PRO CAR

Go like a PRO – Car Rental Service

**Relational Database Management System
Project Report**

MIS 6326 Database Management

Summer 2015

Submitted to:

Professor Young U. Ryu

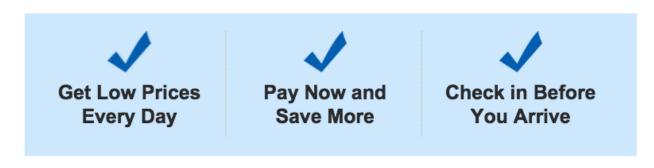**Submitted by:**

Sucheth Renuka Prasad

Contents

1. Problem Description:

PRO CAR is car rental service which provides unique benefit to the customers to rent a car as their heart desires and gives an opportunity of crowd source to provide a car for rent. Weather renting a car for a vacation or for business enterprise, Pro Car has wide range of sports, luxury and hybrid vehicles to meet the every car rental need. Moto of the company is to provide hassle free check in and check out time to satisfy the needs of the customer and make the ride delightful.

Pro Car has a unique benefit of crowd source the cars to rent; connecting people who want to rent a car and people who provides a car on rent. Pro Car thrives on customer satisfaction and building long term relationship with the customer and guarantees best price in the market by reducing the intermediaries. Pro Car also provides convenience benefit and is available in all the parking lots of the malls across the Dallas Fort Worth Area where the customer can drive away any car like a PRO. Adding electronic channel to avail the service provides possession utility and time utility where customer can access the service 24*7 all over the year.

The target market for Pro Car is international students who do not own a car and visitors to the city who would want to explore around the city and part time workers, employees who have been reallocated overseas for short duration who would want to rent out their car.

The company's mission is to help customers pick any car in the lot and drive away like a professional. The company has approximately 6000 customers, and an average of 50 membership applications to provide car on rent per day. The current process of entering, maintaining and purging manual paper process needs to be automated to providing competitive edge for the company. To meet the ever increasing customer demand and provide best service quality for which the company stands a relational database is to be implemented. Relational database besides storing database also helps track customer reservations, date reserved, types of cars available and the location of the car.

Get Low Prices Every Day   **Pay Now and Save More**   **Check in Before You Arrive**

2. Database Tables:

The database consists of 9 tables which are closely related to each other and contain crucial information for the business of the Pro Car, all the tables provide an ease to manage inventory and transaction details for Pro Car. The integrated database enables execution of dynamic query and provide optimization.

Customer Table

Customers are central for the business and for our business transactions. This table contains all important information about the customer such as customer name, contact details and address information. The customer id consists of six alpha numeric code. The first two digits will be first two letters of customer's last name, the next two digits will be month of date of birth and the last two digits will be first two digits of license number.

Table #1	Customer			
Serial No.	**Field**	**Description**	**Data Type**	**Remarks**
1	**Customer_ID (PK)**	ID to identify single customer	Varchar(6)	Primary Key
2	Cust_First_Name	Customer's first name	Char(20)	Required
3	Cust_Middle_Name	Customer's middle name	Char(20)	Optional
4	Cust_Last_Name	Customer's last name	Char(20)	Required
6	Cust_Addr_1	Street address line 1	Char(30)	Required
7	Cust_Addr_2	Street address line 2	Char(30)	Required
8	**Zip (FK)**	Zip code	Number	Foreign key references Location table
9	Cust_Licence_No	License number	Number	Required
10	Cust_Licence_Expiry_Date	License Expiry date	Date/Time	Required
11	Cust_Licence_Issue_State	State of License Issue	Char(20)	Required
12	Insurance_No	Insurance number	Number	Required
13	Insurance_Expiry_Dt	Insurance expiry date	Number	Required

Car Details

The car details table beacons on the information and type of the car. Each car is given an identification number as Car_ID which will be primary key for the table. The key is a four digit number that is auto generated. Car details provide wide range of options for the customer to pick from.

