DBMS LAB PROJECT

RAILWAY MANAGEMENT SYSTEM

PRESENTED BY:

TEAM NO:17

TEAM DETAILS:

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Overview

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2. Entities and attributes
3. ER diagram
4. Schema diagram
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8. Advantages

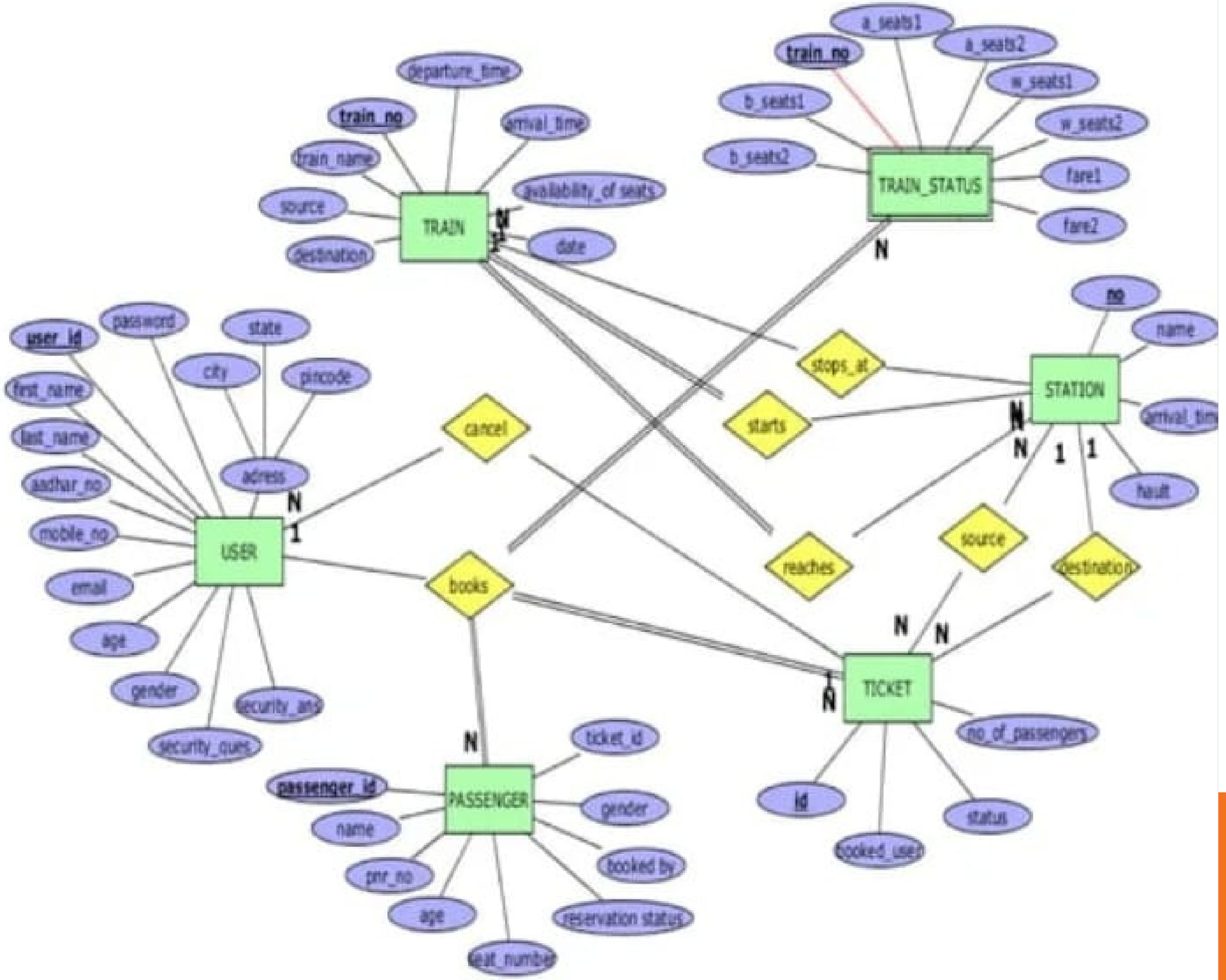
RAILWAY MANAGEMENT SYSTEM:

This prThe main purpose of maintaining database for Railway Reservation System is toreduce the manual errors involved in the booking and canceling of tickets andmake it convenient for the customers and providers to maintain the data abouttheir customers and also about the seats available at them. oject is about creating the database about railway management system.The railway management system facilitates the passengers to enquire about the trains on the basis of source and destination,booking and cancellation of tickets,enquire about the status of the tickets etc.The aim of the project is to design and develop a database maintaining the records of different trains,train status and passengers.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 no of seats available and number of seats already booked.

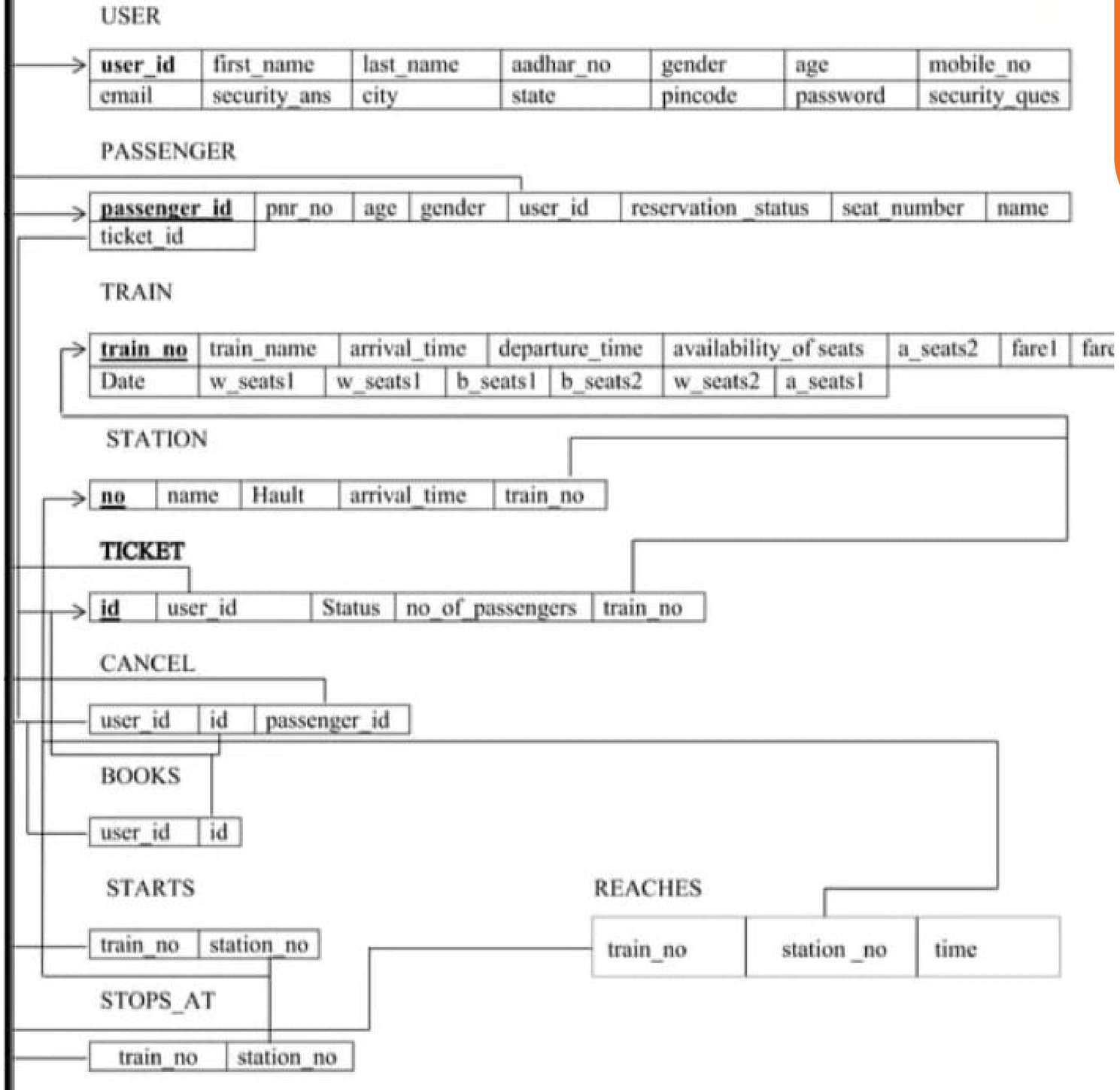
LIST OF ENTITIES AND ATTRIBUTES:

ENTITES	ATTRIBUTES
USER	USER_id,first_name,last_name,gender,age,email,mobileno,city,state,pincode,secuirty_ques,security_ans
passenger	name,gender,age,pnr_no,seat_no,bookedby,reservation_status
train	train_name,source,destination,arrival_time,departure_time,availability_of_seats,train_no,a_seat1 etc
station	name,staion_no,train_no,arrival_time,hault
ticket	id,train_no,booked_user,status,no_of_passengers

ER DIAGRAM:


a_seats1
train_no
a_seats2
w_seats1
b_seats1
w_seats2
b_seats2
fare1
fare2
TRAIN_STATUS
departure_time
train_no
arrival_time
train_name
availability_of_seats
source
TRAIN
destination
date
N
1
N
stops_at
STATION
starts
name
arrival_tim
N
N
1
1
halt
password
state
user_id
city
pincode
first_name
last_name
cancel
aadhar_no
adress
mobile_no
USER
reaches
source
destination
email
books
age
gender
security_ans
security_ques
N
1
N
N
N
TICKET
no_of_passengers
ticket_id
N
passenger_id
PASSENGER
gender
id
status
name
booked by
pnr_no
age
reservation status
seat_number

SCHEMA DIAGRAM:



CREATING TABLES:

```
mysql> create table user(user_id int primary key,first_name varchar(50),last_name varchar(50),gender char,age int,mobile_no varchar(50),email varcha
r(50),city varchar(50),state varchar(50),pincode varchar(50),security_ques varchar(50),security_ans varchar(50));
Query OK, 0 rows affected (0.02 sec)

mysql> desc user;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| user_id       | int         | NO   | PRI | NULL    |       |
| first_name    | varchar(50) | YES  |     | NULL    |       |
| last_name     | varchar(50) | YES  |     | NULL    |       |
| gender        | char(1)     | YES  |     | NULL    |       |
| age           | int         | YES  |     | NULL    |       |
| mobile_no     | varchar(50) | YES  |     | NULL    |       |
| email         | varchar(50) | YES  |     | NULL    |       |
| city          | varchar(50) | YES  |     | NULL    |       |
| state         | varchar(50) | YES  |     | NULL    |       |
| pincode       | varchar(50) | YES  |     | NULL    |       |
| security_ques | varchar(50) | YES  |     | NULL    |       |
| security_ans  | varchar(50) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
12 rows in set (0.00 sec)
```

```
mysql> create table station(station_no int,name varchar(50),hault int,arrival_time time,train_no int,primary key(station_no,train_no),constraint for
eign key(train_no) references train(train_no));
Query OK, 0 rows affected (0.04 sec)

mysql> desc station;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| station_no   | int         | NO   | PRI | NULL    |       |
| name         | varchar(50) | YES  |     | NULL    |       |
| hault        | int         | YES  |     | NULL    |       |
| arrival_time | time        | YES  |     | NULL    |       |
| train_no     | int         | NO   | PRI | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

