A Project Report On

Railway Reservation System

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CERTIFICATE

This is to certify that the project entitled "**Railway Reservation System**" is a bonafide report of the work carried out by

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of the Department of Information Technology, semester V, under the guidance and supervision for the subject Database Management System. They were involved in Project training during the academic year 2020-2021.

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1. SYSTEM OVERVIEW

1.1 CURRENT SYSTEM

A Railway Reservation System is one which helps us to reserve or cancel seats in train. When we want to travel from one place to another place. Since it is difficult to maintain a record of all information manually, we have created it with the help of an E-R diagram, many tables. It consists of several steps to be followed and many forms to be maintained i.e for the convenience of the passengers.

1.2 PROBLEMS

- Maintenance of a huge amount of Database manually is a very tough due to which passengers are not getting the proper information.
- Passengers had to wait for a long time standing in a queue for the confirmation of the ticket.
- Passengers can't be able to know the proper arrival and departure time which is really very inconvenient.
- It takes a lot of work and time for cancellation.

1.3 ADVANTAGES OF THE PROPOSED SYSTEM

Through this system, we try to achieve the below objectives:

- To inform users about their reservation status.
- Available seats and price of ticket.
- Schedules of different trains.
- Provides the details of the various stations from the source to the destination to the passenger.
- To Reduce cost, occur on management.

- To prevent users from getting Invalid Information.
- Train Fare
- Travel Distance.

