UCS310- Database Management System Lab

BookMyTrain

UCS310 DBMS Project Report

End-Semester Evaluation

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1. PROBLEM STATEMENT:

Railway passengers frequently need to know about their ticket reservation status, ticket availability on a particular train or for a place, train arrival or departure details, special trains etc. Customer information centres at the railway stations are unable to serve such queries at peak periods due to limited number of reservation counters available to the passengers and customers. On most of the reservation systems there are long queues, so it takes a long time for any individual to book the ticket. As of now there are no call centre facilities available to solve the queries of the passengers.

1. INTRODUCTION:

We thought of developing a web-based application "**Book My Train**" which would provide the users all the facilities mentioned in the problem statement from his respective terminal only.

This online railway ticket reservation system aims to develop a web application which provides trains details, trains availability, as well as the facility to book tickets online for customers. Our website contains information regarding booking of railway tickets. Users will be able to search the train availability, the exact fare, the arrival and departure time of the train and they can also book the ticket by using their preferred payment option, after booking the ticket if the user want to cancel it then they can easily do so.

In our country India, there are number of counters for the reservation of the seats and one can easily make reservations and get tickets. Railway reservation system, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus it will help organization it better utilization of resources. Administrator of the project, with the help of a password, can enter new train record, display all train records, modify train records and delete train records. The record of train includes its number, name, source, destination, and days on which it is available, whereas record of train status includes dates for which tickets can be booked, total number of seats available, and number of seats already booked.

2. ER DIAGRAM:
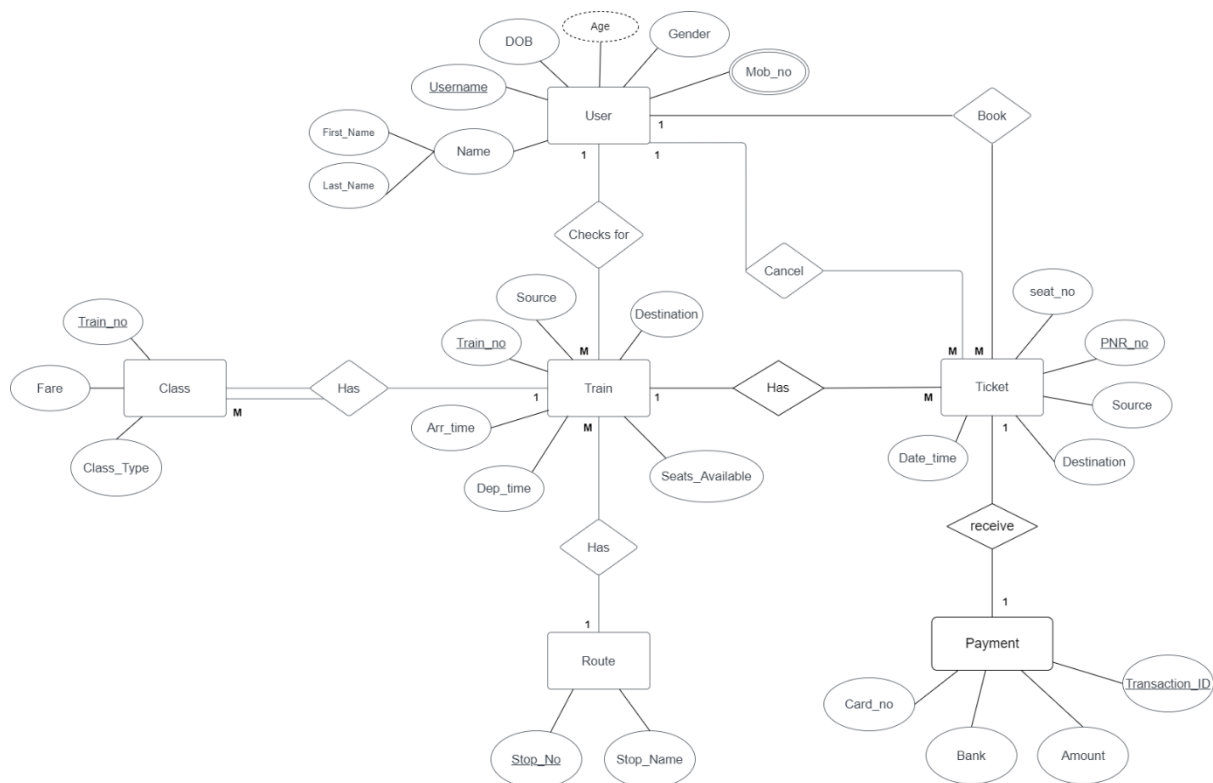
4. ER TO TABLE:

(Red attributes = Primary keys and Blue attributes = Foreign keys.)

