American International University-Bangladesh

RAILWAY TICKETING SYSTEM

Course

Introduction to Database (I)

Date of Submission:

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Project Description

About the project

This project is about creating the database about Railway Database Management System. The railway database system facilitates the passengers to inquire about the trains available based on Train status, station, and booking of tickets and facilitates many other things.

There are several counters for reserving seats, and one can easily make reservations and get tickets. But if the passengers want to get tickets online, they can simply pay online and get tickets.

Problem

In huge problem in our country is standing in long lines to get tickets. That costs our most valuable time which is very annoying and time-consuming.

But We find a solution!!

The use of a ticket card to get tickets. It is convenient for all passengers. Because in this ticket getting process there have no other 3rd party or someone else. It's fully automatic and a time saver technology.

Each passenger must have a ticket card and per card can afford or access only one ticket at that moment.

Conditions

The railway department is run by some rules. If the passenger doesn't purchase a ticket, they can't enter the station. Then if the passenger doesn't get any seats on the train, they must get a standing ticket.

Prosses descriptions

Passengers can book their tickets for their journey. Passengers are provided with their name, id, gender, and age in the card which is used to purchase a train ticket. On this card, the balance and id are provided. The card id is unique.

They want to buy a ticket. Then they must go to the counter/booth. Then the help of the card they can easily get a ticket which saves their time.

The train name, train no, coach no, journey date, seat no, train time, Station name, booking date, journey date, platform no and the ticket price are provided with the ticket.

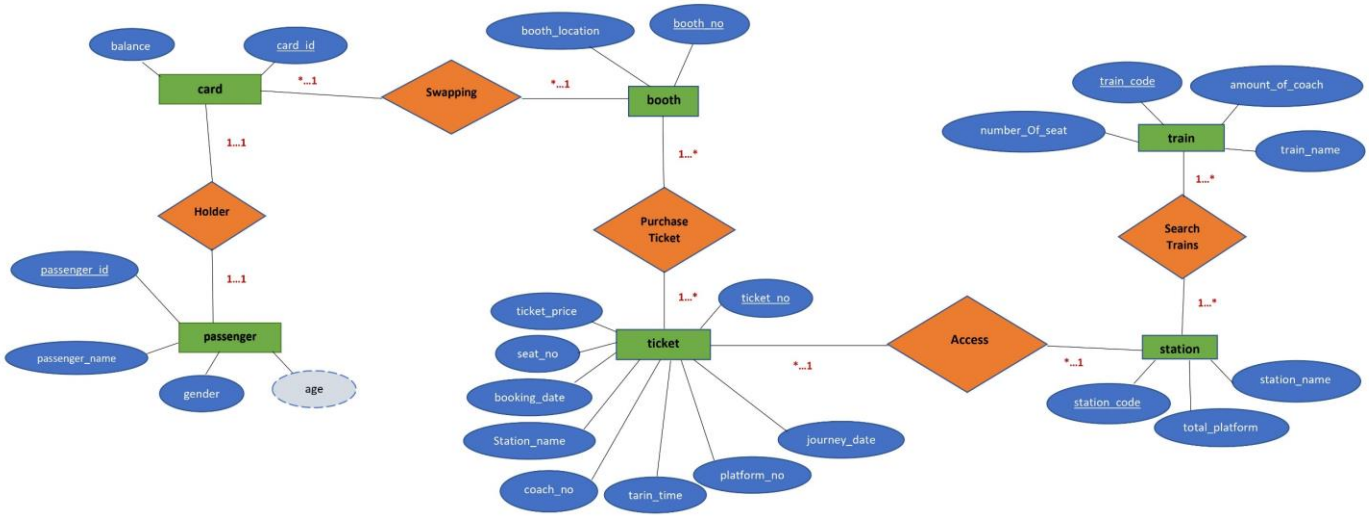
When they get a ticket, they have access to enter the station, and with the help of the ticket, they can find their desired train.

The ticket also has access to get out of the station. Which is more convenient for the user or the passenger.

The list of entities and attributes:

Entities	Attributes
Passenger	passenger_id passenger_name gender age
Train	train_code train_name amount_of_coach number_of_seat
Station	station_name station_code total_platfrom
Ticket	ticket_no coach_no booking_date journey_date seat_no train_time station_name platfrom_no ticket_price
Booth/counter	booth_locations booth_number
Card	card_id balance

ER Diagram


balance
card_id
card
*...1
Swapping
booth_location
booth_no
booth
*...1
1...1
1...*
Holder
Purchase Ticket
1...1
passenger_id
passenger
passenger_name
gender
age
ticket_price
ticket_no
seat_no
ticket
booking_date
Station_name
coach_no
tarin_time
platform_no
journey_date
*...1
Access
train_code
amount_of_coach
number_Of_seat
train
train_name
1...*
Search Trains
1...*
*...1
station
station_code
station_name
total_platform

Normalization

Holder

All attributes are

Holder (passenger_id, passenger_name, gender, age,

card_id, balance)

1nf	No multivalued attributes
2nf	passenger_id, passenger_name, gender, age
	card_id, balance
3nf	passenger_id, passenger_name
	card_id, gender, age
	card_id, balance