2. E-R DIAGRAM

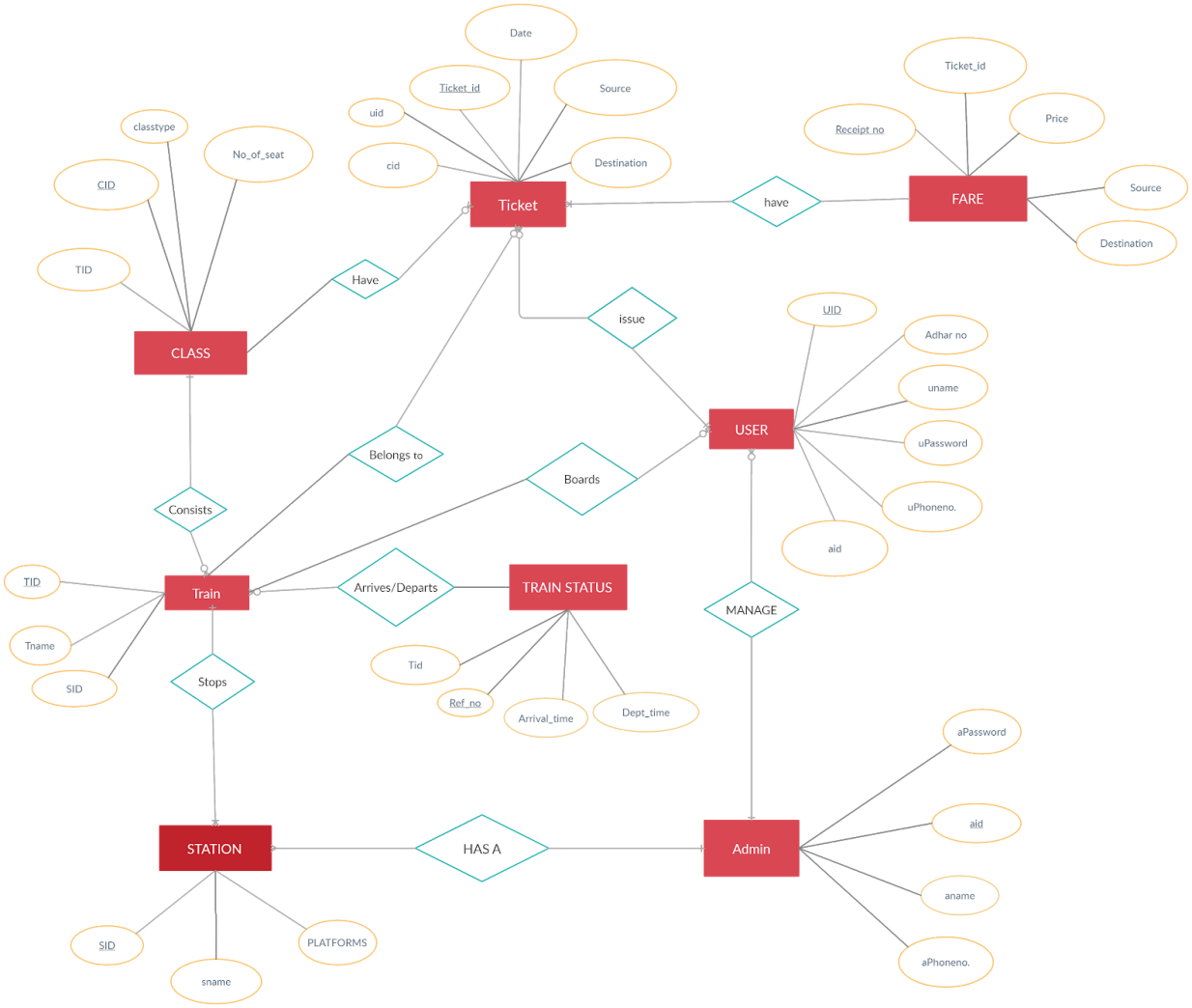
2.1 ENTITIES & ATTRIBUTES

- EMPLOYEE: Phone number, Salary, Employee_id, Name
- USER: Email, Password, Phone number, Name.
- TIME: Arrival and Depart time, Reference number.
- TICKET: Source and Destination, Ticket type, Date, Ticket number,uid
- FARE: Price, Ticket_id, Receipt number.
- STATION: Station number, id, platform.
- TRAIN: Start and stop station, Train_no, Train_name.
- CLASS: Train_id, type, Seats,classtype.

2.2 RELATIONSHIP

- User: Books: Ticket
- Train: Arrives/Departs: Time
- Train: Consists: Class
- Employee: Helps: Users
- Train : Stops: Station
- Ticket: Belongs to: Train

2.3 ER DIAGRAM



3. DATA DICTIONARY

USER1

Field	Type	Null	Key	Default	Extra
uid	varchar(5)	NO	PRI	NULL	
uname	varchar(10)	NO		NULL	
uphoneno	decimal(10,0)	NO		NULL	
adharno	decimal(12,0)	NO		NULL	
aid	varchar(5)	NO	MUL	NULL	

USER2

Field	Type	Null	Key	Default	Extra
uid	varchar(5)	NO	PRI	NULL	
upassword	varchar(10)	NO		NULL	

ADMIN1

Field	Type	Null	Key	Default	Extra
aid	varchar(5)	NO	PRI	NULL	
aname	varchar(5)	NO		NULL	
aphoneno	int	NO		NULL	

ADMIN2

Field	Type	Null	Key	Default	Extra
aid	varchar(5)	NO	PRI	NULL	
apassword	varchar(10)	NO		NULL	

FARE

Field	Type	Null	Key	Default	Extra
receipt_no	varchar(5)	NO	PRI	NULL	
ticket_id	int	NO	MUL	NULL	
price	int	NO		NULL	

STATION

Field	Type	Null	Key	Default	Extra
sid	int	NO	PRI	NULL	
sname	varchar(10)	NO		NULL	
platform	int	NO		NULL	

CLASS

Field	Type	Null	Key	Default	Extra
cid	int	NO	PRI	NULL	
tid	int	NO	MUL	NULL	
seats	int	NO		NULL	
classtype	varchar(20)	NO		NULL	

TICKET

Field	Type	Null	Key	Default	Extra
ticket_id	int	NO	PRI	NULL	
cid	int	NO	MUL	NULL	
ticket_date	date	NO		NULL	
source	varchar(10)	NO		NULL	
destination	varchar(10)	NO		NULL	
uid	varchar(5)	YES	MUL	NULL	

