



Data Base Project

Car Rental

prepared by

Aya Jabi

Alaa Affouri

Emad Alselkhi

Mohammad Soqy

Supervised by

Dr. Emad Saadeh

Abstract:

Manual systems put pressure on people to be correct in all details of their work at all times. With manual car rental system the level of service is dependent on individuals and this puts a requirement on management to run training continuously for staff to keep them motivated and to ensure they are following the correct procedures. However, this might end up in switching details and inconsistency in data entry or in hand written orders. This has the effect of not only causing problems with customer service but also making information unable to be used for reporting or finding trends with data discovery. It takes more effort and physical space to keep track of paper documents, to find information and to keep details secure. When mistakes are made or changes or corrections are needed, often a manual transaction must be completely redone rather than just updated. A manual database would be very vulnerable to a fire or other natural disaster. In addition, any thief could potentially steal data from any manual car rental system. Also, In the case of renting a car and losing the papers, there will be a problem, which is the inability to access the renter's information.

Because of what is mentioned previously, we have come with the idea of building a whole database of a car rental system since modern database system will typically allow workers to search the entire database for specific information in seconds. Also, it helps them to pull data from multiple areas in a database together quickly in order to compare it. In this way, workers can pull information from disparate sources and analyses it for important trends or other useful information by creating charts and other tools. In addition all data existed is protected with computer security measures.

Entities:

1. Customer: A customer is the one who is using the car rental system for reserving a car. Its attributes: the customer's id, customer's name, customer's driving license number, customer's address, and customer's phone number.

2. Car: It has a list of cars available in the system. Its attributes: car's registration number, car's manufacturing country, car's availability flag, car's model, and car's model year.

3. Car Category: Each car has its category. Its attributes: Name, number of passengers, cost per day, and late fee per hour.

4. Booking: it contains all the information about any reserved car in the system. Its attributes: booking id, booking status, from (date time), returned date time, and actual returned date time.

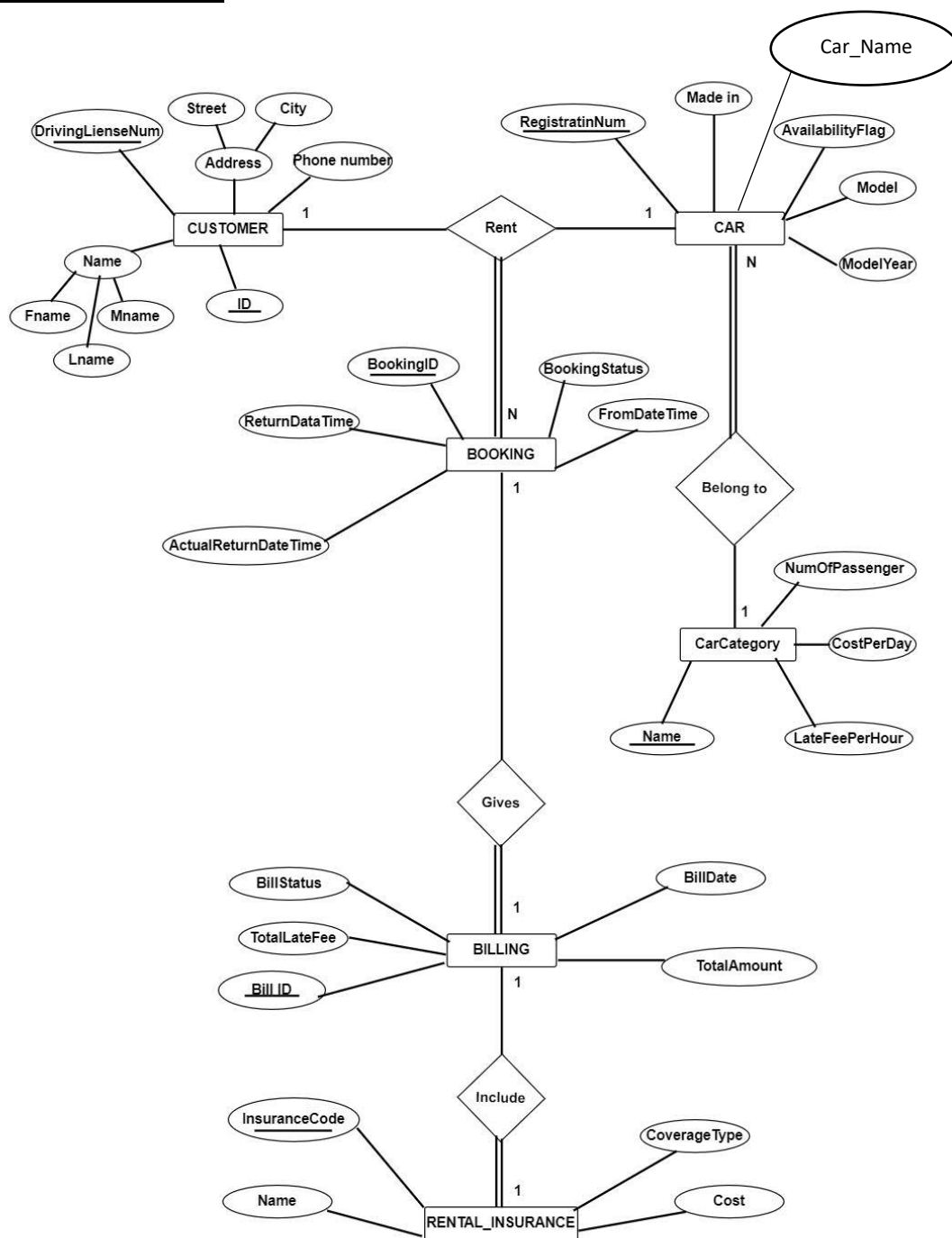
5. Car Rental Insurance: it protects the customer against the cost of damages that may occur when renting a vehicle. Its attributes: insurance code, coverage type, name, and cost.