So table from Holder are

passenger_id, passenger_name

card_id, gender, age

card_id, gender, age

Swapping

All attributes are

Swapping (card_id, balance,

booth_location, booth_no)

1nf	No multivalued attributes
2nf	card_id, balance
	booth location, booth_no
3nf	No transitive dependencies found

Table from Swapping are

card_id, balance

booth_location, booth_no

Purchase ticket

All attributes are

Purchase ticket (booth location, booth_no,

ticket_price, ticket_no, train_name, train_code(fk), coach_no, journey_date, seat_no,

train_time, booking_date)

1nf	No multivalued attributes
2nf	booth_no, booth location
	ticket_no, train_name, train_code, coach_no, journey_date, seat_no, train_time, booking_date, ticket_price
3nf	booth_no, booth_location
	ticket_no, booth_no, booth_location
	ticket_no, train_name, train_code, coach_no, journey_date, seat_no, train_time, booking_date, ticket_price

Table from Purchase ticket

booth_no, booth_location

ticket_no, booth_no, booth_location

ticket_no, train_name, train_code, coach_no, journey_date, seat_no, train_time, booking_date, ticket_price

Access

All attributes are

Access (ticket_no, train_name, train_code, coach_no, journey_date, seat_no, train_time, booking_date, ticket_price,

station_code, station_name, total_platform)

1nf	No multivalued attributes
2nf	ticket_no, train_name, train_code, coach_no, journey_date, seat_no, train_time, booking_date, ticket_price
	station_code, station_name, total_platform
3nf	ticket_no, train_name, seat_no, coach_no journey_date, train_time, booking_date, ticket_price
	ticket_no, station_name, station_code
	station_code, station_name, total_platform

Tables from Access are

ticket_no, train_name, seat_no, coach_no journey_date, train_time, booking_date, ticket_price

ticket_no, station_name, station_code

station_code, station_name, total_platform

Search Train

All attributes are

search train (station_code, station_name, total_platform,

train_code, train_name, amount_of_coach, number_of_seat)

1nf	No multivalued attributes
2nf	station_code, station_name, total_platform
	train_code, train_name, amount_of_coach, number_of_seat
3nf	station_code, station_name
	Station_code, train_code, train_name, amount_of_coach, number_of_seat
	train_code, train_name, amount_of_coach, number_of_seat

Tables from search train are

station_code, station_name

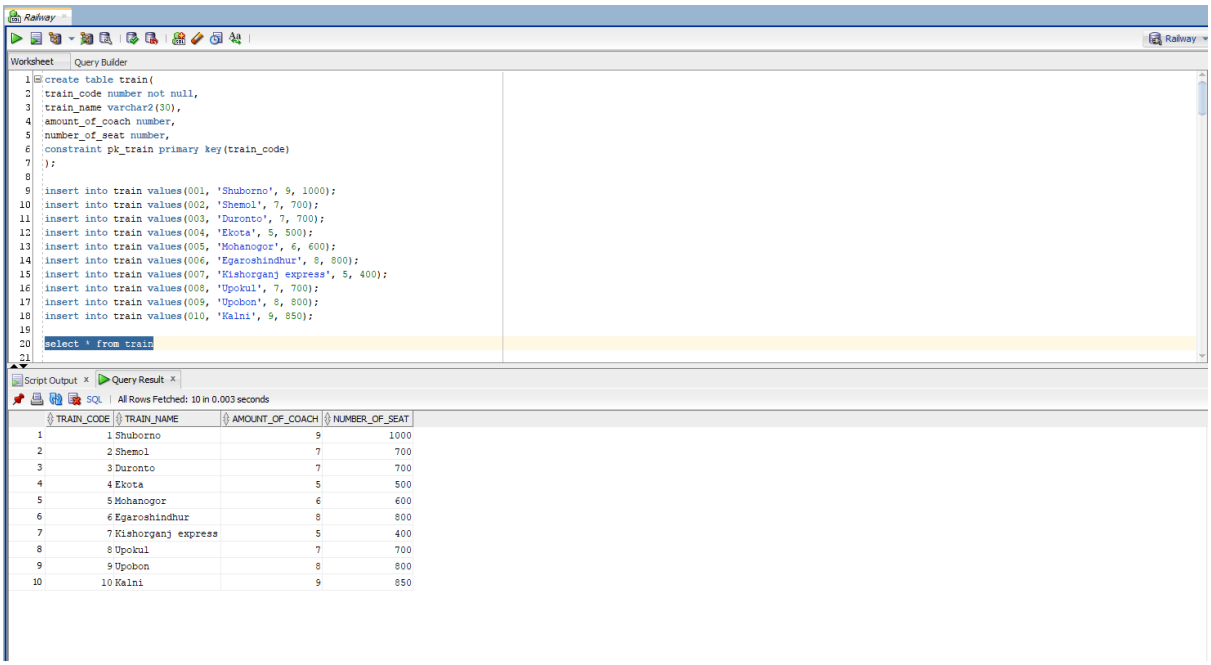
Station_code, train_code, train_name, amount_of_coach, number_of_seat

