**Assessment:** Assignment 02

**Student Names:** Suraj Mittal, Jay Patel

**Professor Name:** Roly Roy

**Lab Section:** 301

**Due Date:** 6 August 2021

**Business Rules | Milestone**

**Assignment 2 – Database Design**

**Student Names**

* Jay Patel
* Suraj Mittal

**Abstract**

In this assignment, Database is created for a Rental Company which provide rental car and accommodation. There are 4 entities in this database **Customer\_Details, Rental\_information, Cars\_t, Payment\_t, Branch\_t.** Each entities holds information regarding its name, for example, Customer\_Details entity will have customer full name, mobile number, address, e-mail address and ID-proof.

**Constraints/Business Rules**

The constraints in the assignment are as follow:

1. Cust\_ID as Primary Key in Customer\_Details table.
2. Rnt\_ID as Primary Key in Rental\_Information table.
3. Cust\_ID as Foreign Key in Payment\_t table referencing to Cust\_ID in Customer\_Details table.
4. Car\_ID as Foreign Key in Branch\_t Table referencing to Car\_ID in Car\_T table.
5. Car-ID as Primary Key in Car\_T table.
6. Payment\_ID as Primary Key in Payment\_T table.
7. Rnt\_ID as Foreign Key in Cars\_t table referencing to Rnt\_ID in Rental\_Information table.
8. Branch\_ID as Primary Key in Branch\_T table.
9. Rental\_Information can have one and only one Customer\_Details.
10. Customer\_Details can have 1 to many Payment\_t.
11. Payment\_t can have one and only one Customer\_Details
12. Payment\_t can have only one and only one Rental\_Information and vice-versa.
13. Rental\_Information can have one to many Cars\_t.
14. Cars\_t can have one to many Rental\_Information.
15. Rental\_Information can have one and only one Cars\_t.
16. Branch\_t can have one to many Cars\_t.
17. Cars\_t can have one and only one Branch\_t.

**Entities**

Database Name: Rental\_cars\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Revision: 1

Date: 2021-07-16

Authors: Suraj Mittal, Jay Patel

|  |  |  |
| --- | --- | --- |
| **Entity Name** | **Entity Type** | **Relates to** |
| **Customer\_Details** | Table |  |
| **Rental\_Information** | Table | Payment\_t |
| **Cars\_t** | Table | Rental\_information |
| **Branch\_t** | Table | Cars\_t |
| **Payment\_t** | Table | Customer\_Details |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Notes:

**Entity Details**

## **Fields form – Customer\_Details**

**Database Name: Rental\_cars**  **Revision: 1.0**

**Entity Name: Customer\_Details** **Date: 2021-07-16**

**Author:** Jay Patel

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data type** | **Field Properties** | **Relates to** |
| **Cust\_ID** | Integer | Primary key |  |
| **Cust\_FirstName** | Varchar(30) | Not Null |  |
| **Cust\_LastName** | Varchar(30) | Not Null |  |
| **Cust\_MobileNo** | Integer | Not Null |  |
| **Cust\_EmailAddress** | Varchar(50) | Null |  |
| **Cust\_LicenceNo** | Integer | Not NULL |  |

**Notes:**

1. **Field form – Rental\_Information\_t**

Database Name: \_\_Rental Cars\_\_\_\_\_\_\_ Revision: \_\_\_1\_\_\_\_\_\_\_\_\_\_\_\_

Entity Name: Rental\_Information\_T Date: \_16 July 2021\_\_\_\_

Author: \_\_Jay\_Patel\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data type | Field Properties | Relates to |
| Rnt\_ID | Int | Primary key, surrogate key |  |
| Rnt\_PickupDate | Date | Not Null |  |
| Rnt\_ReturnDate | Date | Not Null |  |
| Rnt\_InitialMeterReading | Integer | Not Null |  |
| Rnt\_FinalMeterReading | Integer | Not Null |  |
| Rnt\_ChangesPerMile | Integer | Not Null |  |
| Payment\_ID | Integer | Not Null | Payment\_t |

## **Field form – Cars\_t**

**Database Name: Rental\_cars**  **Revision: 1.0**

**Entity Name: cars\_t**   **Date: 2021-07-16**

**Author:** Suraj Mittal

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data type** | **Field Properties** | **Relates to** |
| **Car\_ID** | Integer | Primary Key, Surrogate Key |  |
| **Car\_Model** | VARCHAR2(30) | Not Null |  |
| **Car\_Make** | VARCHAR2(25) | Not Null |  |
| **Car\_InsuranceNo** | Integer | Not Null |  |
| **Car\_NumberPlate** | VARCHAR2(10) | Alternate Key |  |
| **Car\_Availability** | Char(3) | Not Null |  |
| **Rnt\_ID** | Integer | Not Null | Rental\_Information |
|  |  |  |  |
|  |  |  |  |

