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The opening of the A+ Rental Company in Los Angeles, CA needs a solution for the management of the activities coming from customers renting vehicles. A custom made SQL Server database is one solution for this business. This database will store and use the data contained in the database tables for searching in the inventory available vehicles for renting.

There is a table to store the history of rented vehicles and a table for the currently rented vehicles. After the rented vehicle is returned, a new record is to be added in the history table to store the information related to that rental transaction. Once the record is recorded in the history table, the record of the vehicle returned must be deleted from the rented table.

The list of the tables for this database is the following:

|  |  |
| --- | --- |
| 1. CUSTOMER | 1. ADDRESS |
| 1. CITY | 1. STATE |
| 1. INVENTORY | 1. VEHICLE |
| 1. RENTED | 1. HISTORY |

The database APLUS is composed with the following tables and columns:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | CUSTOMER | |  |  | ADDRESS | |  |
| PK | CUST\_ID | INT |  | PK | ADDRESS\_ID | INT |  |
|  | CUST\_FIRST\_NAME | VARCHAR(50) |  |  | ADDRESS\_STREET | VARCHAR(80) |  |
|  | CUST\_LAST\_NAME | VARCHAR(50) |  | FK | ADDRESS\_CITY | SMALLINT |  |
|  | CUST\_MOBILE | INT |  | FK | ADDRESS\_STATE | SMALLINT |  |
|  | CUST\_HOME | INT |  |  | ADDRESS\_ZIP\_CODE |  |  |
| FK | CUST\_ADDRESS\_ID | INT |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | CITY | |  |  | STATE | |  |
| PK | CITY\_ID | SMALLINT |  | PK | STATE\_ID | SMALLINT |  |
|  | CITY\_NAME | VARCHAR(50) |  |  | STATE\_NAME | VARCHAR(50) |  |
|  | CITY\_NOTES | VARCHAR(80) |  |  | STATE\_NOTES | VARCHAR(80) |  |
|  |  |  |  |  |  |  |  |
|  | INVENTORY | |  |  | VEHICLE | |  |
| PK | INV\_ID | INT |  | PK | VEHICLE\_ID | INT |  |
|  | INV\_VIN | VARCHAR(20) |  |  | VEHICLE\_TYPE | VARCHAR(10) |  |
|  | INV\_ADQUISITION | DATE |  |  | VEHICLE\_COLOR | TINYINT |  |
|  | INV\_LIC\_PLATES | VARCHAR(10) |  |  | VEHICLE\_DOORS | TINYINT |  |
|  | INV\_AVAILABLE | BIT |  |  | VEHICLE\_CAPACITY | TINYINT |  |
|  |  |  |  |  |  |  |  |
|  | RENTED | |  |  | HISTORY | |  |
| PK | RENT\_ID | INT |  | PK | HISTORY\_ID | INT |  |
|  | RENT\_DATE | DATE |  |  | HISTORY\_RENTED | DATE |  |
| FK | RENT\_VEHICLE\_ID | INT |  |  | HISTORY\_RETURNED | DATE |  |
| FK | RENT\_CUST\_ID | INT |  | FK | HISTORY\_VEHICLE\_ID | INT |  |
|  |  |  |  | FK | HISTORY\_CUST\_ID | INT |  |
|  |  |  |  |  |  |  |  |

The table CUSTOMER stores the personal information of customers like: names, phone numbers, and address. The table ADDRESS keeps the addresses of customers, and the tables CITY, and STATE stores the cities and states names. The table INVENTORY keeps all the vehicles in the company with the Vehicle Identification Numbers, license plates, and a column to state the status of the vehicle: if it is rented or available.