train_code, train_name, amount_of_coach, number_of_seat

Table Creations and Data Insertion

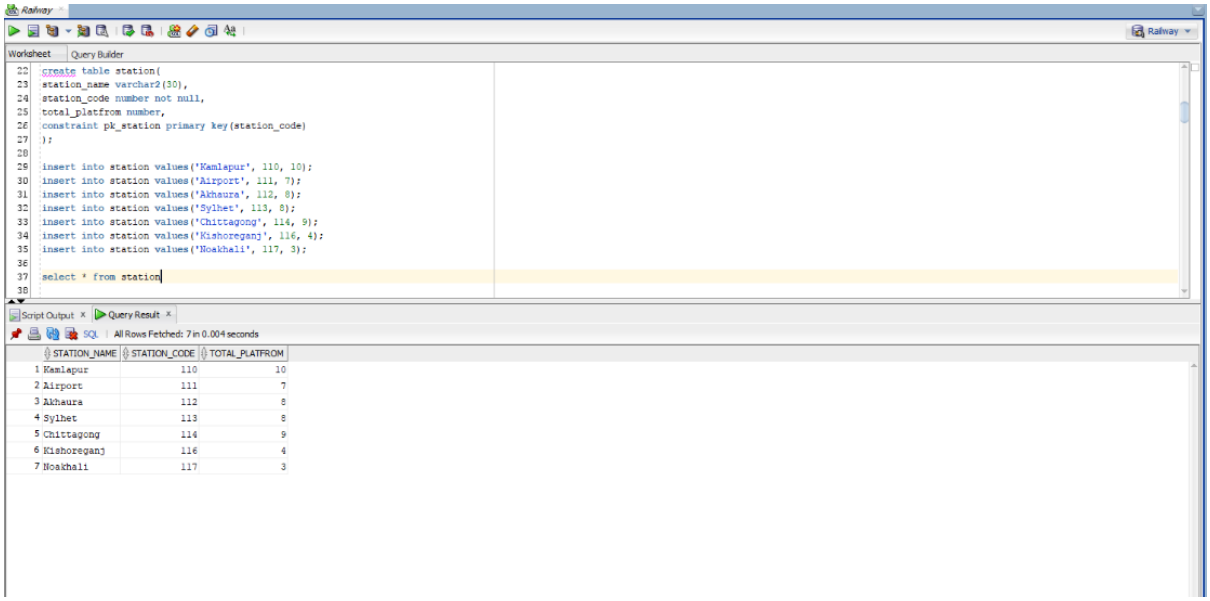
1. Train Table Create:

```
create table train(
train_code number not null,
train_name varchar2(30),
amount_of_coach number,
number_of_seat number,
constraint pk_train primary key(train_code)
);

insert into train values(001, 'Shuborno', 9, 1000);
insert into train values(002, 'Shemol', 7, 700);
insert into train values(003, 'Duronto', 7, 700);
insert into train values(004, 'Ekota', 5, 500);
insert into train values(005, 'Mohanogor', 6, 600);
insert into train values(006, 'Egaroshindhur', 8, 800);
insert into train values(007, 'Kishorganj express', 5, 400);
insert into train values(008, 'Upokul', 7, 700);
insert into train values(009, 'Upobon', 8, 800);
insert into train values(010, 'Kalni', 9, 850);
```



2. Station Table Create:

```
create table station(
station_name varchar2(30),
station_code number not null,
total_platfrom number,
constraint pk_station primary key(station_code)
);
insert into station values('Kamlapur', 110, 10);
insert into station values('Airport', 111, 7);
insert into station values('Akhaura', 112, 8);
insert into station values('Sylhet', 113, 8);
insert into station values('Chittagong', 114, 9);
insert into station values('Kishoreganj', 116, 4);
insert into station values('Noakhali', 117, 3);
```