a) Tables for Relation 1: Checks for relationship between User and Train:

First_Name	Last_Name	Username	DOB	Age	Gender	Mobile Number

Train No.	Source	Destination	Arrival_time	Departure_time	Seats Available	Username

b) Tables for Relation 2: Book/Cancel relationship between User and Ticket:

First_Name	Last_Name	Username	DOB	Age	Gender	Mobile Number

PNR_no.	Seat_no.	Source	Destination	Date_time	Username

c) Tables for Relation 3: Receive relationship between Ticket and Payment:

PNR_no.	Seat_no.	Source	Destination	Date_time

Transaction_ID	Amount	Bank	Card_no.	PNR_no.

d) Tables for Relation 4: Has relationship between Train and Ticket:

Train_no.	Source	Destination	Seats_available	Departure_time	Arrival_time

PNR_no.	Train_no.	Seat_no.	Source	Destination	Date_time

e) Tables for Relation 5: Has relationship between Train and Class:

Train_no.(NOT NULL)	Fare	Class_type

Train_no.	Source	Destination	Seats_available	Arrival_time	Departure_time

f) Tables for Relation 6: Has relationship between Train and Route:

Train_no.	Source	Destination	Seats_available	Arrival_time	Departure_time	Stop_no.

Stop_no.	Stop_Name

5. **Normalized Tables:**

1NF:

Username	First_name	Last_name	DOB	Age	Gender

Username	Mobile_number

2NF:

a)

Train_no.	Username

Train_no.	Seats_available	Arrival_time	Departure_time	Source	Destination

b)

PNR_no.	Username

PNR_no.	Seat_no.	Source	Destination	Date_time

c)

Transaction_ID	PNR_no.

Transaction_ID	Amount	Bank	Card_no.

d)

PNR_no.	Train_no.

PNR_no.	Seat_no.	Source	Destination	Date_time

f)

Train_no.	Stop_no.

Train_no.	Source	Destination	Seats_available	Arrival_time	Departure_time

3NF:

a)

Username	Train_no.	Source	Destination	Arrival_time	Departure_time

Train_no.	Seats_available

b)

Username	PNR_no.	Source	Destination	Date_time

PNR_no.	Seat_no.

d)

Train_no.	PNR_no.	Source	Destination	Date_time

PNR_no.	Seat_no.

f)

Stop_no.	Train_no.	Source	Destination	Arrival_time	Departure_time

Train_no.	Seats_available

6. SQL/PL-SQL Code:

SQL CODE:

```
create table user_details(username varchar(255) PRIMARY KEY,password
varchar(255),first_name varchar(255),last_name varchar(255),mobile_number
number(10),gender varchar(10),dob date);
create table train(train_number varchar(255) PRIMARY KEY,source
varchar(255),destination varchar(255),arrival_time timestamp,departure_time
timestamp,seat_available number(20),stop_number references route(stop_number));
create table ticket(PNR_number number(10) PRIMARY KEY,source
varchar(255),destination varchar(255),date_time timestamp ,seat_number
varchar(255),username references user_details(username),train_number references
train(train_number));
create table route(stop_number number(10) PRIMARY KEY,stop_name
varchar(255),train_number varchar(255));
create table payment(transaction_id number(10) PRIMARY KEY,amount
number(10),bank varchar(255),card_number number(10),PNR references
ticket(PNR_number));
create table class(train_number varchar(255) references train(train_number) NOT
NULL,fare number(10),class_type varchar(255));
```

```sql
INSERT INTO user_details
values('Nivedita','niv333','Nivedita','Verma',8758671095,'female',to_date('2002-05-
01','yyyy-mm-dd'));
INSERT INTO user_details
values('Twesha','arv6433','Twesha','Arvind',9785647381,'female',to_date('2002-12-
21','yyyy-mm-dd'));

INSERT INTO train values('AAA56','Patiala','Chandigarh','31-May-2022 09:30:00
AM','31-May-2022 10:00:00 AM',500,75638);
INSERT INTO train values('BBB95','Delhi','Kerala','19-May-2022 02:30:00 PM','19-
May-2022 05:00:00 PM',252,83518);

INSERT INTO ticket values(9475624358,'Patiala','Chandigarh','31-May-2022
09:30:00 AM','A12','Nivedita','AAA56');
INSERT INTO ticket values(5463890175,'Delhi','Kerala','19-May-2022 09:30:00
AM','B56','Twesha','BBB95');

INSERT INTO route values(75638,'Rajpura','AAA56');
INSERT INTO route values(83518,'Agra','BBB95');

INSERT INTO payment values(6579102657,2000,'HDFC',8251647851,9475624358);
INSERT INTO payment values(9086710265,250,'ICICI',6574819207,5463890175);

INSERT INTO class values('AAA56',500,'first AC');
INSERT INTO class values('BBB95',250,'second Non-AC');

SELECT* from user_details;
SELECT* from train;
SELECT* from ticket;
SELECT* from route;
SELECT* from payment;
SELECT* from class;


----Query to display Trains arriving before 12:00 AM
select * from train where arrival_time < '31-May-2022 12:00:00 AM';

----Query to display users
SELECT username from user_details where gender='female';

--Query to display train number and stops it goes through
SELECT train_number,stop_number from train where stop_number=75638 ;

--Query to display trains from their source
SELECT train_number from train where source ='Patiala';
```