Table #2	Car_Details			
Serial No.	Field	Description	Data Type	Remarks
1	**Car ID (PK)**	An ID to uniquely identify the car	Number	Primary key
2	**Owner_ID (FK)**	Owner's ID from Owner table	Number	Foreign key references Car Owner table
3	Car_Registration_No	Registration number for the car	Number	Required
4	Car_Year	Year of manufacture	Number	Required
5	Car_Model	Model of the car	Varchar(10)	Required
6	Car_Type	Type of the car	Varchar(10)	Required
7	Car_Color	Color of the car	Char(10)	Optional
8	Fuel_Economy	Fuel consumption of the car	Number	Optional
9	Date_Added	Date the car was added to the inventory	Date/Time	Required
10	Passenger_Capacity	Capacity of the car	Number	Optional
11	Insurance_No	Insurance number	Number	Required
12	Insurance_Expiry_Date	Expiry date for insurance	Date/Time	Required

Booking Details Table

As the name indicates, this table consists of booking details of the service and comprises of all the important booking information such as car identification number, rate associated with the car_id and pickup time and return time mapped to customer identification number. When the customer makes a transaction, a unique booking id will be generated as primary key for the table. Booking details acts like a receipt to the service.

Table #3	Booking_Details			
Serial No.	Field	Description	Data Type	Remarks
1	**Booking_ID (PK)**	Booking Identification number	Number	Required
2	**Customer_ID (FK)**	Customer Identification number	Varchar(6)	Foreign key references customer table
3	**Car_ID (FK)**	Car Identification number	Number	Foreign key references car details
4	Pickup_DateTime	Date and Time from of the service	Date/Time	Required
5	Return_DateTime	Date and Time till the end of the service	Date/Time	Required
6	Transaction_ID (FK)	Transaction Identification number	Number	Foreign key reference Payment table

Payments

One of the critical table involving financials, the payment table consist of unique primary identification number as a transaction id, and identifies each transaction. The attribute card type is used to determine which type of card the customer uses to make a payment. Payment table is linked to the Booking table.

Table #4	Payments			
Serial No.	Field	Description	Data Type	Remarks
1	**Transaction_ID**	Transaction identification number	Number	Primary Key
2	Card_Holder_Name	Billing name	Char(50)	Required
3	Card_Type	Type of the card	Char(10)	Required
4	Card_Number	Number of the car	Number	Required
5	Card_Expiry_Date	Expiry date of the card	Date/Time	Required
6	**Zip (FK)**	Zip Code	Number	Foreign key references Zip table
7	Amount	Charges for service	Currency	Required
8	Payment_DateTime	Date and Time associated with payment	Date/Time	Required

Rates

Gives the tariffs for various options to rent a car, Rates are aligned with business strategy to provide best price for the customers and for the clients who provide their car on rent, the rates are provided on the daily basis and prices are strategized to provide competitive edge to the customers to rent a car and at the same time help car owners. Primary key is the combination of 2 entities Last modified date and time and car id.

Table #5	Rates			
Serial No.	Field	Description	Data Type	Remarks
1	**Car_ID (PK) (FK)**	Car identification number	Number	Primary key which is also a foreign key references car details
2	**Last_Modified_Date (PK)**	Denotes the date and time when the changes to the price was made	Date/Time	Primary key
3	Daily_Rate	Rate provided on daily basis	Currency	Required

Availability

This table gives available options for the customers to choose from while booking a car. Availability table reflects product line and product depth of Pro Car, in general availability table gives information about the details of the car and the time slot and duration as to how long a particular car is available for.

Table #6	Availability			
Serial No.	Field	Description	Data Type	Remarks
1	**Slot_ID (PK)**	Slot Identification number	Number	Primary key
2	**Car_ID (FK)**	Car Identification Number	Number	Foreign key references Car Details
3	DateFrom	Date / Time service is available from	Date/Time	Required
4	DateTo	Date/ Time service is available to	Date/Time	Required
5	Availability	Status	Char(1)	Required

Feedback

Long term relationship with the customer leads to success of the firm, feedback table is essential for the growth of business and to provide impeccable service quality.   Feedback table consists of primary key which is foreign key referencing from booking table. This table helps capture all overall rating of the service and facility to provide additional suggestions and comments for the customers.

Table #7	Feedback			
Serial No.	Field	Description	Data Type	Remarks
1	**Booking_ID (PK) (FK)**	Booking Identification number	Number	Primary Key which is also a foreign key references Booking Table
2	DateTime	Date and Time	Date / Time	Required
3	Car_Rating	Rating of the car	Number	Required
4	Booking_Experience_Rating	Rating of the service	Number	Required
5	Price_Rating	Rating of the price	Number	Required
6	Overall_Rating	Overall rating of the experience	Number	Required
7	Additional_Comments	Suggestions and Comments	Char(50)	Required

Car Owners

The fundamental concept of Pro Car business model is to facilitate Car Owners to rent their cars and provide an opportunity to the customers who want to rent a car. Pro Car bridges the needs, wants and the desires of the customers. Owners_ID a four digit numeric code becomes a primary key.