3. Ticket Table Create:

create table ticket(

ticket_no number(25) not null,

train_name varchar2(30),

train_code number,

coach_no number,

booking_date date,

journey_date date,

seat_no number,

train_time varchar2(20),

platfrom_no number,

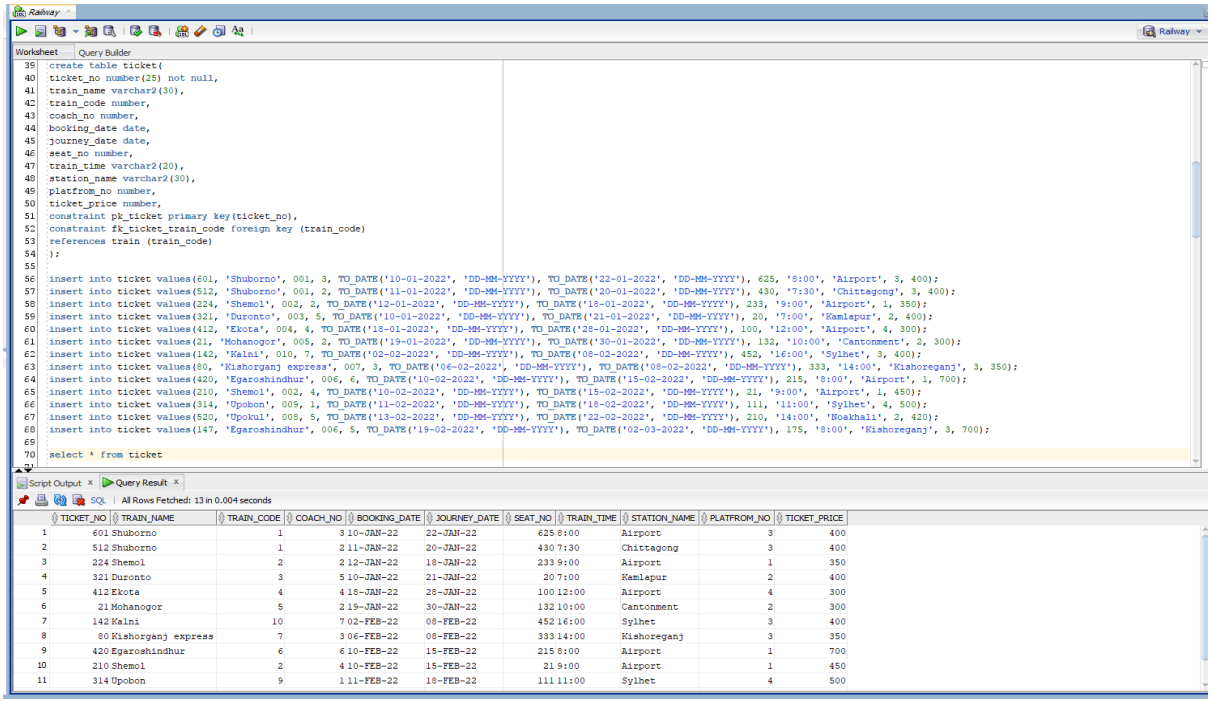
ticket_price number,

constraint pk_ticket primary key(ticket_no),

constraint fk_ticket_train_code foreign key (train_code)

