Activity based

Database Management Systems

Lab Project

Submitted to Vishwakarma University, Pune

ATHARVA SHEVATE

SRN 202201727

Roll No : 02

Div : E E1

Second Year Engineering

Department of Computer Engineering

Faculty of Science and Technology

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Project Statement: Create a database system to manage car rentals including vehicleinvetory, rentalreservations, customerbookings, and rental agreements

FOR EFFECTIVE MANAGEMNENT WE USED THE FOLLOWING :

- **Stored Procedure:** A stored procedure can be created to automate tasks such as generating reports on employee attendance, calculating total hours worked, or updating employee records based on specific criteria.
- **Function:** A user-defined function can be developed to calculate overtime hours for employees based on predefined rules, providing a standardized method for determining overtime pay.
- **Trigger:** Triggers can be implemented to automatically update the attendance status of employees when they clock in or out, ensuring real-time tracking of attendance data and enabling immediate notifications for any discrepancies.
- **Views:** Views can be created to present summarized information such as total hours worked by each employee per week or month, facilitating easy access to essential data for management decision-making and analysis

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--StoredProcedure

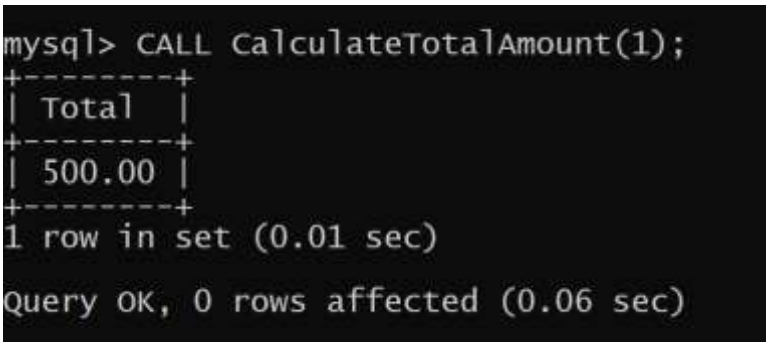
```
DELIMITER //

CREATE PROCEDURE CalculateTotalAmount(IN reservation_id INT)

BEGIN
   SELECT SUM(TotalAmount) AS Total
```

FROM RentalReservation

WHERE ReservationID = reservation_id; DELIMITER ;



-- Trigger

DELIMITER //

CREATE TRIGGER UpdateVehicleAvailability

AFTER INSERT ON RentalReservation

FOR EACH ROW

BEGIN

UPDATE VehicleInventory

SET Available = FALSE

WHERE VehicleID = NEW.VehicleID;

END //

DELIMITER ;

```
mysql> INSERT INTO RentalReservation (CustomerID, VehicleID, ReservationDate, ReturnDate, TotalAmount)
    -> VALUES (1, 2, '2024-05-20', '2024-05-25', 800.00);
Query OK, 1 row affected (0.36 sec)

mysql> select * from VehicleInventory;
+-----------+--------------+---------------+---------+-----------+
| VehicleID | VehicleModel | VehicleName   | Deposit | Available |
+-----------+--------------+---------------+---------+-----------+
|         1 | Sedan        | City Car      | 1000.00 |         1 |
|         2 | SUV          | Adventure SUV | 1500.00 |         0 |
|         3 | Truck        | Cargo Truck   | 2000.00 |         1 |
+-----------+--------------+---------------+---------+-----------+
3 rows in set (0.00 sec)
```

-- View

CREATE VIEW CustomerBookingDetails AS

SELECT c.CustomerID, c.Name, c.Address, c.ContactNo, r.ReservationID, r.ReservationDate, r.ReturnDate, v.VehicleModel, v.VehicleName

FROM Customer c

JOIN RentalReservation r ON c.CustomerID = r.CustomerID

JOIN VehicleInventory v ON r.VehicleID = v.VehicleID;

```
mysql> SELECT * FROM CustomerBookingDetails;
+------------+---------------+-----------------------------+-----------+---------------+-----------------+-----------+-----------+
| CustomerID | Name          | Address                     | ContactNo | ReservationID | ReservationDate | ReturnDate | VehicleMo
del | VehicleName   |
+------------+---------------+-----------------------------+-----------+---------------+-----------------+-----------+-----------+
|          1 | John Doe      | 123 Main St, Cityville, CA  | 555-1234  |             1 | 2024-05-01      | 2024-05-05 | Sedan
    | City Car      |
|          1 | John Doe      | 123 Main St, Cityville, CA  | 555-1234  |             5 | 2024-05-20      | 2024-05-25 | SUV
    | Adventure SUV |
|          2 | Jane Smith    | 456 Oak Rd, Townville, NY   | 555-5678  |             2 | 2024-05-03      | 2024-05-07 | SUV
    | Adventure SUV |
|          3 | Michael Johnson | 789 Pine Ave, Villageton, TX | 555-9012 |             3 | 2024-05-05      | 2024-05-09 | Truck
    | Cargo Truck   |
+------------+---------------+-----------------------------+-----------+---------------+-----------------+-----------+-----------+
4 rows in set (0.01 sec)
```

Conclusion :

The Car Rental System is a comprehensive database solution that utilizes triggers, views, and stored procedures to enhance functionality, streamline processes, and provide valuable insights into rental operations. Here are the key points of conclusion:

1. Enhanced Automation with Triggers:

- **Triggers have been employed to automate certain actions within the system. For example, the `UpdateVehicleAvailability` trigger automatically updates the availability status of vehicles in the inventory when new rental**

reservations are made. This ensures accurate and real-time availability tracking without manual intervention.

2. Simplified Data Retrieval with Views:

- **Views such as `CustomerBookingDetails` provide a simplified and consolidated view of customer booking information, including customer details, reservation details, and vehicle details. This facilitates easier data retrieval and analysis, improving the efficiency of rental management processes.**

3. Improved Functionality with Stored Procedures:

- **Stored procedures like `CalculateTotalAmount` offer a centralized way to perform common calculations or operations on the database. In this case, the procedure calculates the total amount for a given reservation ID, providing a convenient way to retrieve important financial information for rental transactions.**
