train station

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- Requirement collection & Analysis:

We have a train station which organize many trips to different cities. So, we need to build an application to maintain and manage operations of this station.
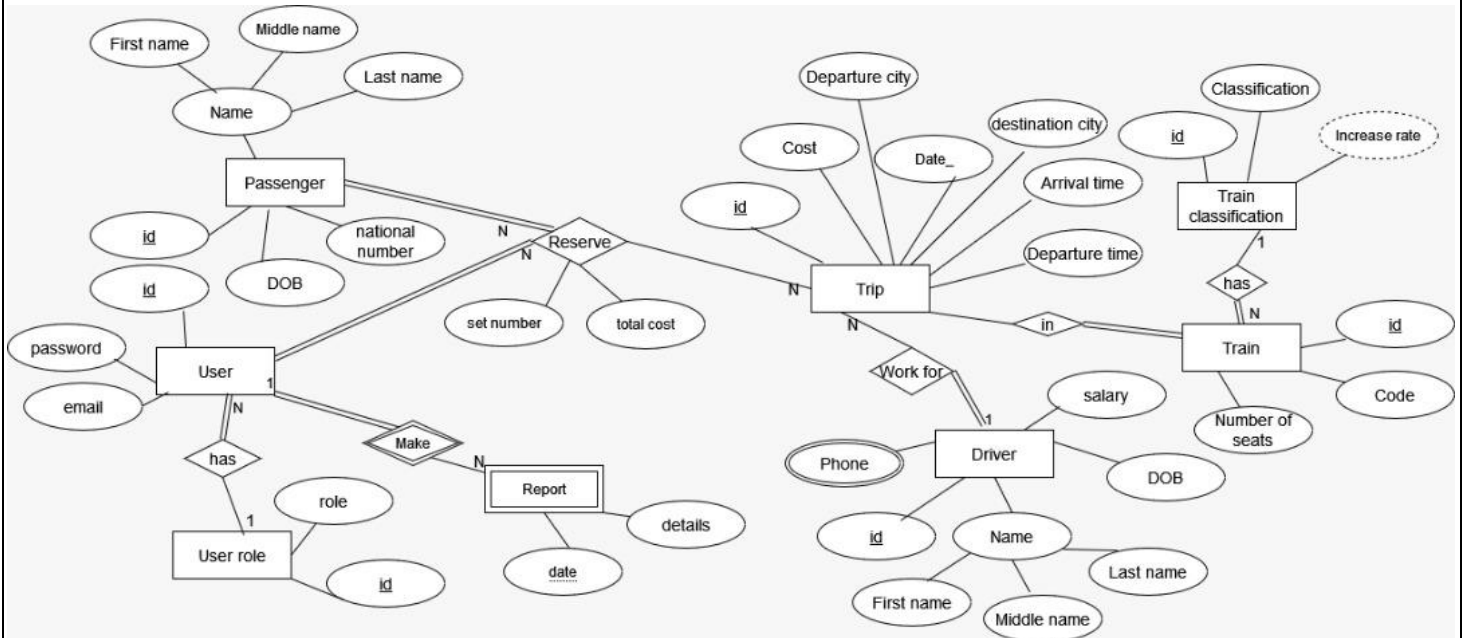
First: there are different users of the app:
1- Admins of system who have full privileges of accessing data and running operations.
