Introduction

We are basically attempting to construct a management system that connects the client and the provision of the automobile rental service in this car rental management project for our database final project. Our online car rental management system may relate to a collection of resources, personnel, and working methods. Managers at this level are primarily concerned with implementing and overseeing the organization's daily activities, hence the absence of management information systems exposed the business to danger. This is because given the multiple controls, continual monitoring, large amounts of data, and numerous controls, rapid reactions are necessary and effective and efficient information processing is essential.a visual display that depicts connections between individuals, objects, places, ideas, or events within an information technology (IT) system is called an entity relationship diagram (ERD), also known as an entity relationship model. and we employ SQL as a database language.

Abstract

customers will be able to make bookings for their cars from anywhere in the city thanks to the car rental system. Customers fill up their personal data on this application to supply information. Once a user has created an account on the website, they can make a car reservation. The suggested system is an online platform that is entirely integrated. It continues to simplify laborious operations. This automated method aids customers by letting them fill in the information as necessary. It contains information on the area and the kind of vehicle they want to rent. The system's goal is to create a website where users can make reservations for automobiles and service requests from any location in the city.

Objective

To carry out their jobs, our online vehicle rental management information system adds complexity, ambiguity, and the need for judgement, insight, and a sizable level of interpersonal skill.
Specific Goals - Our main objective is to create the database that will be used to store the vehicle, the client, and utilizing our database expertise, the system's booking data. As we have stated, the main goal of our system is to enhance the country's current data management system; however, for this project, we are only concentrating on one specific area in Addis Abeba.

Scope

The scope of our project, which is all about the car rental management system, is constrained because we are creating an online database system that requires electronics and internet access. As a result, we will only take into account the immediate vicinity of this city.
The system for renting automobiles should keep thorough records of the vehicles and the customers, including how long they rent a car for and what kind of car they rent. Small enterprises that offer customers car rentals will be the system's primary target audience. For each successful transaction, the system will be able to generate and print an invoice. Levels of Access: There will be two access tiers for the system.

Statement of the issue

Observations show that some small firms currently use a vehicle rental system that is not a web-based application. The current systems have a problem with this. This limitation enables them to keep customer information safe, but it also prohibits them from making their services more widely available online; as a result, they use posters to advertise their services to onlookers. By switching to their type of system on the web, these companies may address these problems. Additionally, they use telephone call reservations, which have less features than a web-based alternative.

The company's background and profile

The online vehicle rental management information system and Addis Abeba are crucial. One Travels is missing, resulting in complexity, ambiguity, and the need for decisions, understanding, and a considerable lot of interpersonal skill in order to carry out their duties. By centralizing the online database, integrating it in accordance with a business or end-user-defined topic area, and transferring ownership, the problem of database failure and business closure can be overcome. to the proprietors of the subject area. possess one, making their task challenging, uncertain, and labor-intensive because it required making judgement, having insight, and having interpersonal skills. The importance of information flows calls for a major focus on computer-dominated systems.
Lack of an online vehicle rental management information system at Africa One Travels adds complexity.

Our System's Conceptual and Logical Data Model

✓ The management system for our database implementation, which manages car rentals, will primarily be made up of ten entities.

1. Customer (Renter)
2. Orders/Bookings
3. Cars or Vehicles
4. Bill/Payments
5. Corporation itself (Admin)
6. Employee
7. Rental Duration as Weak Entity
8. Rental Agreement
9. Rental Duration as Weak Entity
10. Drive License

Each of these entities shall have specifying attributes and relationships with one another. For instance, let's us look at some
relationships between the entities:

- A customer will view vehicles available and will make a booking once they find their product of choice.
- a customer has its own driving license
- and also, customers are served by different employees
- An administrator (employee at the rental company) can also add vehicles, get payment from customer and can also provide a discount for customers.

Typically, after logging in, a customer should be able to see all of the rental cars that are available. A customer will book the particular vehicle they have selected once they have made up their minds. The consumer is required to pay the stipulated amount as soon as the admin authorises the booking. Here, a reduction might be applied. The consumer can pick up the car and return it by the due date when the payment has been made.

Other connections between entities:

o The customer makes a reservation and rents a car.
o An administrator offers a discount.
o An admin accepts a customer's reservation.
o Following app booking, a customer makes a payment.

Using these relationships among entities, we designed a logical approach of how to assign attributes to each specific entity
and assign their key type. The primary keys of all ten entities shall be:

A. Customer – Customer ID
B. Vehicle – Vehicle ID
C. Booking – Booking ID
D. Payment/Bill – Bill ID
E. Discount – Discount ID → as weak entity
F. Administrator – Admin ID
G. Employee – Employee ID
H. Rental Agreement – Agreement ID
I. Rental Duration – Agreement ID as Weak Entity
J. Drive License – License Number

Attributes and other details we gave to each entity is down below:

1. Customer

- a. Customer Name
  - i. First Name
  - ii. Middle Name
  - iii. Last Name
- b. Customer ID – Primary key
- c. Customer Address (Multi valued attribute)
  - i. House number
  - ii. Street
  - iii. City
- d. Customer phone number (multi-valued attribute)
- e. Customers email

2. Vehicle

- a. Vehicle Name
- b. Vehicle ID – Primary key
- c. Vehicle Make/Model
- d. Vehicle Type
- e. Booking status

3. Booking

- a. Start Date
- b. End date
- c. Customer-ID – Foreign key

4. Billing

- a. Bill number – Primary key
- b. Amount
- c. Due Date
- d. Customer-ID – primary key

5. Admin

- a. Admin Name
  - i. First Name
  - ii. Middle Name
  - iii. Last Name
- b. Admin ID
- c. Username
- d. Password

6. Discount

- a. Discount id – primary key
- b. Discount amount

7. Employee

- a. Employee name
- b. Employee ID
- c. Employee task

8. Driving License

- a. L-number – primary key
- b. Expiration

c. Level

9. **Rental Agreement**

a. Agreement id – primary key
b. Agreement date

10. **Rental Duration**

a. Maximum rental duration
b. Minimum rental duration
c. Agreement date – foreign key

- ✓ Vehicle viewed by in many customers (many to many relation)
- ✓ Vehicle updated by many admins (many to many relation)
- ✓ Rental agreement has one rental duration (many to one relation)
- ✓ Booking is made by one customer (many to many relation)
- ✓ Booking approves by one admin (many to one relation)
- ✓ Admin receives many bills (one to many relation)
- ✓ Admin hire many employees (one to many relation)
- ✓ The customer served by many employees (many to many relation)
- ✓ Customer makes many rental agreements (one to many relation)
- ✓ Customer has one driving license (one to one relation)
- ✓ Customer pays many bills (one to many relation)