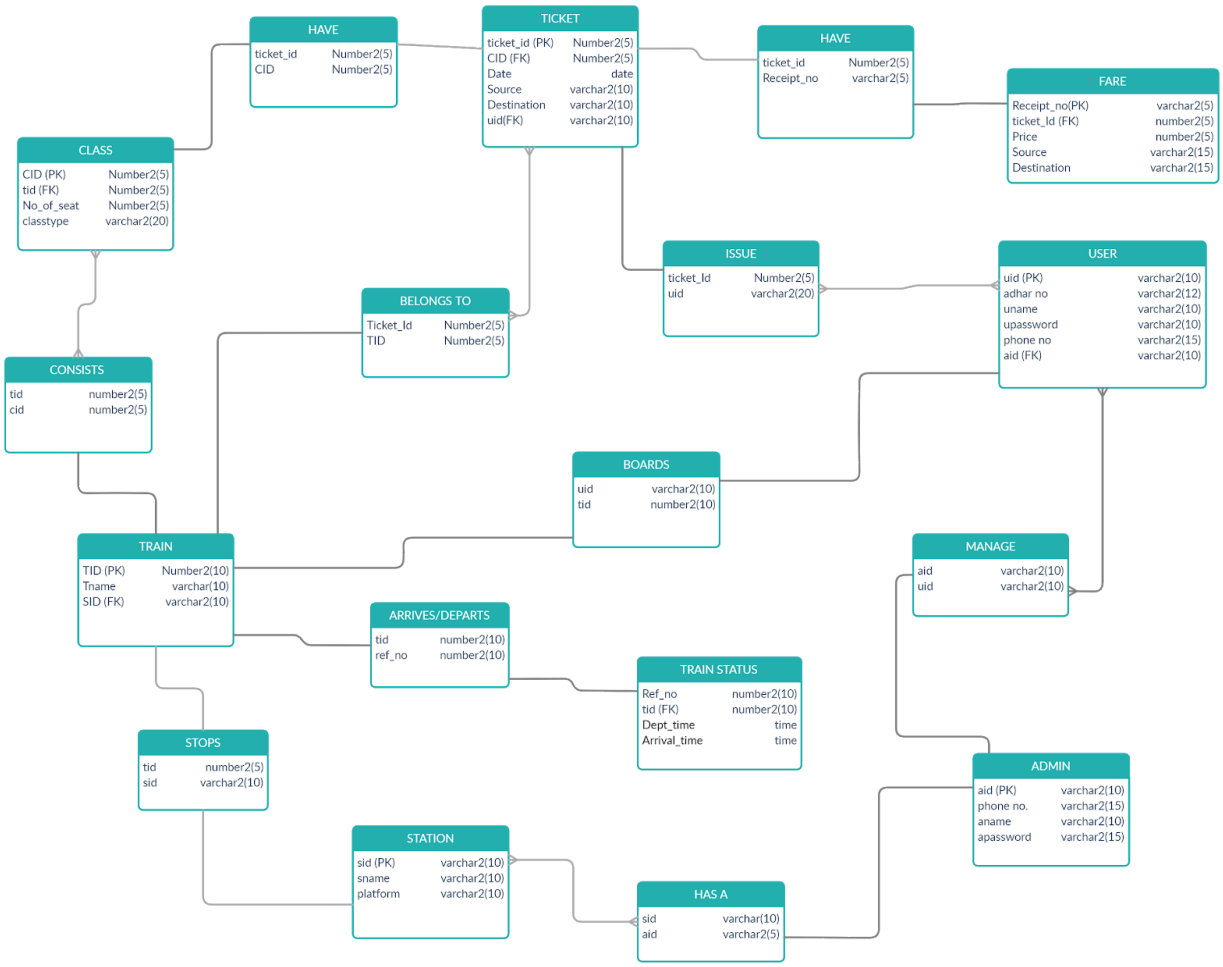
TRAIN

Field	Type	Null	Key	Default	Extra
tid	int	NO	PRI	NULL	
tname	varchar(30)	NO		NULL	
sid	int	NO	MUL	NULL	

TRAIN STATUS

Field	Type	Null	Key	Default	Extra
ref_no	varchar(5)	NO	PRI	NULL	
trainid	int	NO	MUL	NULL	
dept_time	datetime	NO		NULL	
arrival_time	datetime	NO		NULL	