2- Employees who can run some operations like add a new trip or accessing to some data.
3- User of application who can run some operations like make a new book or accessing to some data
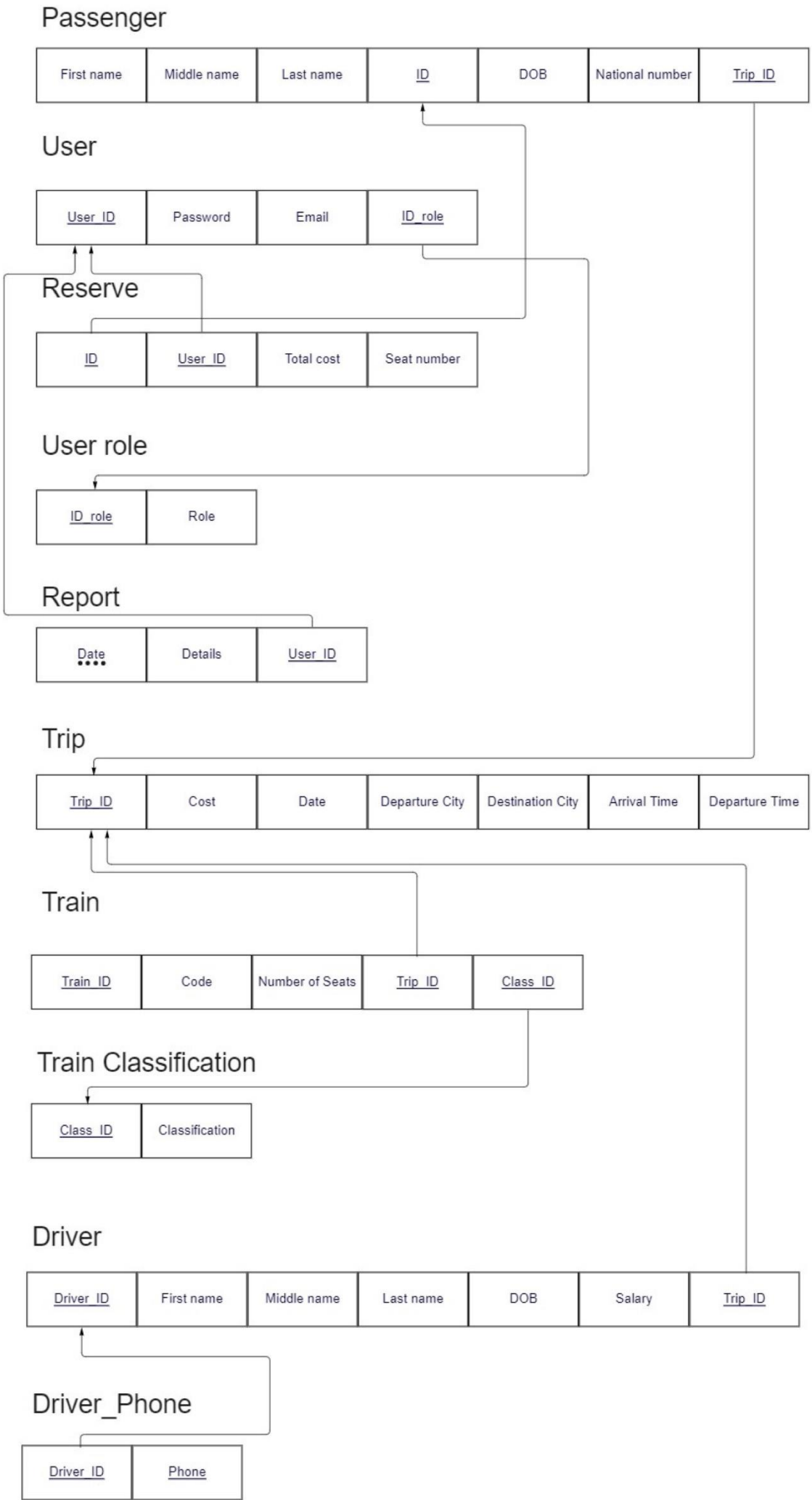
Second: operations of application:
1- Manage drivers.
2- Manage trains with different classification.
3- Manage trips to different cities.
4- Manage reservations.
5- Ability to provide notes or report a problem.