--Query to display station where pnr number is
SELECT ticket.source,route.stop_name from ticket,route where PNR_number
=5463890175 and ticket.train_number=route.train_number;

SNAPSHOTS:

Feedback ? Help vvishalakshi_be20@thapar.edu ∨

SQL Worksheet

Clear Find Actions ∨ Save Run ▶

```
17   INSERT INTO route values(75638,'Rajpura','AAA56');
18   INSERT INTO route values(83518,'Agra','BBB95');
19
20   INSERT INTO payment values(6579102657,2000,'HDFC',8251647851,9475624358);
21   INSERT INTO payment values(9086710265,250,'ICICI',6574819207,5463890175);
22
23   INSERT INTO class values('AAA56',500,'first AC');
24   INSERT INTO class values('BBB95',250,'second Non-AC');
25
26   SELECT* from user_details;
27   SELECT* from train;
28   SELECT* from ticket;
29
```

PNR_NUMBER	SOURCE	DESTINATION	DATE_TIME	SEAT_NUMBER	USERNAME	TRAIN_NUMBER
9475624358	Patiala	Chandigarh	31-MAY-22 09.30.00.000000 AM	A12	Nivedita	AAA56
5463890175	Delhi	Kerala	19-MAY-22 09.30.00.000000 AM	B56	Twesha	BBB95

Download CSV
2 rows selected.

```
18   INSERT INTO route values(83518,'Agra','BBB95');
19
20   INSERT INTO payment values(6579102657,2000,'HDFC',8251647851,9475624358);
21   INSERT INTO payment values(9086710265,250,'ICICI',6574819207,5463890175);
22
23   INSERT INTO class values('AAA56',500,'first AC');
24   INSERT INTO class values('BBB95',250,'second Non-AC');
25
26   SELECT* from user_details;
27   SELECT* from train;
28   SELECT* from ticket;
29   SELECT* from route;
30
```

STOP_NUMBER	STOP_NAME	TRAIN_NUMBER
75638	Rajpura	AAA56
83518	Agra	BBB95

Download CSV
2 rows selected.

```
19
20   INSERT INTO payment values(6579102657,2000,'HDFC',8251647851,9475624358);
21   INSERT INTO payment values(9086710265,250,'ICICI',6574819207,5463890175);
22
23   INSERT INTO class values('AAA56',500,'first AC');
24   INSERT INTO class values('BBB95',250,'second Non-AC');
25
26   SELECT* from user_details;
27   SELECT* from train;
28   SELECT* from ticket;
29   SELECT* from route;
30   SELECT* from payment;
31
```

TRANSACTION_ID	AMOUNT	BANK	CARD_NUMBER	PNR
6579102657	2000	HDFC	8251647851	9475624358
9086710265	250	ICICI	6574819207	5463890175

Download CSV
2 rows selected.

SQL Worksheet

◇ Clear   ⚲ Find   Actions ⌄   ⊟ Save   Run ▶

```
20  INSERT INTO payment values(6579102657,2000,'HDFC',8251647851,9475624358);
21  INSERT INTO payment values(9086710265,250,'ICICI',6574819207,5463890175);
22
23  INSERT INTO class values('AAA56',500,'first AC');
24  INSERT INTO class values('BBB95',250,'second Non-AC');
25
26  SELECT* from user_details;
27  SELECT* from train;
28  SELECT* from ticket;
29  SELECT* from route;
30  SELECT* from payment;
31  SELECT* from class;
32
```

TRAIN_NUMBER	FARE	CLASS_TYPE
AAA56	500	first AC
BBB95	250	second Non-AC
AAA56	500	first AC