**Notes:**

## **4 Fields Form – Payment\_t**

**Database Name: Rental\_cars**  **Revision: 1.0**

**Entity Name: Payment\_t**  **Date: 2021-07-16**

**Author:** Suraj Mittal

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data type** | **Field Properties** | **Relates to** |
| **Payment\_ID** | Integer | Primary key, surrogate key |  |
| **Payment\_date** | Date | Not Null |  |
| **Payment\_amount** | Integer | Not Null |  |
| **Payment\_mode** | VARCHAR(10) | Not Null |  |
| **Cust\_ID** | Integer | Not Null | Customer\_Details |
|  |  |  |  |
|  |  |  |  |

**Notes**

## **5 Fields form – Branch\_T**

Database Name: \_\_Rental Cars\_\_\_\_\_\_\_ Revision: \_\_\_1\_\_\_\_\_\_\_\_\_\_\_\_

Entity Name: \_Branch\_t Date: \_16 July 2021\_\_\_\_

Author: \_\_Jay\_Patel\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data type | Field Properties | Relates to |
| Branch\_ID | Int | Primary key, surrogate key |  |
| Branch\_Name | Varchar(50) | Not Null |  |
| Branch\_Address | Varchar(200) | Not Null |  |
| Car\_ID | Integer | Not Null | Cars\_t |
|  |  |  |  |
|  |  |  |  |

**ER Diagram**

**Graphical user interface, application, table

Description automatically generated**

**Basic ERD**

**Diagram

Description automatically generated**

**DDL File**

--Student Names: Suraj Mittal, Jay Patel

--Assessment: Assignment 02

--File: Assignment 02 DDL

DROP VIEW IF EXISTS Payment\_V;

DROP VIEW IF EXISTS Car\_V;

DROP TABLE IF Exists "Branch\_t";

DROP TABLE IF Exists "Cars\_t";

DROP TABLE IF Exists "Rental\_Information";

DROP TABLE IF Exists "Payment\_t";

DROP TABLE IF Exists "Customer\_Details";

CREATE TABLE "Customer\_Details" (

"Cust\_ID" Integer,

"Cust\_FirstName" Varchar(30),

"Cust\_LastName" Varchar(30),

"Cust\_MobileNo" bigint,

"Cust\_EmailAddress" varchar(50),

"Cust\_LicenceNo" bigint,

PRIMARY KEY ("Cust\_ID")

);

CREATE TABLE "Payment\_t" (

"Payment\_ID" Integer,

"Cust\_ID" Integer,

"Payment\_amount" Integer,

"Payment\_mode" VARCHAR(10),

"Payment\_date" Date,

PRIMARY KEY ("Payment\_ID"),

CONSTRAINT "FK\_Payment\_t.Cust\_ID"

FOREIGN KEY ("Cust\_ID")

REFERENCES "Customer\_Details"("Cust\_ID")

);

CREATE TABLE "Rental\_Information" (

"Rnt\_ID" Integer,

"Rnt\_PickupDate" Date,

"Rnt\_ReturnDate" Date,

"Rnt\_FinalMeterReading" Integer,

"Rnt\_InitialMeterReading" Integer,

"Rnt\_ChargesPerMile" Integer,

"Payment\_ID" Integer,

PRIMARY KEY ("Rnt\_ID"),

CONSTRAINT Rental\_InformationFK

FOREIGN KEY ("Payment\_ID")

REFERENCES "Payment\_t" ("Payment\_ID")

);

CREATE TABLE "Cars\_t" (

"Car\_ID" Integer,

"Car\_model" Varchar(30),

"Car\_make" Varchar(25),

"Car\_insuranceNo" Integer,

"Car\_NumberPlate" Varchar(10),

"Car\_Availability" Char(3),

"Rnt\_ID" Integer,

PRIMARY KEY ("Car\_ID"),

CONSTRAINT "Cars\_tFK"

FOREIGN KEY ("Rnt\_ID")

REFERENCES "Rental\_Information"("Rnt\_ID")

);

CREATE TABLE "Branch\_t" (

"Branch\_ID" Integer,

"Branch\_Name" Varchar(50),

"Branch\_Address" Varchar(200),

"Car\_ID" Integer,

PRIMARY KEY ("Branch\_ID"),

CONSTRAINT "Branch\_tFK" FOREIGN KEY ("Car\_ID")

REFERENCES "Cars\_t"("Car\_ID")

);

**DML File**

--Student Names: Suraj Mittal, Jay Patel

--Assessment: Assignment 02

--File: Assignment 02 DML

INSERT INTO "Customer\_Details" VALUES (4001, 'Margaret', 'Jones', 4162773401, 'margaret1@.com', 134711320);

INSERT INTO "Customer\_Details" VALUES (4002, 'Colleen', 'Wiley', 4168886588, 'colleenk3@.com', 148752345);

INSERT INTO "Customer\_Details" VALUES (4003, 'Donald', 'Watkins', 40331877659, 'donalda4@.com', 137892348);

INSERT INTO "Customer\_Details" VALUES (4004, 'Jerry', 'Cordero', 7806819462, 'jerryc5@.com', 137264334);