- Database Design:
  ERD model:

Passenger

First name	Middle name	Last name	ID	DOB	National number	Trip_ID

User

User_ID	Password	Email	ID_role

Reserve

ID	User_ID	Total cost	Seat number

User role

ID_role	Role

Report

Date	Details	User_ID

Trip

Trip_ID	Cost	Date	Departure City	Destination City	Arrival Time	Departure Time

Train

Train_ID	Code	Number of Seats	Trip_ID	Class_ID

Train Classification

Class_ID	Classification

Driver

Driver_ID	First name	Middle name	Last name	DOB	Salary	Trip_ID

Driver_Phone

Driver_ID	Phone

- Database Implementation:

  Create database:
  create database Train_Station;

  Create table:

  ```sql
  CREATE TABLE train_Station.Train_Classification
  (
    ID INT NOT NULL AUTO_INCREMENT,
    Classification VARCHAR(20) NOT NULL,
    increase___rate FLOAT NOT NULL,
    PRIMARY KEY (ID),
    UNIQUE (Classification)
  );

  CREATE TABLE train_Station.Train
  (
    ID INT NOT NULL AUTO_INCREMENT,
    Code VARCHAR(20) NOT NULL,
    number_Of_Seats INT NOT NULL,
    ClassID INT NOT NULL,
    PRIMARY KEY (ID),
    FOREIGN KEY (ClassID) REFERENCES
  Train_Classification(ID),
    UNIQUE (Code)
  );
  ```

```sql
CREATE TABLE train_Station.Trip
(
  ID INT NOT NULL AUTO_INCREMENT,
  Cost FLOAT NOT NULL,
  Departure_City VARCHAR(20) NOT NULL,
  Destination_City VARCHAR(20) NOT NULL,
  Departure_Time time NOT NULL,
  Arrival_Time time NOT NULL,
  Date_ DATE NOT NULL,
  PRIMARY KEY (ID)
);

CREATE TABLE train_Station.Passenger
(
  ID INT NOT NULL AUTO_INCREMENT,
  First_Name VARCHAR(20) NOT NULL,
  Middle_Name VARCHAR(20) NOT NULL,
  Last_Name VARCHAR(20) NOT NULL,
  DOB DATE NOT NULL,
  National_Number VARCHAR(20) NOT NULL,
  PRIMARY KEY (ID),
  UNIQUE (National_Number)
);
```

```sql
CREATE TABLE train_Station.Driver
(
  ID INT NOT NULL AUTO_INCREMENT,
  First_Name VARCHAR(20) NOT NULL,
  Middle_Name VARCHAR(20) NOT NULL,
  Last_Name VARCHAR(20) NOT NULL,
  DOB DATE NOT NULL,
  Salary FLOAT NOT NULL,
  PRIMARY KEY (ID)
);




CREATE TABLE train_Station.Trip_Train
(
  ID INT NOT NULL AUTO_INCREMENT,
  TrainID INT NOT NULL,
  TripID INT NOT NULL,
  DriveID INT NOT NULL,
  PRIMARY KEY (ID),
  FOREIGN KEY (TrainID) REFERENCES Train(ID),
  FOREIGN KEY (TripID) REFERENCES Trip(ID),
  FOREIGN KEY (DriveID) REFERENCES Driver(ID)
);
```

```sql
CREATE TABLE  train_Station.User_Role
(
  ID INT NOT NULL AUTO_INCREMENT,
  Role VARCHAR(20) NOT NULL,
  PRIMARY KEY (ID),
  UNIQUE (Role)
);

CREATE TABLE train_Station.Ticket
(
  ID INT NOT NULL AUTO_INCREMENT,
  Date_ DATE NOT NULL,
  seat_Number INT NOT NULL,
  Trip_trainID INT NOT NULL,
  PassengerID INT NOT NULL,
  UserID INT NOT NULL,
  PRIMARY KEY (ID),
  FOREIGN KEY (Trip_trainID) REFERENCES Trip_train(ID),
  FOREIGN KEY (PassengerID) REFERENCES Passenger(ID),
  FOREIGN KEY (UserID) REFERENCES User(ID)
);
```

```sql
CREATE TABLE train_Station.User
(
  ID INT NOT NULL AUTO_INCREMENT,
  Email unique VARCHAR(50) NOT NULL,
  password VARCHAR(50) NOT NULL,
  RoleID INT NOT NULL,
  PRIMARY KEY (ID),
  FOREIGN KEY (RoleID) REFERENCES User_Role(ID)
);


CREATE TABLE train_Station.Report
(
  ID INT NOT NULL AUTO_INCREMENT,
  Date_ DATE NOT NULL,
  details Text NOT NULL,
       INT NOT NULL,
  PRIMARY KEY (ID),
  FOREIGN KEY (UserID) REFERENCES User(ID)
);
```

INSERT INTO user_role

(ID,Role)

VALUES

(1,'admin'),

(2,'user'),

(3,'employee') ;

ID	Role
1	admin
3	employee
2	user
NULL	NULL

INSERT INTO user

(email,password,RoleID)

VALUES

('user@gmial.com','12345',2),

('user2@gmial.com','0000',2),

('user3@gmial.com','pass',2),

('admin@gmial.com','admin',1),

('admin2@gmial.com','pAd',1),

('admin3@gmial.com','09876',1),

('em@gmial.com','emp012',3)