SQL Worksheet

◇ Clear   ⚲ Find   Actions ⌄   ⊟ Save   Run ▶

```
25
26  SELECT* from user_details;
27  SELECT* from train;
28  SELECT* from ticket;
29  SELECT* from route;
30  SELECT* from payment;
31  SELECT* from class;
32
33
34  ----Query to display Trains arriving after 12:00 PM
35  select * from train where arrival_time < '31-May-2022 12:00:00 AM';
36
37
```

TRAIN_NUMBER	SOURCE	DESTINATION	ARRIVAL_TIME	DEPARTURE_TIME	SEAT_AVAILABLE	STOP_NUMBER
BBB95	Delhi	Kerala	19-MAY-22 02.30.00.000000 PM	19-MAY-22 05.00.00.000000 PM	252	83518

Download CSV

SQL Worksheet

◇ Clear   ⚲ Find   Actions ⌄   ⊟ Save   Run ▶

```
27  SELECT* from train;
28  SELECT* from ticket;
29  SELECT* from route;
30  SELECT* from payment;
31  SELECT* from class;
32
33
34  ----Query to display Trains arriving after 12:00 PM
35  select * from train where arrival_time < '31-May-2022 12:00:00 AM';
36
37  ----Query to display users
38  SELECT username from user_details where gender='female';
39
```

USERNAME
Nivedita
Twesha

Download CSV
2 rows selected.

```
31  SELECT* from class;
32
33
34  ----Query to display Trains arriving after 12:00 PM
35  select * from train where arrival_time < '31-May-2022 12:00:00 AM';
36
37  ----Query to display users
38  SELECT username from user_details where gender='female';
39
40  --Query to display train number and stops it goes through
41  SELECT train_number,stop_number from train where stop_number=75638 ;
42
43
```

USERNAME
Nivedita
Twesha

Download CSV
2 rows selected.

```
34  ----Query to display Trains arriving after 12:00 PM
35  select * from train where arrival_time < '31-May-2022 12:00:00 AM';
36
37  ----Query to display users
38  SELECT username from user_details where gender='female';
39
40  --Query to display train number and stops it goes through
41  SELECT train_number,stop_number from train where stop_number=75638 ;
42
43  --Query to display trains from their source
44  SELECT train_number from train where source ='Patiala';
45
46
```

TRAIN_NUMBER
AAA56

Download CSV

```
36
37  ----Query to display users
38  SELECT username from user_details where gender='female';
39
40  --Query to display train number and stops it goes through
41  SELECT train_number,stop_number from train where stop_number=75638 ;
42
43  --Query to display trains from their source
44  SELECT train_number from train where source ='Patiala';
45
46  --Query to display station where pnr number is
47  SELECT ticket.source,route.stop_name from ticket,route where PNR_number =5463890175 and ticket.train_number=route.train_number;
48
```

SOURCE	STOP_NAME
Delhi	Agra

Download CSV

PLSQL QUERIES:

--PRINTING MESSAGE IN PL/SQL

```
DECLARE
  message  varchar2(255):= 'Hello, Welcome to our project of Railway Reservation
System!';
BEGIN
  dbms_output.put_line(message);
END;
```


--TO DISPLAY DETAILS OF TRAIN WITH TRAIN NUMBER AAA56

```
DECLARE
  t_id train.train_number%type := AAA56;
  t_source train.source%type;
  t_dest train.destination%type;

BEGIN
  SELECT train_number, source, destination INTO t_id, t_source, t_dest
  FROM train
  WHERE train_number = t_id;
  dbms_output.put_line
  ('Train number is' ||t_id || 'going from ' || t_source || ' to ' || t_dest);
END;
```

SQL Worksheet   Clear   Find   Actions   Save   Run

```
21  INSERT INTO payment values(9086710203,250, ICICI ,6574819207,5403890173);
22
23  INSERT INTO class values('AAA56',500,'first AC');
24  INSERT INTO class values('BBB95',250,'second Non-AC');
25
26  SELECT* from user_details;
27  SELECT* from train;
28  SELECT* from ticket;
29  SELECT* from route;
30  SELECT* from payment;
31  SELECT* from class;
32
33  DECLARE
34      t_id train.train_number%type := 'AAA56';
35      t_source train.source%type;
36      t_dest train.destination%type;
37
38  BEGIN
39      SELECT train_number, source, destination INTO t_id, t_source, t_dest
40      FROM train
41      WHERE train_number = t_id;
42      dbms_output.put_line
43      ('Train number is ' ||t_id || ' going from ' || t_source || ' to ' || t_dest);
44  END;
```

```
Statement processed.
Train number is AAA56 going from Patiala to Chandigarh
```