references train (train_code));

```
insert into ticket values(601, 'Shuborno', 001, 3, TO_DATE('10-01-2022', 'DD-MM-YYYY'), TO_DATE('22-01-2022', 'DD-MM-YYYY'), 625, '8:00', 'Airport', 3, 400);

insert into ticket values(512, 'Shuborno', 001, 2, TO_DATE('11-01-2022', 'DD-MM-YYYY'), TO_DATE('20-01-2022', 'DD-MM-YYYY'), 430, '7:30', 'Chittagong', 3, 400);

insert into ticket values(224, 'Shemol', 002, 2, TO_DATE('12-01-2022', 'DD-MM-YYYY'), TO_DATE('18-01-2022', 'DD-MM-YYYY'), 233, '9:00', 'Airport', 1, 350);

insert into ticket values(321, 'Duronto', 003, 5, TO_DATE('10-01-2022', 'DD-MM-YYYY'), TO_DATE('21-01-2022', 'DD-MM-YYYY'), 20, '7:00', 'Kamlapur', 2, 400);

insert into ticket values(412, 'Ekota', 004, 4, TO_DATE('18-01-2022', 'DD-MM-YYYY'), TO_DATE('28-01-2022', 'DD-MM-YYYY'), 100, '12:00', 'Airport', 4, 300);

insert into ticket values(21, 'Mohanogor', 005, 2, TO_DATE('19-01-2022', 'DD-MM-YYYY'), TO_DATE('30-01-2022', 'DD-MM-YYYY'), 132, '10:00', 'Cantonment', 2, 300);

insert into ticket values(142, 'Kalni', 010, 7, TO_DATE('02-02-2022', 'DD-MM-YYYY'), TO_DATE('08-02-2022', 'DD-MM-YYYY'), 452, '16:00', 'Sylhet', 3, 400);

insert into ticket values(80, 'Kishorganj express', 007, 3, TO_DATE('06-02-2022', 'DD-MM-YYYY'), TO_DATE('08-02-2022', 'DD-MM-YYYY'), 333, '14:00', 'Kishoreganj', 3, 350);

insert into ticket values(420, 'Egaroshindhur', 006, 6, TO_DATE('10-02-2022', 'DD-MM-YYYY'), TO_DATE('15-02-2022', 'DD-MM-YYYY'), 215, '8:00', 'Airport', 1, 700);

insert into ticket values(210, 'Shemol', 002, 4, TO_DATE('10-02-2022', 'DD-MM-YYYY'), TO_DATE('15-02-2022', 'DD-MM-YYYY'), 21, '9:00', 'Airport', 1, 450);

insert into ticket values(314, 'Upobon', 009, 1, TO_DATE('11-02-2022', 'DD-MM-YYYY'), TO_DATE('18-02-2022', 'DD-MM-YYYY'), 111, '11:00', 'Sylhet', 4, 500);

insert into ticket values(520, 'Upokul', 008, 5, TO_DATE('13-02-2022', 'DD-MM-YYYY'), TO_DATE('22-02-2022', 'DD-MM-YYYY'), 210, '14:00', 'Noakhali', 2, 420);

insert into ticket values(147, 'Egaroshindhur', 006, 5, TO_DATE('19-02-2022', 'DD-MM-YYYY'), TO_DATE('02-03-2022', 'DD-MM-YYYY'), 175, '8:00', 'Kishoreganj', 3, 700);
```



```
create table ticket(
ticket_no number(25) not null,
train_name varchar2(30),
train_code number,
coach_no number,
booking_date date,
journey_date date,
seat_no number,
train_time varchar2(20),
station_name varchar2(30),
platfrom_no number,
ticket_price number,
constraint pk_ticket primary key(ticket_no),
constraint fk_ticket_train_code foreign key (train_code)
references train (train_code)
);

insert into ticket values(601, 'Shuborno', 001, 3, TO_DATE('10-01-2022', 'DD-MM-YYYY'), TO_DATE('22-01-2022', 'DD-MM-YYYY'), 625, '8:00', 'Airport', 3, 400);
insert into ticket values(512, 'Shuborno', 001, 2, TO_DATE('11-01-2022', 'DD-MM-YYYY'), TO_DATE('20-01-2022', 'DD-MM-YYYY'), 430, '7:30', 'Chittagong', 3, 400);
insert into ticket values(224, 'Shemol', 002, 2, TO_DATE('12-01-2022', 'DD-MM-YYYY'), TO_DATE('18-01-2022', 'DD-MM-YYYY'), 233, '9:00', 'Airport', 1, 350);
insert into ticket values(321, 'Duronto', 003, 5, TO_DATE('10-01-2022', 'DD-MM-YYYY'), TO_DATE('21-01-2022', 'DD-MM-YYYY'), 20, '7:00', 'Kamlapur', 2, 400);
insert into ticket values(412, 'Ekota', 004, 4, TO_DATE('18-01-2022', 'DD-MM-YYYY'), TO_DATE('28-01-2022', 'DD-MM-YYYY'), 100, '12:00', 'Airport', 4, 300);
insert into ticket values(21, 'Mohanogor', 005, 2, TO_DATE('19-01-2022', 'DD-MM-YYYY'), TO_DATE('30-01-2022', 'DD-MM-YYYY'), 132, '10:00', 'Cantonment', 2, 300);
insert into ticket values(142, 'Kalni', 010, 7, TO_DATE('02-02-2022', 'DD-MM-YYYY'), TO_DATE('08-02-2022', 'DD-MM-YYYY'), 452, '16:00', 'Sylhet', 3, 400);
insert into ticket values(80, 'Kishorganj express', 007, 3, TO_DATE('06-02-2022', 'DD-MM-YYYY'), TO_DATE('08-02-2022', 'DD-MM-YYYY'), 333, '14:00', 'Kishoreganj', 3, 350);
insert into ticket values(420, 'Egaroshindhur', 006, 6, TO_DATE('10-02-2022', 'DD-MM-YYYY'), TO_DATE('15-02-2022', 'DD-MM-YYYY'), 215, '8:00', 'Airport', 1, 700);
insert into ticket values(210, 'Shemol', 002, 4, TO_DATE('10-02-2022', 'DD-MM-YYYY'), TO_DATE('15-02-2022', 'DD-MM-YYYY'), 21, '9:00', 'Airport', 1, 450);
insert into ticket values(314, 'Upobon', 009, 1, TO_DATE('11-02-2022', 'DD-MM-YYYY'), TO_DATE('18-02-2022', 'DD-MM-YYYY'), 111, '11:00', 'Sylhet', 4, 500);
insert into ticket values(520, 'Upokul', 008, 5, TO_DATE('13-02-2022', 'DD-MM-YYYY'), TO_DATE('22-02-2022', 'DD-MM-YYYY'), 210, '14:00', 'Noakhali', 2, 420);
insert into ticket values(147, 'Egaroshindhur', 006, 5, TO_DATE('19-02-2022', 'DD-MM-YYYY'), TO_DATE('02-03-2022', 'DD-MM-YYYY'), 175, '8:00', 'Kishoreganj', 3, 700);

select * from ticket
```

	TICKET_NO	TRAIN_NAME	TRAIN_CODE	COACH_NO	BOOKING_DATE	JOURNEY_DATE	SEAT_NO	TRAIN_TIME	STATION_NAME	PLATFROM_NO	TICKET_PRICE
1	601	Shuborno	1	3	10-JAN-22	22-JAN-22	625	8:00	Airport	3	400
2	512	Shuborno	1	2	11-JAN-22	20-JAN-22	430	7:30	Chittagong	3	400
3	224	Shemol	2	2	12-JAN-22	18-JAN-22	233	9:00	Airport	1	350
4	321	Duronto	3	5	10-JAN-22	21-JAN-22	20	7:00	Kamlapur	2	400
5	412	Ekota	4	4	18-JAN-22	28-JAN-22	100	12:00	Airport	4	300
6	21	Mohanogor	5	2	19-JAN-22	30-JAN-22	132	10:00	Cantonment	2	300
7	142	Kalni	10	7	02-FEB-22	08-FEB-22	452	16:00	Sylhet	3	400
8	80	Kishorganj express	7	3	06-FEB-22	08-FEB-22	333	14:00	Kishoreganj	3	350
9	420	Egaroshindhur	6	6	10-FEB-22	15-FEB-22	215	8:00	Airport	1	700
10	210	Shemol	2	4	10-FEB-22	15-FEB-22	21	9:00	Airport	1	450
11	314	Upobon	9	1	11-FEB-22	18-FEB-22	111	11:00	Sylhet	4	500