4. SCHEMA DIAGRAM



5. DATABASE IMPLEMENTATION

5.1 CREATE SCHEMA

1.ADMIN1

```
CREATE TABLE `railway`.`admin1` (
  `aid` VARCHAR(5) NOT NULL,
  `aname` VARCHAR(5) NOT NULL,
  `aphoneno` INT(10) NOT NULL,
  PRIMARY KEY (`aid`));
```

aid	aname	aphoneno
A101	RAJA	1234567890
A102	Dev	987654321
A103	Akash	456789123
A104	Dirgh	605432198
A105	Dhruv	908745632
NULL	NULL	NULL

2. ADMIN2

```
CREATE TABLE `railway`.`admin2` (
  `aid` VARCHAR(5) NOT NULL,
  `password` VARCHAR(10) NOT NULL,
  PRIMARY KEY (`aid`));
```

aid	apassword
A101	password
A102	123456
A103	football
A104	qwerty
A105	welcome
NULL	NULL

3.USER1

```
CREATE TABLE `railway`.`user1` (
  `uid` VARCHAR(5) NOT NULL,
  `uname` VARCHAR(10) NOT NULL,
  `uphoneno` INT(10) NOT NULL,
  `adharno` INT(10) NOT NULL,
```

```
 `aid` VARCHAR(5) NOT NULL,
 PRIMARY KEY (`uid`),
 INDEX `aid_idx` (`aid` ASC) VISIBLE,
 CONSTRAINT `aid`
   FOREIGN KEY (`aid`)
   REFERENCES `railway`.`admin1` (`aid`)
   ON DELETE NO ACTION
   ON UPDATE NO ACTION);
```

uid	uname	uphoneno	adharno	aid
U101	Ebrahim	8888888888	123456789987	A101
U102	Arjun	9537678894	857694523641	A102
U103	Bheem	8140656906	147258369963	A102
U104	Krishna	9054203318	741258963258	A105
U105	Hanuman	6355649653	963258741258	A103
U106	Ram	8522589631	753159842684	A104
U107	Kumbhkaran	7532648922	987456258963	A105
U108	kiran	9636985258	222333456789	A104
NULL	NULL	NULL	NULL	NULL

4. USER2

```
CREATE TABLE `railway`.`user2` (
  `uid` INT NOT NULL,
  `upassword` VARCHAR(10) NOT NULL,
  PRIMARY KEY (`uid`));
```

uid	upassword
U101	dragon
U102	starwars
U103	solo
U104	monkey
U105	welcome
NULL	NULL

5. FARE

```
CREATE TABLE `railway`.`fare` (
  `receipt_no` VARCHAR(5) NOT NULL,
  `ticket_id` INT(5) NOT NULL,
```

```
`price` INT(5) NOT NULL,
PRIMARY KEY (`receipt_no`),
INDEX `ticket_id_idx` (`ticket_id` ASC) VISIBLE,
CONSTRAINT `ticket_id`
  FOREIGN KEY (`ticket_id`)
  REFERENCES `railway`.`ticket` (`ticket_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION);
```

receipt_no	ticket_id	price
F101	20101	50
F102	20102	75
F103	20103	75
F104	20104	60
F105	20105	100
F106	20106	100
F107	20107	80
F108	20108	80
F109	20109	90
F110	20110	40
NULL	NULL	NULL

6. TICKET

```
CREATE TABLE `railway`.`ticket` (

  `ticket_id` INT(5) NOT NULL,
  `cid` INT(5) NOT NULL,
  `ticket_date` DATE NOT NULL,
  `source` VARCHAR(10) NOT NULL,
  `destination` VARCHAR(10) NOT NULL,
  PRIMARY KEY (`ticket_id`),
  INDEX `cid_idx` (`cid` ASC) VISIBLE,
  CONSTRAINT `cid`
    FOREIGN KEY (`cid`)
    REFERENCES `railway`.`class` (`cid`)
```

ticket_id	cid	ticket_date	source	destination	uid
20101	30101	2001-01-23	Vadodara	Ahmedabad	U101
20102	30103	2001-06-15	Nadiad	Ahmedabad	U102
20103	30103	2001-06-15	Nadiad	Ahmedabad	U102
20104	30102	2001-07-26	Vadodara	Surat	U103
20105	30101	2001-11-06	Anand	Surat	U104
20106	30101	2001-11-06	Anand	Surat	U104
20107	30104	2001-05-07	Nadiad	Anand	U105
20108	30104	2001-04-08	Anand	Nadiad	U106
20109	30103	2001-03-15	Anand	Ahmedabad	U107
20110	30102	2001-02-16	Surat	Nadiad	U108
NULL	NULL	NULL	NULL	NULL	NULL