6. Billing: it will be given at the end of the agreed car rental period. Its attributes: bill id, bill status, total late fee, bill date, and total amount.

Assumptions:

1. Each booking is associated with only one car reservation at one time.
2. Not all booking is associated with billing because the booking may be cancelled.
3. In case of an accident, additional cost (insurance cost) will be added to the billing.

Full ER Diagram:



Mapping Table:

Customer

<u>Dri_Lic_No</u>	<u>C_id</u>	Phone_No	Fname	Mname	Lname	Street	City
-------------------	-------------	----------	-------	-------	-------	--------	------

Car

<u>Reg_No</u>	Availability Flag	ModelYear	Model	Made in	<u>Dri_Lic_No</u>	Car_Name	<u>C_Name</u>
---------------	-------------------	-----------	-------	---------	-------------------	----------	---------------

Car_Category

<u>Name</u>	No_of_Person	CostPerDay	LateFeePerHour
-------------	--------------	------------	----------------

Booking

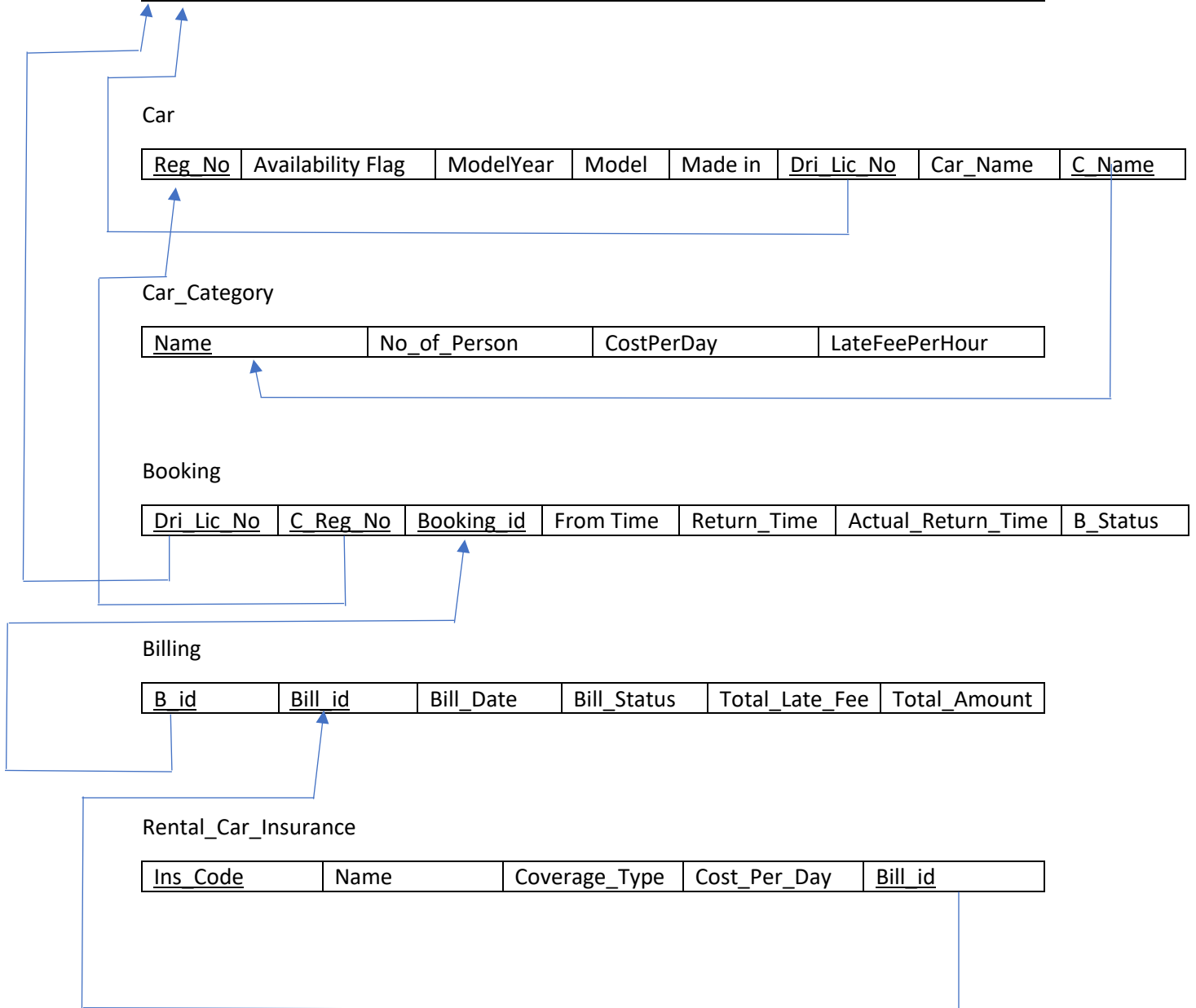
<u>Dri_Lic_No</u>	<u>C_Reg_No</u>	<u>Booking_id</u>	From Time	Return_Time	Actual_Return_Time	B_Status
-------------------	-----------------	-------------------	-----------	-------------	--------------------	----------