```
mysql> create table train(train_no int primary key,train_name varchar(50),arrival_time time,departure_time time,availability_ofseats char,dat
;
Query OK, 0 rows affected (0.02 sec)

mysql> desc train;
+----------------------+-------------+------+-----+---------+-------+
| Field                | Type        | Null | Key | Default | Extra |
+----------------------+-------------+------+-----+---------+-------+
| train_no             | int         | NO   | PRI | NULL    |       |
| train_name           | varchar(50) | YES  |     | NULL    |       |
| arrival_time         | time        | YES  |     | NULL    |       |
| departure_time       | time        | YES  |     | NULL    |       |
| availability_ofseats | char(1)     | YES  |     | NULL    |       |
| date                 | date        | YES  |     | NULL    |       |
+----------------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

```
mysql> create table train_status(train_no int primary key,b_seats1 int,b_seats2 int,b_seats3 int,a_seats1 int,a_seats2 int);
Query OK, 0 rows affected (0.02 sec)

mysql> desc train_status;
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| train_no | int  | NO   | PRI | NULL    |       |
| b_seats1 | int  | YES  |     | NULL    |       |
| b_seats2 | int  | YES  |     | NULL    |       |
| b_seats3 | int  | YES  |     | NULL    |       |
| a_seats1 | int  | YES  |     | NULL    |       |
| a_seats2 | int  | YES  |     | NULL    |       |
+----------+------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

```
mysql> create table ticket(id int primary key,user_id int,status char,noofpassengers int,train_no int,constraint foreign key(user_id) references use
r(user_id),constraint foreign key(train_no) references train(train_no));
Query OK, 0 rows affected (0.05 sec)

mysql> desc ticket;
+----------------+---------+------+-----+---------+-------+
| Field          | Type    | Null | Key | Default | Extra |
+----------------+---------+------+-----+---------+-------+
| id             | int     | NO   | PRI | NULL    |       |
| user_id        | int     | YES  | MUL | NULL    |       |
| status         | char(1) | YES  |     | NULL    |       |
| noofpassengers | int     | YES  |     | NULL    |       |
| train_no       | int     | YES  | MUL | NULL    |       |
+----------------+---------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

```
mysql> create table passengers(passengers_id int primary key,pnr_no int,age int,gender char,user_id int,reservation_status char,seat_number varchar(
5),name varchar(50),ticket_id int,constraint foreign key(user_id)references user(user_id),constraint foreign key(ticket_id)references ticket(id));
Query OK, 0 rows affected (0.04 sec)

mysql> desc passengers;
+--------------------+-------------+------+-----+---------+-------+
| Field              | Type        | Null | Key | Default | Extra |
+--------------------+-------------+------+-----+---------+-------+
| passengers_id      | int         | NO   | PRI | NULL    |       |
| pnr_no             | int         | YES  |     | NULL    |       |
| age                | int         | YES  |     | NULL    |       |
| gender             | char(1)     | YES  |     | NULL    |       |
| user_id            | int         | YES  | MUL | NULL    |       |
| reservation_status | char(1)     | YES  |     | NULL    |       |
| seat_number        | varchar(5)  | YES  |     | NULL    |       |
| name               | varchar(50) | YES  |     | NULL    |       |
| ticket_id          | int         | YES  | MUL | NULL    |       |
+--------------------+-------------+------+-----+---------+-------+
9 rows in set (0.00 sec)
```

```
mysql> create table starts(train_no int primary key,station_no int,constraint foreign key(train_no) references train(train_no),constraint foreign ke
y(station_no) references station(station_no));
Query OK, 0 rows affected (0.03 sec)

mysql> desc starts;
+------------+------+------+-----+---------+-------+
| Field      | Type | Null | Key | Default | Extra |
+------------+------+------+-----+---------+-------+
| train_no   | int  | NO   | PRI | NULL    |       |
| station_no | int  | YES  | MUL | NULL    |       |
+------------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

```
> create table stops_at(train_no int,station_no int,constraint f
ey(train_no) references train(train_no),constraint foreign key(s
) references station(station_no));
OK, 0 rows affected (0.04 sec)

> desc stops_at;
-------+------+------+-----+---------+-------+
ld     | Type | Null | Key | Default | Extra |
-------+------+------+-----+---------+-------+
in_no  | int  | YES  | MUL | NULL    |       |
tion_no | int | YES  | MUL | NULL    |       |
-------+------+------+-----+---------+-------+
s in set (0.00 sec)