4. Passenger

```
create table passenger(
passenger_id number not null,
passenger_name varchar2(30),
gender varchar2(20),
age number,
card_id number,
constraint pk_passenger primary key(passenger_id),
constraint fk_passenger foreign key (card_id)
references card (card_id)
);
insert into passenger values(201, 'Nazmul', 'Male', 20, 'Yes');
insert into passenger values(202, 'Hasnatur', 'Male', 19, 'Yes');
insert into passenger values(203, 'Pritom', 'Male', 20, 'Yes');
insert into passenger values(204, 'Rafi', 'Male', 19, 'Yes');
insert into passenger values(205, 'Karim', 'Male', 45, 'No');
```

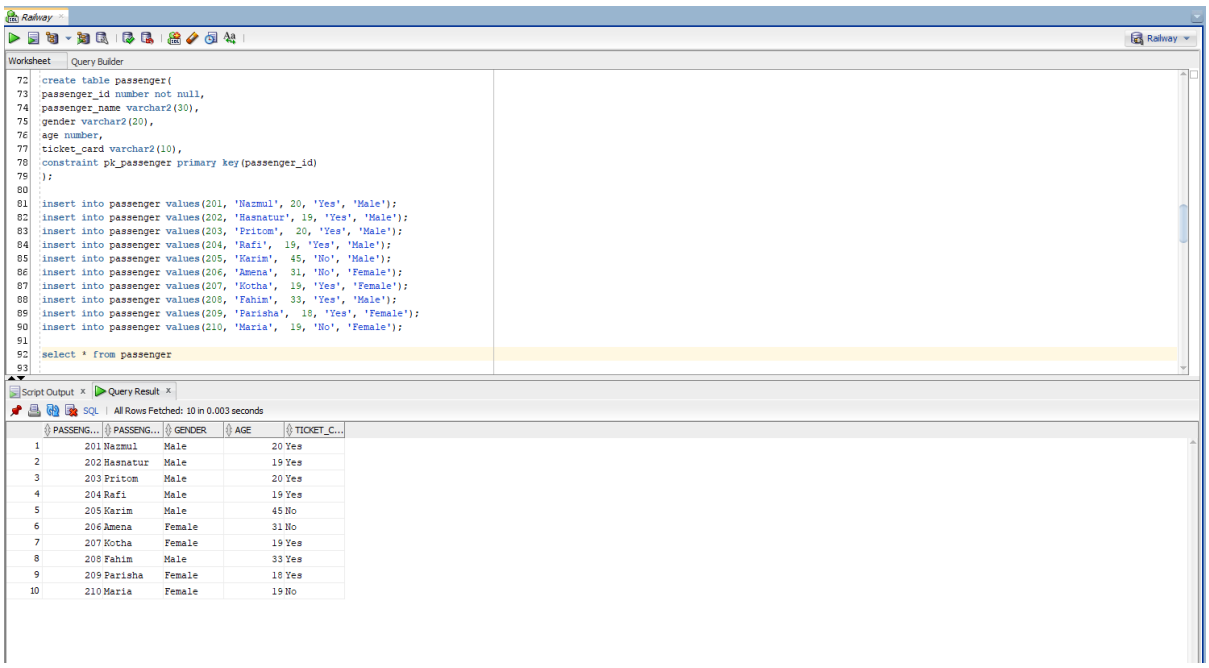
insert into passenger values(206, 'Amena', 'Female', 31, 'No');

insert into passenger values(207, 'Kotha', 'Female', 19, 'Yes');

insert into passenger values(208, 'Fahim', 'Male', 33, 'Yes');

insert into passenger values(209, 'Parisha', 'Female', 18, 'Yes');

insert into passenger values(210, 'Maria', 'Female', 19, 'No');



5. Booth

create table booth(

booth_no number,

booth_location varchar2(30),

constraint pk_booth primary key(booth_no)