7. CLASS

```
CREATE TABLE `railway`.`class` (
  `cid` INT(5) NOT NULL,
  `tid` INT(5) NOT NULL,
  `seats` INT(5) NOT NULL,
  PRIMARY KEY (`cid`),
  INDEX `tid_idx` (`tid` ASC) VISIBLE,
  CONSTRAINT `tid`
    FOREIGN KEY (`tid`)
    REFERENCES `railway`.`train` (`tid`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION);
```

cid	tid	seats	classtype
30101	5050	15	First Class
30102	5052	20	Second Class
30103	5053	25	First Class
30104	5051	35	First Class
30105	5054	30	Second Class
NULL	NULL	NULL	NULL

8. TRAIN

```
CREATE TABLE `railway`.`train` (
  `tid` INT(5) NOT NULL,
  `tname` VARCHAR(10) NOT NULL,
```

```
  `sid` INT(5) NOT NULL,
  PRIMARY KEY (`tid`),
  INDEX `sid_idx` (`sid` ASC) VISIBLE,
  CONSTRAINT `sid`
    FOREIGN KEY (`sid`)
    REFERENCES `railway`.`station` (`sid`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION);
```

tid	tname	sid
5050	Jan Shatabdi Express	10102
5051	Udyan Express	10101
5052	Surat Mail	10104
5053	Intercity Express	10103
5054	Memoo	10105
NULL	NULL	NULL

9. STATION

```
CREATE TABLE `railway`.`station` (
  `sid` INT(5) NOT NULL,
  `sname` VARCHAR(10) NOT NULL,
  `platform` INT NOT NULL,
  PRIMARY KEY (`sid`));
```

sid	sname	platform
10101	Nadiad	3
10102	Ahmedabad	12
10103	Vadodara	10
10104	Surat	8
10105	Anand	5
NULL	NULL	NULL

10. TRAIN STATUS

```
CREATE TABLE `railway`.`train_status` (
  `ref_no` INT NOT NULL,
  `trainid` INT(5) NOT NULL,
  `dept_time` DATETIME NOT NULL,
  `arrival_time` DATETIME NOT NULL,
  PRIMARY KEY (`ref_no`),
  INDEX `trainid_idx` (`trainid` ASC) VISIBLE,
  CONSTRAINT `trainid`
    FOREIGN KEY (`trainid`)
    REFERENCES `railway`.`train` (`tid`)
```

ON DELETE NO ACTION
ON UPDATE NO ACTION);

	ref_no	trainid	dept_time	arrival_time
▶	R101	5050	2020-01-05 05:05:05	2020-01-05 05:05:05
	R102	5051	2001-10-05 04:05:10	2020-09-05 05:05:05
	R103	5052	2001-12-05 06:05:04	2020-10-05 05:05:05
	R104	5053	2001-11-05 07:05:06	2020-10-05 05:05:05
	R105	5054	2001-09-05 11:11:11	2020-08-05 10:10:10
*	NULL	NULL	NULL	NULL

5.2 INSERT DATA VALUES

ADMIN1 - ADMIN2:

```
insert into admin1 values("A101","RAJA",1234567890);
insert into admin2 values("A101","password");
insert into admin1 values("A102","Dev",987654321);
insert into admin2 values("A102","123456");
insert into admin1 values("A103","Akash",456789123);
insert into admin2 values("A103","football");
insert into admin1 values("A104","Dirgh",605432198);
insert into admin2 values("A104","qwerty");
insert into admin1 values("A105","Dhruv",908745632);
insert into admin2 values("A105","welcome");
select * from admin1;
select * from admin2;
delete from admin1 where aname = "RAJA";
delete from admin1 where aname = "RAJA";
```