INSERT INTO "Customer\_Details" VALUES (4005, 'Randy', 'Thompson', 5145673479, 'randyt2@.com', 139824339);

INSERT INTO "Payment\_t" VALUES (2001, 4001, 8580, 'Cash', '2020-09-16');

INSERT INTO "Payment\_t" VALUES (2002, 4002, 15184, 'E-Banking', '2020-11-05');

INSERT INTO "Payment\_t" VALUES (2003, 4003, 1494, 'Cash', '2021-01-15');

INSERT INTO "Payment\_t" VALUES (2004, 4004, 30349, 'Debit Card', '2021-03-01');

INSERT INTO "Payment\_t" VALUES (2005, 4005, 8951, 'Cash', '2021-03-21');

INSERT INTO "Rental\_Information" VALUES (5001,'2020-09-15','2020-09-16','22976','21546','6',2001);

INSERT INTO "Rental\_Information" VALUES (5002,'2020-11-01','2020-11-05','47122','45224','8',2002);

INSERT INTO "Rental\_Information" VALUES (5003,'2021-01-13','2021-01-15','31600','31434','9',2003);

INSERT INTO "Rental\_Information" VALUES (5004,'2021-02-20','2021-03-01','63000','60241','11',2004);

INSERT INTO "Rental\_Information" VALUES (5005,'2021-03-17','2021-03-21','57234','56239','9',2005);

INSERT INTO "Cars\_t" VALUES(3001,'Toyota','Corolla',1234567,'2T41 O94B','YES',5001);

INSERT INTO "Cars\_t" VALUES(3002,'Honda','Civic',1098765,'X4VY 3J71','NO',5002);

INSERT INTO "Cars\_t" VALUES(3003,'Hyundai','Sonata',4521411,'FG65 J879','YES',5003);

INSERT INTO "Cars\_t" VALUES(3004,'Jeep','Compass',5721564,'Q944 IJH6','NO',5004);

INSERT INTO "Cars\_t" VALUES(3005,'KIA','Seltos',9761421,'186R THB3','YES',5005);

INSERT INTO "Branch\_t" VALUES (1001, 'North', '408 Nootka Street',3001);

INSERT INTO "Branch\_t" VALUES (1002, 'South', '1545 St George Street',3002);

INSERT INTO "Branch\_t" VALUES (1003, 'East', '1767 Paris St',3003);

INSERT INTO "Branch\_t" VALUES (1004, 'West', '1884 9th Ave',3004);

INSERT INTO "Branch\_t" VALUES (1005, 'Centeral', '4882 Montreal Road',3005);

**Query File**

SELECT \*

FROM "Branch\_t";

SELECT \*

FROM "Cars\_t";

SELECT \*

FROM "Customer\_Details";

SELECT \*

FROM "Payment\_t";

SELECT \*

FROM "Rental\_Information";

-- Meta Data of the tables

SELECT \*

from information\_schema.columns WHERE table\_name ='Branch\_t';

SELECT \*

from information\_schema.columns WHERE table\_name ='Cars\_t';

SELECT \*

from information\_schema.columns WHERE table\_name ='Customer\_Detials';

SELECT \*

from information\_schema.columns WHERE table\_name ='Payment\_t';

SELECT \*

from information\_schema.columns WHERE table\_name ='Rental\_Information';

--LEFT OUTER JOIN: here Customer\_Details table left outer joins the Payment\_t table using the Cust\_ID due

--it is primary key in Customer\_Details table and foreign key in Payment\_t

SELECT C."Cust\_ID",C."Cust\_FirstName",C."Cust\_LastName",C."Cust\_MobileNo",P."Payment\_amount",P."Payment\_mode",P."Payment\_date"

FROM "Customer\_Details" C LEFT OUTER JOIN "Payment\_t" P

ON C."Cust\_ID" = P."Cust\_ID";

-- RIGHT OUTER JOIN: here Branch\_t table right outer joins the Cars\_t table using the Car\_ID due

--it is primary key in Cars\_t table and foreign key in Branch\_t

SELECT C."Car\_ID",C."Car\_model",C."Car\_make",C."Car\_Availability",P."Branch\_Name",P."Branch\_Address"

FROM "Cars\_t" C RIGHT OUTER JOIN "Branch\_t" P

ON C."Car\_ID" = P."Car\_ID";

-- UNION: In this UNION, the information of car like model and make UNIONS with the Branch name and address

SELECT "Car\_ID","Car\_model","Car\_make"

FROM "Cars\_t"

UNION

SELECT "Branch\_ID","Branch\_Name","Branch\_Address"

FROM "Branch\_t";

-- VIEW Number 1

CREATE VIEW Payment\_V AS

SELECT \*

FROM "Branch\_t"

WHERE "Car\_ID" >=3002;

--VIEW Number 2

CREATE VIEW Car\_V AS

SELECT \*

FROM "Cars\_t"

WHERE "Car\_Availability"='YES';

**Reverse Engineered Data Model**

Graphical user interface, application, Word

Description automatically generated