Billing

<u>B_id</u>	<u>Bill_id</u>	Bill_Date	Bill_Status	Total_Late_Fee	Total_Amount
-------------	----------------	-----------	-------------	----------------	--------------

Rental_Car_Insurance

<u>Ins_Code</u>	Name	Coverage_Type	Cost_Per_Day	<u>Bill_id</u>
-----------------	------	---------------	--------------	----------------



Full Implementation of our database Project:

create table customer)

c_id int,

dri_lic_no int primary key,

phone_no int,

Fname varchar,(20)

Mname varchar,(20)

Lname varchar,(20)

street varchar,(20)

city varchar(20)

;(

create table car)

reg_no int primary key,

availability varchar,(20)

modelyear int,

model varchar,(30)

make varchar,(20)

dri_lic_no int,

c_name varchar,(20)

car_name varchar,(30)

foreign key (dri_lic_no) references customer (dri_lic_no) on delete set null

;(

create table car_category)

name varchar (20) primary key,

no_of_person int,

```
cost_per_day int,  
late_fee_per_hour int  
;
```

```
alter table car  
add foreign key (c_name) references car_category (name) on delete  
cascade;
```

```
create table booking)  
dri_lic_no int,  
c_reg_no int,  
booking_id int primary key,  
starting_date date,  
returning_date date,  
actuall_returning_date date,  
status varchar, (20)  
foreign key (dri_lic_no) references customer (dri_lic_no) on delete set  
null,  
foreign key (c_reg_no) references car (reg_no) on delete set null  
;
```

```
create table billing)  
b_id int,  
bill_id int primary key,  
bill_date date,  
bill_status varchar,(20)  
total_late_fee int,  
total int,
```

foreign key (b_id) references booking (booking_id) on delete cascade
;

```
create table car_insurance)
ins_code int primary key,
name varchar,(100)
covarage_type varchar,(100)
cost int,
bill_id int,
foreign key (bill_id) references billing (bill_id) on delete set null
;
```

Records Inserted:

```
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
VALUES (100,1,0595535907,'emad','ahmad','taha','yafa','nablus');
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
VALUES (101,2,0595590735,'ahmad','adel','emad','sufian','nablus');
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
VALUES
(102,3,0597842309,'hussam','ahmad','ramadn','haifa','ramallah');
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
VALUES (103,4,0595879356,'yassmen','khalil','hamed','tunes','nablus');
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
VALUES (104,5,0567891235,'wael','ahmad','khalid','alhorea','salfeet');
INSERT INTO Customer (Dri_Lic_No, C_id, Phone_No , Fname,
Mname, Lname, Street, City)
```



```

VALUES (105,6,056789654,'ali','ayham','rasim','alskakene','ramallah');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name,car_name)

VALUES (1000,'rented',2020,'m4','germany',100,'sport','bmw');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1001,'available',2018,'serento','korea',101,'SUV','kia');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1002,'available',2022,'morning','korea',100,'economy','kia');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1003,'available',2022,'accent','korea',102,'economy','hunda');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1004,'rented',2021,'tesla-z','usa',103,'smart','tesla');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1005,'available',2019,'m8','germany',104,'sport','bmw');

INSERT INTO car (reg_no, availability, modelyear , model, make,
dri_lic_no , c_name, car_name)

VALUES (1006,'rented',2019,'sckoda-scala','Czech',105,'MID
SIZE','sckoda');