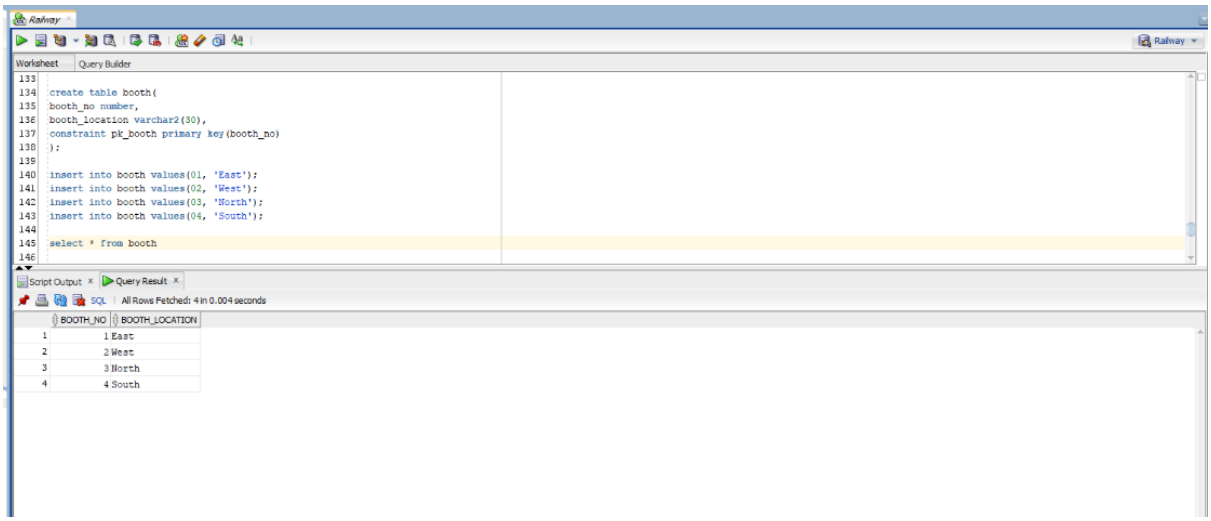
);

insert into booth values(01, 'East');

insert into booth values(02, 'West');

insert into booth values(03, 'North');

insert into booth values(04, 'South');



6. Card

create table card(

card_id number not null,

balance number,

constraint pk_card primary key(card_id)

)

insert into card values(921, 1000);

insert into card values(922, 1200);

insert into card values(923, 1500);

insert into card values(924, 200);

insert into card values(925, 1100);

insert into card values(926, 600);

insert into card values(927, 1200);

```
create table card(
card_id number not null,
balance number,
constraint pk_card primary key(card_id)
);

insert into card values(921, 1000);
insert into card values(922, 1200);
insert into card values(923, 1500);
insert into card values(924, 200);
insert into card values(925, 1100);
insert into card values(926, 600);
insert into card values(927, 1200);

select * from card
```

CARD_ID	BALANCE
921	1000
922	1200
923	1500
924	200
925	1100
926	600
927	1200

Report Query

EQUI-JOIN

select passenger.passenger_id, passenger.card_id, passenger.passenger_name, card.balance

from passenger , card

where passenger.card_id = card.card_id;

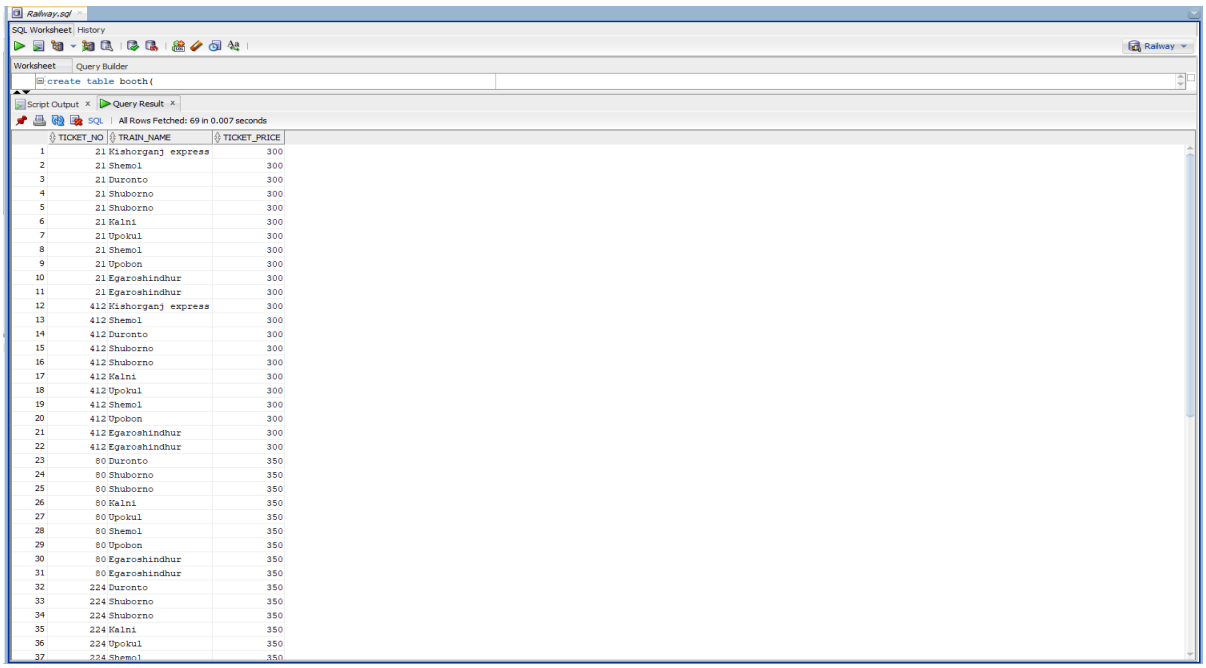
PASSENGER_ID	CARD_ID	PASSENGER_NAME	BALANCE
201	921	Nazmul	1000
202	922	Hasnatur	1200
203	923	Pritom	1500
204	924	Rafi	200
205	925	Karim	1100
206	926	Amena	600
207	927	Kotha	1200