Table #8	Car_Owners			
Serial No.	Field	Description	Data Type	Remarks
1	**Owner_ID (PK)**	Owner Identification type	Number	Primary Key
2	Owner_License_No	License Number	Number	Required
3	Owner_First_Name	Owner's First name	Char(20)	Required
4	Owner_Last_Name	Owner Last Name	Char(20)	Required
5	Owner_Addr_1	Owner Address Line 1	Char(20)	Required
6	Owner_Addr_2	Owner Address Line 2	Char(20)	Required
7	**Zip (FK)**	Zip code	Number	Foreign key references of Zip Table
8	Date_Added	Date/Time	Date/Time	Required

Location

The location table is an essential table to track the city and state details for all the transaction and payment details.   Zip code will be unique identification number of the table.

Table #9	Locations			
Serial No.	Field	Description	Data Type	Remarks
1	**Zip (PK)**	Zip code of the location	Number	Primary key of the table
2	City	City	Char(10)	Required
3	State	State	Char(10)	Required
4	Country	Country	Char(10)	Required

3. Entity Relationship Diagram

Availability

PK	Slot_ID
	Date From
	Date To
	Available_YN
FK1	Car_ ID

Car Details

PK	Car_ID
	Car_Registration_No
	Car_Year
	Car_Model
	Car_Type
	Car_Color
	Fuel_Economy
	Date_Added
	Passenger_Capacity
	Insurance_No
	Insurance_Expiry_Dt
FK1	Owner_ID

Feedback

PK,FK1	Booking_ID
	DateTime
	Car_Rating
	Booking_Experience_Rating
	Price_Rating
	Overall_Rating
	Additional_Comments

Booking Details

PK	Booking_ID
	Pickup_DateTime
	Return_DateTime
	Rate_Type
FK1	Customer_ID
FK2	Car_ ID
FK3	Transaction_ID

Customer

PK	Customer_ID
	Cust_First_Name
	Cust_Middle_Name
	Cust_Last_Name
	Cust_DOB
	Cust_Addr_1
	Cust_Addr_2
FK1	Zip
	Cust_Licence_No
	Cust_Licence_Expiry_Dt
	Cust_Licence_Issue_State
	Insurance_No
	Insurance_Expiry_Dt

Rates

PK	Last_Modified_DateTime
PK,FK1	Car_ID
	Daily_Rate

Payments

PK	Transaction_ID
	Card_Holder_Name
	Card_Type
	Card_Number
	Card_Expiry_Dt
FK1	Zip
	Amount
	Payment_DateTime

Car Owners

PK	Owner_ID
	Owner_License_No
	Owner_First_Name
	Owner_Middle_Name
	Owner_Last_Name
	Owner_Addr_1
	Owner_Addr_2
FK1	Zip
	Date_Added

Location

PK	Zip
	City
	State
	Country

4. Data Input Screen Printout

- Admin_navigation
- Booking_DetailsForm
- Car_Details subform
- Car_DetailsForm
- Car_Owner
- CustAvailabilityForm
- Customer_navigation
- CustomerForm
- FeedbackForm
- LocationForm
- Payments subform
- Main_menu
- PaymentsForm
- RatesForm
- ReportForm

Admin_navigation

Car_Owner

Car Details

ADMIN OPERATIONS

| Car Owner |
| Car Details |
| Rates |
| Customer |
| Location |
| Availability |

Car_Details

Car ID	1	Fuel Economy	0
Registration No	645123456	Date Added	12/1 /2009
Model	COROLLA	Passenger Capacity	5
Year	2009	Insurance No	4561239
Type	SEDAN	Insurance Expiry Date	12/12/2018
Color	WHITE	Owner ID	2

LOAD   DELETE   UNDO   EXIT

Record: 1 of 4   No Filter   Search

Rates

ADMIN OPERATIONS

| Car Owner |
| Car Details |

| Location |
| Availability |

Rates

Date	8 /7 /2015
Car_ID	3
Daily_Rate	$90.00

LOAD   DELETE   UNDO   EXIT

Record: 1 of 2   No Filter   Search

Customer

| Car Owner |
| Car Details |
| Rates |
| Customer |
| Location |
| Availability |

Customer

Customer_ID	1	Cust_License_No	789546213
Cust_First_Name	SUCHETH	Cust_License_Expiry_Date	12/12/2020
Cust_Middle_Name	RENUKA	Cust_License_Issue_State	TEXAS
Cust_Last_Name	PRASAD	Insurance_No	357159654
Cust_Addr_1	7825 NORTH STREET	Insurance_Expiry_Dt	12/12/2020
Cust_Addr_2	APT 1509		
Zip	75080		