```

```

INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)

VALUES ('sport',5,300,40);

INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)

VALUES ('SUV',7,150,10);

```

```
INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)
VALUES ('smart',5,250,20);
```

```
INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)
VALUES ('MID SIZE',5,180,10);
```

```
INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)
VALUES ('luxury',7,170,10);
```

```
INSERT INTO car_category
(name,no_of_person,cost_per_day,late_fee_per_hour)
VALUES ('economy',5,150,10);
```

```
INSERT INTO booking (dri_lic_no, c_reg_no, booking_id, starting_date,
returning_date, actuall_returning_date,status)
VALUES ( 100,1006 ,10 , '17-DEC-2022' , '19-DEC-2022' , '19-DEC-
2022' , 'Booked Up' );
```

```
INSERT INTO booking (dri_lic_no, c_reg_no, booking_id, starting_date,
returning_date, actuall_returning_date,status)
VALUES ( 103,1000 ,11 , '10-Jun-2022' , '12-Jun-2022' , '12-Jun-2022' ,
'Not Booked' );
```

```
INSERT INTO booking (dri_lic_no, c_reg_no, booking_id, starting_date,
returning_date, actuall_returning_date,status)
VALUES (100 ,1001 ,12 , '5-Dec-2022' , '12-Dec-2022' , '12-Dec-2022' ,
'Booked Up' );
```

```
INSERT INTO booking (dri_lic_no, c_reg_no, booking_id, starting_date,
returning_date, actuall_returning_date,status)
VALUES (101 , 1002,13 , '5-Sep-2022' , '8-Sep-2022' , '8-Sep-2022' ,
'Booked Up' );
```

```
INSERT INTO booking (dri_lic_no, c_reg_no, booking_id, starting_date,
returning_date, actuall_returning_date,status)
VALUES (102 ,1003 ,14 ,'8-Nov-2022' ,'12-Nov-2022' ,'12-Nov-2022'
,'Not Booked');
```

```
INSERT INTO billing (b_id, bill_id, bill_date, bill_status, total_late_fee,
total)
```

```
VALUES ( 13,1 , '8-Sep-2022' , 'Paid' ,0 ,150 );
```

```
INSERT INTO billing (b_id, bill_id, bill_date, bill_status, total_late_fee,
total)
```

```
VALUES ( 12, 21, '14-Dec-2022' , 'Paid' , 0,150 );
```

```
INSERT INTO billing (b_id, bill_id, bill_date, bill_status, total_late_fee,
total)
```

```
VALUES ( 11, 3, '12-Jun-2022', 'Paid' ,0 ,300 );
```

```
INSERT INTO billing (b_id, bill_id, bill_date, bill_status, total_late_fee,
total)
```

```
VALUES ( 10, 4, '19-nov-2022' , 'Paid' ,0 ,180 );
```

```
INSERT INTO billing (b_id, bill_id, bill_date, bill_status, total_late_fee,
total)
```

```
VALUES ( 14, 5,'12-Nov-2022', 'Paid' ,0 ,150 );
```

```
INSERT INTO car_insurance (ins_code, name, covarage_type, cost,
bill_id)
```

```
VALUES (1200 ,'COLLISION DAMAGE WAIVER',' Mandatory' ,8000
,3 );
```

```
INSERT INTO car_insurance (ins_code, name, covarage_type, cost,
bill_id)
```

```
VALUES (1201 ,' SUPPLEMENTAL LIABILITY PROTECTION' ,
'Third team', 8000,1 );
```

```
INSERT INTO car_insurance (ins_code, name, covarage_type, cost,
bill_id)
VALUES (1202 , 'PERSONAL ACCIDENT INSURANCE', 'Mandatory'
,8000 ,4 );
```

Reports:

1 .Display all the customers' records who located in Nablus or Ramallah city:

```
SELECT * FROM customer
WHERE city = 'nablus' OR city = 'ramallah';
```

2 .Display the number of BMW cars manufactured in 2020:

```
SELECT COUNT (c_name)
FROM car
WHERE modelyear = 2020 AND c_name = 'bmw';
```

3 .Display all the cars' records where the cost per a day is between 100 – 200:

```
SELECT * FROM car_category
WHERE cost_per_day BETWEEN 100 AND 200;
```

4 .Check the bill status that holds the date of 8th Sep. 2022:

```
SELECT bill_status
FROM billing
WHERE bill_date = '8-Sep-2022';
```

5 .Display all cars' records related to a personal accident insurance:

```
SELECT * FROM car_insurance
```

WHERE name = 'PERSONAL ACCIDENT INSURANCE;'

6 .Check if the Kia Serento is available or rented:

SELECT availability

FROM car

WHERE model = 'serento;'