;

ID	email	password	RoleID
1	user@gmial.com	12345	2
2	user2@gmial.com	0000	2
3	user3@gmial.com	pass	2
4	admin@gmial.com	admin	1
5	admin2@gmial.com	pAd	1
6	admin3@gmial.com	09876	1
7	em@gmial.com	emp012	3
NULL	NULL	NULL	NULL

```sql
INSERT INTO driver
(First_Name,Middle_Name,Last_Name,DOB,Salary)
VALUES
('Mhd','Salem',     'Malek','1993-04-22',20000),
('Mahmood','Ayman','Ragheeb','1987-03-01',15000)
;
```

ID	First_Name	Middle_Name	Last_Name	DOB	Salary
1	Mhd	Salem	Malek	1993-04-22	20000
2	Mahmood	Ayman	Ragheeb	1987-03-01	15000
NULL	NULL	NULL	NULL	NULL	NULL

```sql
INSERT INTO train_classification
( Classification, increase_rate)
VALUES
('VIP',50),
('Normal',0),
('Fast',60)
;
```

ID	Classification	increase_rate
1	VIP	50
2	Normal	0
3	Fast	60
NULL	NULL	NULL

```sql
INSERT INTO train_station.train

(Code, number_Of_Seats, ClassID )

VALUES

(N_T1',40,2')  ,(N_T2',50,2') ,(VT001',40,1'),  (F-01',40,3') ;
```

ID	Code	number_Of_Seats	ClassID
1	N_T1	40	2
2	N_T2	50	2
3	VT001	40	1
4	F-01	25	3

```sql
INSERT INTO trip
(Cost, Departure_City, Destination_City, Departure_Time,
Arrival_Time, Date_)
VALUES
(50,'Riyadh  ','Madina','12:30:00','12:50:00','2022-04-30'),
(25,'Riyadh','Madina','12:40:00','02:00:00','2022-04-30'),
(75,'Mecca','Riyadh','01:00:00','02:00:00','2022-05-02')
;
```

ID	Cost	Departure_City	Destination_City	Departure_Time	Arrival_Time	Date_
21	50	Riyadh	Madina	12:30:00	12:50:00	2022-04-30
22	25	Riyadh	Madina	12:40:00	02:00:00	2022-04-30
23	75	Mecca	Riyadh	01:00:00	02:00:00	2022-05-02

```sql
INSERT INTO trip_train
(TrainID ,TripID,DriveID)
VALUES
(4, 21 , 2),
(1, 22 , 2),
(3, 23 , 1)
;
```

ID	TrainID	TripID	DriveID
1	4	21	2
2	1	22	2
3	3	23	1
NULL	NULL	NULL	NULL

INSERT INTO passenger

(First_Name,Middle_Name,Last_Name,DOB,National_Number)

VALUES

('Ali', 'Saleem',   'Hasan',   '1999-04-01','123456789'),

('Fouad', 'Ali',   'Hasan',   '2014-07-23','0987345'),

('Lilas',   'Emad',   'Kamel',   '2001-07-06', '753356874')

;

ID	First_Name	Middle_Name	Last_Name	DOB	National_Number
10	Ali	Saleem	Hasan	1999-04-01	123456789
11	Fouad	Ali	Hasan	2014-07-23	0987345
12	Lilas	Emad	Kamel	2001-07-06	753356874

INSERT INTO ticket

(Date_, seat_Number, Trip_trainID, PassengerID, UserID)

VALUES

('2022-04-17',   1,   3,   10,   1),

('2022-04-17',   2,   3,   11,   1),

('2022-04-17',   1,   1,   12,   1)

;

ID	Date_	seat_Number	Trip_trainID	PassengerID	UserID
24	2022-04-17	1	3	10	1
25	2022-04-17	2	3	11	1
26	2022-04-17	1	1	12	1
NULL	NULL	NULL	NULL	NULL	NULL

```
INSERT INTO train_station.report
(Date_, details, UserID)
VALUES
('2022-04-17',       'some probleme -_-',       1),
('2022-04-17',       'I have a probleme -------',       2)
;
```

ID	Date_	details	UserID
1	2022-04-17	some probleme -_-	1
2	2022-04-17	I have a probleme -------	2