> create table reaches(train_no int,station_no int,time time,cor
foreign key(train_no) references train(train_no),constraint fore
station_no)references station(station_no));
OK, 0 rows affected (0.04 sec)

> desc reaches;
-------+------+------+-----+---------+-------+
ld     | Type | Null | Key | Default | Extra |
-------+------+------+-----+---------+-------+
in_no  | int  | YES  | MUL | NULL    |       |
tion_no | int | YES  | MUL | NULL    |       |
e      | time | YES  |     | NULL    |       |
-------+------+------+-----+---------+-------+
s in set (0.00 sec)
```

```
mysql> create table books(user_id int,id int,constraint foreign key(user
_id) references user(user_id),constraint foreign key(id)references ticke
t(id));
Query OK, 0 rows affected (0.04 sec)

mysql> desc books;
+---------+------+------+-----+---------+-------+
| Field   | Type | Null | Key | Default | Extra |
+---------+------+------+-----+---------+-------+
| user_id | int  | YES  | MUL | NULL    |       |
| id      | int  | YES  | MUL | NULL    |       |
+---------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

```
mysql> create table cancel(user_id int,id int, passenger_id int,constrai
nt foreign key(id) references ticket(id),constraint foreign key(passenge
r_id) references passengers(passengers_id),constraint foreign key(user_i
d)references user(user_id));
Query OK, 0 rows affected (0.05 sec)

mysql> desc cancel;
+--------------+------+------+-----+---------+-------+
| Field        | Type | Null | Key | Default | Extra |
+--------------+------+------+-----+---------+-------+
| user_id      | int  | YES  | MUL | NULL    |       |
| id           | int  | YES  | MUL | NULL    |       |
| passenger_id | int  | YES  | MUL | NULL    |       |
+--------------+------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

INSERTING VALUES INTO TABLES:

- insert into user values(1701,'vijay','sharma','M',34,'9887786655','vijay@gmail.com','vijayawada','andhrapradesh','520001','favouritecolour','red'), (1702,'rohith','kumar','M',45,'9809666555','rohithkumar@gmail.com','guntur','andhrapradesh','522004''favouritebike','bmw'), (1703,'manasvi','sree','F',20,'9995550666','manasvi@gmail.com','guntur','andhrapradesh','522204','favourite flower','rose');
- insert into train values(12711,'pinakini exp','113000','114000','A',20240405),(12315,'cormandel exp','124500','125000','N',20240601);
- insert into station values(111,'vijayawada',10,'113000',12711),(222,'tirupathi',5,'114500',12315);
- insert into train_status values(12711,10,5,0,300,600),(12315,10,4,0,100,450);
- insert into ticket values(4001,1701,'c',1,12711),(4002,1702,'N',1,12315);
- insert into passengers values(5001,78965,45,'M',1701,'c','B6-45','ramesh',4001), (5002,54523,54,'F',1701,'W','B3-21','surekha',4002);
- insert into starts values(12711,111),(12315,111);
- insert into stops_at values(12711,222),(12315,111);
- insert into reaches values(12711,222,'040000'),(12315,111,'053500');
- insert into books values(1701,4001),(1702,4002);
- insert into cancel values(1701,4001,5001);

```
mysql> select *from user;
+---------+------------+-----------+--------+------+------------+----------------------+-----------+---------------+---------+------------------+---------------+
| user_id | first_name | last_name | gender | age  | mobile_no  | email                | city      | state         | pincode | security_ques    | security_ans  |
+---------+------------+-----------+--------+------+------------+----------------------+-----------+---------------+---------+------------------+---------------+
|    1701 | vijay      | sharma    | M      |   34 | 9887786655 | vijay@gmail.com      | vijayawada | andhrapradesh | 520001  | favouritecolour  | red           |
|    1702 | rohith     | kumar     | M      |   45 | 9809666555 | rohithkumar@gmail.com | guntur     | andhrapradesh | 522004  | favouritebike    | bmw           |
|    1703 | manasvi    | sree      | F      |   20 | 9995550666 | manasvi@gmail.com    | guntur     | andhrapradesh | 522004  | favourite flower | rose          |
+---------+------------+-----------+--------+------+------------+----------------------+-----------+---------------+---------+------------------+---------------+
3 rows in set (0.00 sec)