Next is a list of relations between foreign keys and tables:

CUST\_ADDRESS\_ID references the ADDRESS\_ID primary key

ADDRESS\_CITY references the CITY\_ID primary key

ADDRESS\_STATE references the STATE\_ID primary key

INV\_ID references VEHICLE\_ID primary key

RENTED\_VEHICLE\_ID references INV\_ID primary key

RENTED\_CUST\_ID references CUST\_ID primary key

HISTORY\_ID references RENTED\_ID primary key

HISTORY\_VEHICLE\_ID references VEHICLE\_ID

HISTORY\_CUST\_ID references CUST\_ID

Here are some column data examples:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  | CUSTOMER |  | CITY |
|  | CUST\_ID | 1000 | CITY\_ID | 10 |
|  | CUST\_FIRST\_NAME | JOHN | CITY\_NAME | SOUTH SALT LAKE |
|  | CUST\_LAST\_NAME | DOW | CITY\_NOTES |  |
|  | CUST\_MOBILE | 4351003000 |  |  |
|  | CUST\_HOME | 4352004000 |  |  |
|  | CUST\_ADDRESS\_ID | 1 |  |  |
|  |  |  |  |  |
|  | CUST\_ID | 2000 | CITY\_ID | 11 |
|  | CUST\_FIRST\_NAME | JANE | CITY\_NAME | NORTH SALT LAKE |
|  | CUST\_LAST\_NAME | DOW | CITY\_NOTES |  |
|  | CUST\_MOBILE | 8015486000 |  |  |
|  | CUST\_HOME | 8018342208 |  |  |
|  | CUST\_ADDRESS\_ID | 2 |  |  |
|  |  |  |  |  |
|  |  | ADDRESS |  | STATE |
|  | ADDRESS\_ID | 1 | STATE\_ID | 39 |
|  | ADDRESS\_STREET | 934 STATE STREET | STATE\_NAME | UTAH |
|  | ADDRESS\_CITY | 10 | STATE\_NOTES |  |
|  | ADDRESS\_STATE | 39 |  |  |
|  | ADDRESS\_ZIP\_CODE | 84120 |  |  |
|  |  |  |  |  |
|  | ADDRESS\_ID | 2 | STATE\_ID | 39 |
|  | ADDRESS\_STREET | 1800 CHIPETA WAY | STATE\_NAME | UTAH |
|  | ADDRESS\_CITY | 11 | STATE\_NOTES |  |
|  | ADDRESS\_STATE | 39 |  |  |
|  | ADDRESS\_ZIP\_CODE | 84123 |  |  |
|  |  |  |  |  |
|  |  | INVENTORY |  | VEHICLE |
|  | INV\_ID | 1 | VEHICLE\_ID | 1 |
|  | INV\_VIN | 4UN829406X45 | VEHICLE\_TYPE | 1 |
|  | INV\_ADQUISITION | 7/21/2015 | VEHICLE\_COLOR | SILVER |
|  | INV\_LIC\_PLATES | MJB 621 | VEHICLE\_DOORS | 4 |
|  | INV\_AVAILABLE | 0 | VEHICLE\_CAPACITY | 5 |
|  |  |  |  |  |
|  | INV\_ID | 2 | VEHICLE\_ID | 2 |
|  | INV\_VIN | 1XD243958M31 | VEHICLE\_TYPE | 5 |
|  | INV\_ADQUISITION | 7/28/2015 | VEHICLE\_COLOR | BLUE |
|  | INV\_LIC\_PLATES | WOW 297 | VEHICLE\_DOORS | 5 |
|  | INV\_AVAILABLE | 0 | VEHICLE\_CAPACITY | 5 |
|  |  |  |  |  |
|  |  | RENTED |  | HISTORY |
|  | RENT\_ID | 1 | HISTORY\_ID |  |
|  | RENT\_DATE | 3/22/2016 | HISTORY\_RENTED |  |
|  | RENT\_VEHICLE\_ID | 1 | HISTORY\_RETURNED |  |
|  | RENT\_CUST\_ID | 1 | HISTORY\_VEHICLE\_ID |  |
|  |  |  | HISTORY\_CUST\_ID |  |
|  |  |  |  |  |
|  | RENT\_ID | 2 | HISTORY\_ID |  |
|  | RENT\_DATE | 4/1/2016 | HISTORY\_RENTED |  |
|  | RENT\_VEHICLE\_ID | 2 | HISTORY\_RETURNED |  |
|  | RENT\_CUST\_ID | 2 | HISTORY\_VEHICLE\_ID |  |
|  |  |  | HISTORY\_CUST\_ID |  |
|  |  |  |  |  |

Because the two vehicles of the company are rented then there are no records in the table HISTORY. As soon as each vehicle is returned, the information of that record in the table RENTED will be saved in the table HISTORY, and immediately after erased from the table RENTED.