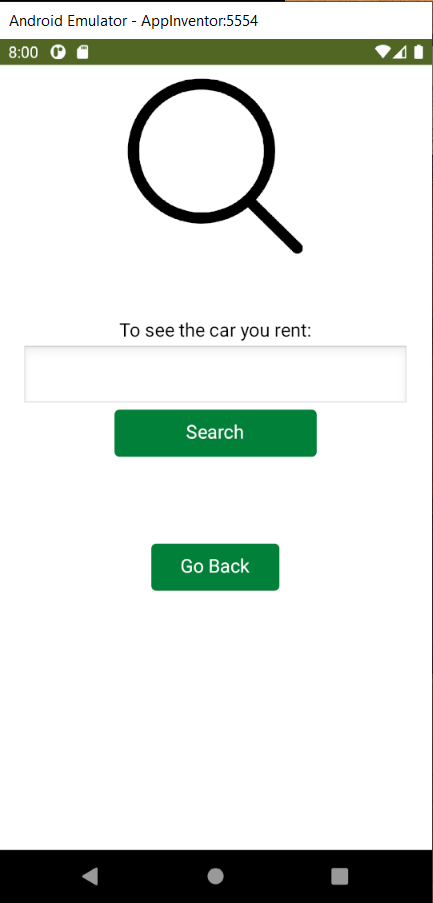
*Figure: The View Cars page*

On the View Cars page, the user can see all available cars. This page has three buttons, which are the More Details button, Next button, and Go Back to Main button. When the user clicks on the More Details button, he/ she can see more details about the car and can rent it. When the user clicks on the Next button, the page will move to the next car. When the user clicks on the More Go Back to Main button, the page will go back to the main page.



*Figure: The More Details page*

By clicking on the More Details button from the View Cars page, more details about the car will appear. In addition, the user can enter his/her phone number to rent the car. There are two buttons to go back from this page. One of them is the Go Back to Cars button, which will move the page to the View Cars page. The other one is the Go Back to Main button, which will move the page to the main page.



*Figure: The Search page*

By clicking on the Search button from the main page, the user will be able to search for his/ her rent. The user will be asked to enter his/ her phone number to search for the cars he/ she rented. If there are no cars reserved with that phone number, the warning message will appear to inform the user that there is no reservation for any car. Also, there is a Go Back button to move the page to the previous page.

# Conclusion

In conclusion to previous experiences, when every activity related to the vehicle rental business was restricted to a physical place everything was difficult. but with the internet's power has altered the nature of functions and how these tasks are accomplished. Customers can now by using car rental system book vehicles online, rent car online, so they only need to go to the office to pick up the car after making sure that the car is available in advance.

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