mysql> select*from passengers;
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
| passengers_id | pnr_no | age  | gender | user_id | reservation_status | seat_number | name   | ticket_id |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
|          5001 |  78965 |   45 | M      |    1701 | c                  | B6-45       | ramesh |      4001 |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
1 row in set (0.00 sec)

mysql> select*from train;
+----------+---------------+--------------+----------------+----------------------+------------+
| train_no | train_name    | arrival_time | departure_time | availability_ofseats | date       |
+----------+---------------+--------------+----------------+----------------------+------------+
|    12315 | cormandel exp | 12:45:00     | 12:50:00       | N                    | 2024-04-05 |
|    12711 | pinakini exp  | 11:30:00     | 11:40:00       | A                    | 2024-06-01 |
+----------+---------------+--------------+----------------+----------------------+------------+
2 rows in set (0.00 sec)

mysql> select*from station;
+------------+------------+-------+--------------+----------+
| station_no | name       | hault | arrival_time | train_no |
+------------+------------+-------+--------------+----------+
|        111 | vijayawada |    10 | 11:30:00     |    12711 |
|        222 | tirupathi  |     5 | 11:45:00     |    12315 |
+------------+------------+-------+--------------+----------+
2 rows in set (0.00 sec)
```

```
mysql> select*from passengers where ticket_id=4001;
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
| passengers_id | pnr_no | age  | gender | user_id | reservation_status | seat_number | name   | ticket_id |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
|          5001 |  78965 |   45 | M      |    1701 | c                  | B6-45       | ramesh |      4001 |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
1 row in set (0.00 sec)

mysql> select*from train_status;
+----------+----------+----------+----------+-------+-------+
| train_no | b_seats1 | b_seats2 | b_seats3 | fare1 | fare2 |
+----------+----------+----------+----------+-------+-------+
|    12315 |       10 |        5 |        0 |   300 |   600 |
|    12711 |       10 |        4 |        0 |   100 |   450 |
+----------+----------+----------+----------+-------+-------+
2 rows in set (0.00 sec)
```

```
mysql> ^C
mysql> select*from ticket;
+------+---------+--------+-----------------+----------+
| id   | user_id | status | noofpassengers  | train_no |
+------+---------+--------+-----------------+----------+
| 4001 |    1701 | c      |               1 |    12711 |
| 4002 |    1702 | n      |               1 |    12315 |
+------+---------+--------+-----------------+----------+
2 rows in set (0.00 sec)

mysql> select*from starts;
+----------+------------+
| train_no | station_no |
+----------+------------+
|    12711 |        111 |
|    12315 |        222 |
+----------+------------+
2 rows in set (0.00 sec)

mysql> select*from stops_at;
+----------+------------+
| train_no | station_no |
+----------+------------+
|    12711 |        222 |
|    12315 |        111 |
+----------+------------+
2 rows in set (0.00 sec)

mysql> select*from reaches;
+----------+------------+----------+
| train_no | station_no | time     |
+----------+------------+----------+
|    12711 |        222 | 04:00:00 |
|    12315 |        111 | 05:35:00 |
+----------+------------+----------+
2 rows in set (0.00 sec)

mysql> select*from books;
+---------+------+
| user_id | id   |
+---------+------+
|    1701 | 4001 |
|    1702 | 4002 |
+---------+------+
```

QUERIES TO RETRIVE DATA:

- Print details of passengers travelling under ticket no 4001