--CHECKING LOGIN CREDENTIALS:
```
create or replace function log_in(x in varchar2, y in varchar2)
return varchar2
as
  match_count number;
begin
  select count(*)
    into match_count
    from user_details
    where username=x
    and password=y;
  if match_count = 0 then
    return 'Wrong username or password!';
  elsif match_count = 1 then
    return 'Login successful!';
  else
    return 'Too many matches, this should never happen!';
  end if;
end;
/
```

```
32
33
34 create or replace function log_in(x in varchar2, y in varchar2)
35 return varchar2
36 as
37    match_count number;
38 begin
39    select count(*)
40      into match_count
41      from user_details
42      where username=x
43      and password=y;
44    if match_count = 0 then
45      return 'Wrong username or password!';
46    elsif match_count = 1 then
47      return 'Login successful!';
48    else
49      return 'Too many matches, this should never happen!';
50    end if;
51 end;
52 /
```

Function created.

--TO DISPLAY DETAILS OF TRAIN ARRIVING IN MORNING

DECLARE
    P_PNR ticket.PNR_number%type;
    P_source ticket.source%type;
    P_dest ticket.destination%type;
    P_dt ticket.date_time%type;
    SeatNo ticket.seat_number%type;
Cursor c IS select PNR_number,source,destination,date_time,seat_number from ticket
where to_char(ticket.date_time,'am')='am' ;

BEGIN
    open c;
    loop fetch c into P_PNR,P_source,P_dest,P_dt,SeatNo;
    exit when c%NOTFOUND;
    dbms_output.put_line(P_PNR||' '||P_source||' '||P_dest||' '||P_dt||' '||SeatNo||' '); end
loop;
    close c;
END;

```
38  BEGIN
39    SELECT train_number, source, destination INTO t_id, t_source, t_dest
40    FROM train
41    WHERE train_number = t_id;
42    dbms_output.put_line
43    ('Train number is ' ||t_id || ' going from ' || t_source || ' to ' || t_dest);
44  END;
45
46
47  DECLARE
48    P_PNR ticket.PNR_number%type;
49    P_source ticket.source%type;
50    P_dest ticket.destination%type;
51    P_dt ticket.date_time%type;
52    SeatNo ticket.seat_number%type;
53  Cursor c IS select PNR_number,source,destination,date_time,seat_number from ticket where to_char(ticket.date_time,'am')='am' ;
54
55  BEGIN
56    open c;
57    loop fetch c into P_PNR,P_source,P_dest,P_dt,SeatNo;
58    exit when c%NOTFOUND;
59    dbms_output.put_line(P_PNR||' '||P_source||' '||P_dest||' '||P_dt||' '||SeatNo||' '); end loop;
60    close c;
61  END;
```

```
Statement processed.
9475624358 Patiala Chandigarh 31-MAY-22 09.30.00.000000 AM A12
5463890175 Delhi Kerala 19-MAY-22 09.30.00.000000 AM B56
```

--EXCEPTION

```
DECLARE
  temp varchar(20);

BEGIN
  SELECT train_number into temp from train where source='Canada';

exception
  WHEN no_data_found THEN
    dbms_output.put_line('ERROR');
    dbms_output.put_line('This data does not exist');
end;
```

--TRIGGER

```
CREATE TRIGGER trig
after INSERT
ON user_details
BEGIN
dbms_output.put_line('New User added');
END;
```

```
71
72  --Trigger
73  CREATE TRIGGER trig
74  after INSERT
75  ON user_details
76  BEGIN
77  dbms_output.put_line('New User added');
78  END;
79
```

Trigger created.

--TRIGGER

```
CREATE TRIGGER trig
after INSERT
ON user_details
BEGIN
dbms_output.put_line('New User added');
END;

INSERT INTO user_details values('Vishalakshi','varu123','Vishalakhsi','Kapoor',
7256392176,'female',to_date('2003-10-07', 'yyyy-mm--dd'));
```

```
71
72  --Trigger
73  CREATE TRIGGER trig
74  after INSERT
75  ON user_details
76  BEGIN
77  dbms_output.put_line('New User added');
78  END;
79
80  INSERT INTO user_details values('Vishalakshi','varu123','Vishalakshi','Kapoor',7256392176,'female',to_date('2003-10-07','yyyy-mm-dd'));
81
```

1 row(s) inserted.
New User added