OUTER-JOIN

```
select passenger.passenger_id, passenger.card_id, passenger.passenger_name,
card.balance
from passenger , card
where passenger.card_id(+) = card.card_id
order by passenger.card_id;
```

SELF-JOIN

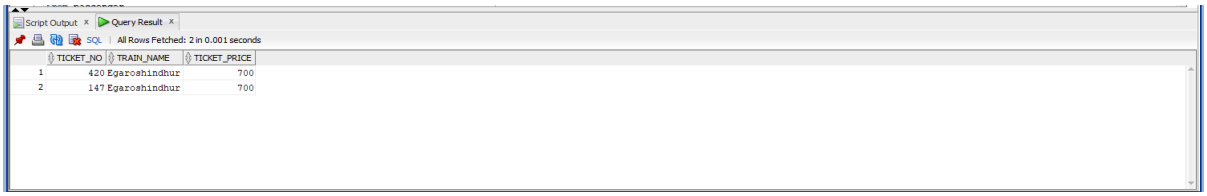
```
select a.ticket_no, b.train_name, a.ticket_price
from ticket a, ticket b
where a.ticket_price < b.ticket_price;
```



	TICKET_NO	TRAIN_NAME	TICKET_PRICE
1	21	Kishorganj express	300
2	21	Shemol	300
3	21	Duronto	300
4	21	Shuborno	300
5	21	Shuborno	300
6	21	Kalni	300
7	21	Upokul	300
8	21	Shemol	300
9	21	Upobon	300
10	21	Egaroshindhur	300
11	21	Egaroshindhur	300
12	412	Kishorganj express	300
13	412	Shemol	300
14	412	Duronto	300
15	412	Shuborno	300
16	412	Shuborno	300
17	412	Kalni	300
18	412	Upokul	300
19	412	Shemol	300
20	412	Upobon	300
21	412	Egaroshindhur	300
22	412	Egaroshindhur	300
23	80	Duronto	350
24	80	Shuborno	350
25	80	Shuborno	350
26	80	Kalni	350
27	80	Upokul	350
28	80	Shemol	350
29	80	Upobon	350
30	80	Egaroshindhur	350
31	80	Egaroshindhur	350
32	224	Duronto	350
33	224	Shuborno	350
34	224	Shuborno	350
35	224	Kalni	350
36	224	Upokul	350
37	224	Shemol	350

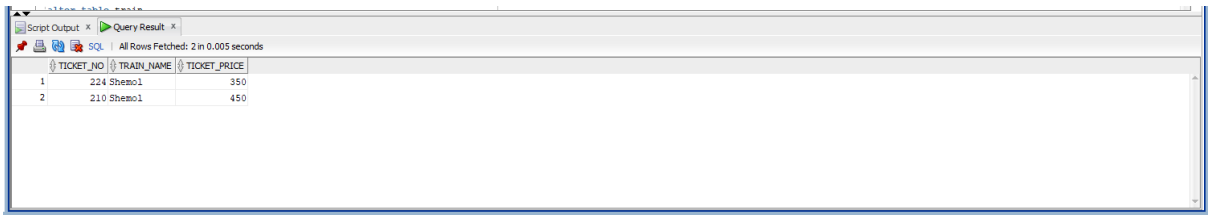
Display ticket_no, train_name,ticket_price which is greater than 314 no ticket price(subquery)

```
select ticket_no, train_name, ticket_price
from ticket
where ticket_price >
(select ticket_price
from ticket
where ticket_no = 314);
```



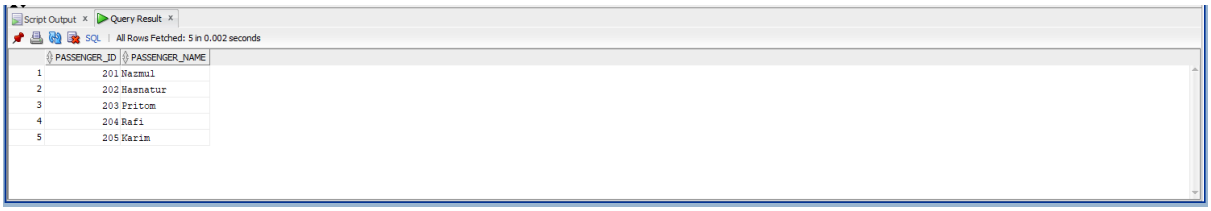
Display ticket_no, train_name, ticket_price where train_code 002(subquery)

```
select ticket_no, train_name,ticket_price
from ticket
where train_code in
( select train_code
from train
where train_code = 002);
```



Subquery using group by and having clause

```
select train_code, min(ticket_price)
from ticket
group by train_code
having min(ticket_price) > (select min(ticket_price)
from ticket
where train_code = 001);
```



Creating a view

```
create view passenger_view as
select passenger_id, passenger_name
from passenger
where gender = 'Male';

select*from passenger_view;
```

Constraint

```
alter table train
add check(number_of_seat >= 300);
```

Sequence

```
create sequence train_train_code
increment by 1
start with 003
maxvalue 10
nocache
nocycle;
```