```
mysql> select*from passengers where ticket_id=4001;
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
| passengers_id | pnr_no | age  | gender | user_id | reservation_status | seat_number | name   | ticket_id |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
|          5001 |  78965 |   45 | M      |    1701 | c                  | B6-45       | ramesh |      4001 |
+---------------+--------+------+--------+---------+--------------------+-------------+--------+-----------+
1 row in set (0.00 sec)
```

- Display the train number with increasing order of fairs

```
mysql> select ts.train_no,ts.fare1,t.train_name from train_status ts,train t where t.train_no=ts.train_no order by fare1 asc;
+----------+-------+--------------+
| train_no | fare1 | train_name   |
+----------+-------+--------------+
|    12711 |   100 | cormandel exp |
|    12315 |   300 | pinakini exp  |
+----------+-------+--------------+
2 rows in set (0.01 sec)
```

- Display time at which the trainno_____ reaches stationno_____;

```
mysql> select r.*,s.name from reaches r,station s where r.station_no=s.station_no;
+----------+------------+----------+------------+
| train_no | station_no | time     | name       |
+----------+------------+----------+------------+
|    12315 |        111 | 05:35:00 | vijayawada |
|    12711 |        222 | 04:00:00 | tirupathi  |
+----------+------------+----------+------------+
2 rows in set (0.00 sec)
```

- Display the trainno which haults for more time in the station

```
mysql> select train_no,max(hault) as hault from station group by train_no order by hault desc limit 1;
+----------+-------+
| train_no | hault |
+----------+-------+
|    12711 |    10 |
+----------+-------+
1 row in set (0.00 sec)
```

- Display immediate train from tirupathi to vijayawada

```
mysql> SELECT DISTINCT t.*
    -> FROM train t, station s, starts st, stops_at sa
    -> WHERE st.station_no = (SELECT station_no FROM station WHERE name = 'tirupathi')
    ->   AND sa.station_no = (SELECT station_no FROM station WHERE name = 'vijayawada')
    -> ORDER BY date;
+----------+--------------+--------------+----------------+----------------------+------------+
| train_no | train_name   | arrival_time | departure_time | availability_ofseats | date       |
+----------+--------------+--------------+----------------+----------------------+------------+
|    12315 | cormandel exp | 12:45:00     | 12:50:00       | N                    | 2024-04-05 |
|    12711 | pinakini exp  | 11:30:00     | 11:40:00       | A                    | 2024-06-01 |
+----------+--------------+--------------+----------------+----------------------+------------+
2 rows in set (0.00 sec)
```

- Display the details of passengers who cancelled the ticket for a train no

```
mysql> select u.* from user u,cancel c,ticket t where c.user_id=u.user_id and c.id=t.id and t.train_no=12711;
+---------+------------+-----------+--------+-----+------------+---------------+-----------+--------------+---------+----------------+--------------+
| user_id | first_name | last_name | gender | age | mobile_no  | email         | city      | state        | pincode | security_ques  | security_ans |
+---------+------------+-----------+--------+-----+------------+---------------+-----------+--------------+---------+----------------+--------------+
|    1701 | vijay      | sharma    | M      |  34 | 9887786655 | vijay@gmail.com | vijayawada | andhrapradesh | 520001  | favouritecolour | red          |
+---------+------------+-----------+--------+-----+------------+---------------+-----------+--------------+---------+----------------+--------------+
1 row in set (0.00 sec)

mysql>
```

ADVANTAGES OF RAILWAY MANAGEMENT SYSTEM:

- **Data Centralization:**

All relevant data, including schedules, routes, ticket information, maintenance records, and employee details, can be stored in a centralized database.

- **Efficient Data Retrieval:**

With a well-designed database, queries for retrieving information can be optimized, leading to faster and more efficient data retrieval.

- **Enhanced Security:**

A well-designed database system provides robust security measures to protect sensitive information. Access controls, encryption, and authentication mechanisms can be implemented to safeguard data integrity and prevent unauthorized access.

- **Integration with Other Systems:**

The RMS database can be integrated with other systems such as financial systems, human resources, and maintenance tracking. This integration streamlines overall business processes and ensures consistency in data across different departments.


Thank
you!