Project phase 1 (Database initial study)

Group 12

Car Rental Booking System

Introduction of Project Team Members:

Name & Surname	Contact Details	Photo	Position/Title
Neo Mokoena	+27 60 600 2590		- **Group leader** - Project Manager
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Name & Surname	Contact Details	Photo	Position/Title
Siboniso Sekute			-Data Analyst

1. **Company objectives**

The company requires a database that will support its day-to-day operations. Specific company objectives are:

- To organise vehicle maintenance and repairs more efficiently and to generate reminders for preventive maintenance to avoid breakdowns and ensure that vehicles are always available.
- To manipulate the available client data which in return the company can improve their customer services.
- To make the company system user friendly for the customers to rent cars.
- To set the system to automatically store information about bookings, reservations, payment history, etc. in order to help the company keep track of transactions.
- To secure all the data stored. Meaning protecting confidential information of both the company and the customers.

2. **Company operations**
    - Offer car rental services to customers.
    - Checking on which cars are available for rental.
    - Maintaining, cleaning and even buying new cars if needed to.
    - Processing rental contracts, including customer information, vehicle details, rental duration, and pricing.
    - Responding to customer inquiries on the rental process, the vehicles, and the policies of the company.
3. **Company's structure**

The company structure is hierarchical.

The Executive leadership team has:

- Chief Executive Officer
- Chief Financial Officer
- Chief Operations Officer

The Operations Department:

- Operations Manager
- Branch Managers

Finance and Accounting Department:

- Accountants
- Financial Analysts

Sales and Marketing Department:

- Sales Manager
- Marketing Manager

Human Resources Department:

- HR Manager
- Training Coordinator
- HR Assistants

Customer Service Department:

- Customer Service Representatives
- Call Centre Manager

4. Problems and constraints

The car booking system may face several problems and constraints and here are some of the problems and constraints:

- The company keeps information such as customer details, rental details, and documents as files in folders and uses Microsoft Excel to store cars' schedules. Because there is no database, data cannot be updated immediately.

- The data that the company stores can be accessed by any user, which is a risk to the security of customer data and the company's confidential information.

- The company still uses a paper rental form, then inputs the information from the forms into the computer, this can lead to data redundancy, data duplication and it wastes time.

- Rental results are calculated manually and this increases chances results in errors.

- Predicting user demand accurately is very hard. One of the possibilities is owning more cars than they are demanded and the other one is having less cars than they are demanded.

- Maintenance of the infrastructure supporting the booking system, servers, databases, etc costs money and time but have to be done

- Designing the system to scale efficiently tThe o handle increasing numbers of users and bookings without sacrificing performance or reliability is essential for long-term sustainability

- Maintenance of the infrastructure supporting the booking system, servers, databases, etc costs money and time.

- The demands of the customers, especially in a large area, is one of the biggest problems to be solved. For example when there are not enough cars to be booked that may lead to a frustration of clients and a loss of revenue opportunities.

5. Objectives to Solve Problems Identified

- The database system will let users search customer data by selecting good search criteria based on name, email and mobile number.

- With a database user access can be controlled, and arranged into various levels and access rights to make sure that only the authorised people have access to the data stored in the database.

- Customers will enter their data into the car rental online application and automatically stored into the database, this will reduce data redundancy and duplication and save time.

- The car rental results will be calculated automatically using the database and stored in the database

- Improve accessibility and user experience for customers in Mafikeng with limited access to technology by creating offline booking options and mobile-friendly interfaces to cater to customers without internet access, ensuring fair access to car rental services.

- Enhance vehicle security and customer safety, particularly in high-crime areas by deploying advanced security measures like GPS tracking, geofencing, and remote immobilisation capabilities to deter theft and promptly respond to security incidents, thereby boosting customer confidence and safeguarding vehicles.

- Ensure timely maintenance and minimise breakdowns by organising vehicle maintenance and repair schedules efficiently.

- Determining the optimal number of cars to maintain in the company in order to efficiently meet user demand, as well as prioritising the user experience by ensuring that users can easily find and reserve cars when needed. develop booking interfaces that are easy to use and provide real-time availability data.

6. Database Information Requirement

- Customer Data:
  Gather demographic details, contact information, and language preferences to offer personalised service aligned with Mafikeng's diverse cultural landscape.

- Vehicle Monitoring and Maintenance:
  Track vehicle usage patterns, maintenance schedules, and repair histories to ensure fleet reliability and safety amid Mafikeng's challenging road conditions and environmental factors.

- Security and Compliance Records:
  Maintain comprehensive records of security incidents, access control measures, and compliance reports to meet regulatory standards and address safety concerns in Mafikeng's high-crime areas

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- Booking records: recording every details regarding every reservation made via the system including the users id , all the details about the car such as the car plate number and also the pick up location and the destination to ensure that everything goes well since Mafikeng is not a fully developed area

7. **Database Scope**

Scope

- Design a centralised database system optimised for offline usage and mobile access, catering to customers with limited internet connectivity in remote Mafikeng areas

- The database system will handle everything involved in renting a car, like making reservations, keeping track of vehicles, managing customers, and handling payments.

- The database system will handle payments, make invoices and keep track of all transactions.

- The database system will keep the vehicles' maintenance records such as service date, repairs, inspections, and any corresponding expenses.

8. **Boundaries**

- To ensure customer privacy and confidentiality data privacy laws, such as the POPIA, act should be adhered in compliance with South Africa's regulatory standards

- Operational limitations such as poor internet connectivity, power outages should be accounted for when designing the database to ensure that it is reliable and functional when used in Mafikeng.

- The database should work within the company technological capabilities and infrastructure constraints, adapting solutions to accommodate factors like network bandwidth, hardware resources, and software compatibility specific to the company's environment.

- Optimise memory usage, ensure sufficient storage for data, and balance processing demands, to make make sure that resources such as memory, storage, and processing power are allocated efficiently within the database system

- Robust security measures should be implemented by defining user roles and permissions to restrict access based on need and encrypting sensitive data including when it is being transferred.

- The database should be designed so that it can be scaled seamlessly as data volume and user load increase

- Data backup and recovery mechanisms should be implemented to prevent data loss, by scheduling automated backups for the database and enabling restoring data to specific timestamps.

References

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