LOAD   DELETE   UNDO   EXIT

Record: 1 of 1   No Filter   Search

Location

| Car Owner |
| Car Details |
| Rates |
| Customer |
| Location |
| Availability |

Location

ZIP	75080
City	richardson
State	texas
Country	USA

LOAD   DELETE   UNDO   EXIT

Record: 1 of 5   No Filter   Search

Availability

ADMIN OPERATIONS

| Car Owner |
| Car Details |
| Rates |
| Customer |
| Location |
| **Availability** |

Availability

Date_from   1 /3 /2015

Date_to   1 /4 /2015

Availability ☑

Car   2 ▾

[LOAD] [DELETE] [UNDO] [EXIT]

Record: I◄ ◄ 1 of 2 ► ►I ►⊞ No Filter Search

Booking

PRO CAR RENTAL SERVICE

| Booking |
| Payment |
| Feedback |

Booking_Details

Booking ID   5

Pickup Date_Time 1/3/2015

Return Date_Time 1/4/2015

Customer ID   1 ▾

Car ID   2 ▾

Availability

Car_ID	Date_from	Date_to	Availability
2	1 /3 /2015	1 /4 /2015	☑
4	1 /5 /2015	1 /6 /2015	☑

[LOAD] [DELETE] [UNDO] [EXIT]

Record: I◄ ◄ 1 of 1 ► ►I ►⊞ No Filter Search

Payment

Feedback

5. Sample Reports

- Reports
- Car Details
- Car Owner
- Customer
- Payments
- Rates

Reports

REPORTS

Availability	Car_Details	Car_Owner	Customer	Payments	Rates

Availability

Car_ID	Date_from	Date_to	Availability
1	1 /4 /2015	1 /5 /2015	☑
2	1 /3 /2015	1 /4 /2015	☑
3	1 /3 /2015	1 /3 /2015	☑
4	1 /5 /2015	1 /6 /2015	☑

Car Details

REPORTS

Availability	Car_Details	Car_Owner	Customer	Payments	Rates

Car_Details

Car_Registration_No	Car_Year	Car_Model	Car_Type	Car_Color	Fuel_Economy	Passenger_Capacity	Insurance_No	Insurance_Expiry_Date
645123456	2009	COROLLA	SEDAN	WHITE	12	5	4561239	12/12/2018
3581595	2008	FORD	SEDAN	BLACK	15	5	35621978	12/21/2019
465879465	2009	nissan	sedan	white	16	4	789546123	12/12/2015
978765415	0	Camry	Sedan	Black	17	4	214587965	12/12/2018

Friday, August 7, 2015   Page 1 of 1

Car Owner

| Availability | Car_Details | Car_Owner | Customer | Payments | Rates |

Car_Owner

nse_No	Owner_First_Name	Owner_Last_Name	Owner_Addr_1	Owner_Addr_2	Zip
######	TOM	HANKS	7520 Driveway Blvd	Courts	75253
######	JIM	JHONSON	8794 MALABU	NORTH STREET	90209
######	nitesh	garg	7825 MaCallum	dallas	75080
######	Riya	Sen	8523 McCallum	Dallas	75080

Friday, August 7, 2015   Page 1 of 1

Payments

| Availability | Car_Details | Car_Owner | Customer | Payments | Rates |

Payments

Transaction_ID	Card_Holder_Name	Card_Type	Amount	Payment_Date/Time
1	Nitesh Garg	Visa	$20.00	8/7/2015

Friday, August 7, 2015   Page 1 of 1

Rates

| Availability | Car_Details | Car_Owner | Customer | Payments | Rates |

Rates

Car_ID	Daily_Rate	Last_Modified_Date
3	$90.00	8 /7 /2015
4	$60.00	8 /7 /2015

Customer

REPORTS

| Availability | Car_Details | Car_Owner | **Customer** | Payments | Rates |

Customer

Customer_ID	Cust_First_Name	Cust_Last_Name	Cust_Addr	Cust_License_No	Insurance_No
1	SUCHETH	PRASAD	7825 NORTH STREET	789546213	357159654
2	Nitesh	Garg	75252 McCallum	8457965	58421555
3	Riya	Bebot	75253 McCallum	874599	3214458

Friday, August 7, 2015   Page 1 of 1