USER1:

```
insert into user1 values("U101","Ebrahim","8888888888","123456789987","A101");
insert into user1 values("U102","Arjun","9537678894","857694523641","A102");
insert into user1 values("U103","Bheem","8140656906","147258369963","A102");
insert into user1 values("U104","Krishna","9054203318","741258963258","A105");
insert into user1 values("U105","Hanuman","6355649653","963258741258","A103");
```

```
insert into user1 values("U106","Ram","8522589631","753159842684","A104");
insert into user1 values("U107","Kumbhkaran","7532648922","987456258963","A105");
insert into user1 values("U108","kiran","9636985258","222333456789","A104");
```

USER2:

```
insert into user2 values("U101","dragon");
insert into user2 values("U102","starwars");
insert into user2 values("U103","solo");
insert into user2 values("U104","monkey");
insert into user2 values("U105","welcome");
select * from user2;
```

STATION:

```
insert into station values(10101,"Nadiad",3);
insert into station values(10102,"Ahmedabad",12);
insert into station values(10103,"Vadodara",10);
insert into station values(10104,"Surat",8);
insert into station values(10105,"Anand",5);
select * from station;
```

TRAIN:

```
insert into train values(5050,"Jan Shatabdi Express",10102);
insert into train values(5051,"Udyan Express",10101);
insert into train values(5052,"Surat Mail",10104);
insert into train values(5053,"Intercity Express",10103);
insert into train values(5054,"Memoo",10105);
insert into train values(5055,"Chennai Express",10101);
insert into train values(5056,"Madras Express",10102);

select * from train;
```

CLASS:

```
insert into class values(30101,5050,15,"First Class");
insert into class values(30102,5052,20,"Second Class");
insert into class values(30103,5053,25,"First Class");
insert into class values(30104,5051,35,"First Class");
```

```
insert into class values(30105,5054,30,"Second Class");
```

TICKET:

```
insert into ticket values(20101,30101,'2001-01-23',"Vadodara","Ahmedabad","U101");
insert into ticket values(20102,30103,'2001-06-15',"Nadiad","Ahmedabad","U102");
insert into ticket values(20103,30103,'2001-06-15',"Nadiad","Ahmedabad","U102");
insert into ticket values(20104,30102,'2001-07-26',"Vadodara","Surat","U103");
insert into ticket values(20105,30101,'2001-11-06',"Anand","Surat","U104");
insert into ticket values(20106,30101,'2001-11-06',"Anand","Surat","U104");
insert into ticket values(20107,30104,'2001-05-07',"Nadiad","Anand","U105");
insert into ticket values(20108,30104,'2001-04-08',"Anand","Nadiad","U106");
insert into ticket values(20109,30103,'2001-03-15',"Anand","Ahmedabad","U107");
insert into ticket values(20110,30102,'2001-02-16',"Surat","Nadiad","U108");
select * from ticket;
```

FARE:

```
insert into fare values("F101",20101,50);
insert into fare values("F102",20102,75);
insert into fare values("F103",20103,75);
insert into fare values("F104",20104,60);
insert into fare values("F105",20105,100);
insert into fare values("F106",20106,100);
insert into fare values("F107",20107,80);
insert into fare values("F108",20108,80);
insert into fare values("F109",20109,90);
insert into fare values("F110",20110,40);
select * from fare;
```

TRAIN_STATUS:

```
insert into train_status values ("R101",5050,'2020-01-05 05-05-05','2020-01-05 05-05-05');
insert into train_status values ("R102",5051,'2001-10-05 04-05-10','2020-09-05 05-05-05');
insert into train_status values ("R103",5052,'2001-12-05 06-05-04','2020-10-05 05-05-05');
insert into train_status values ("R104",5053,'2001-11-05 07-05-06','2020-10-05 05-05-05');
insert into train_status values ("R105",5054,'2001-09-05 11-11-11','2020-08-05 10-10-10');
```

5.3 QUERIES

1. List name of users whose name start with

select uname from user1 where uname like 'd%';

uname
Krishna
Kumbhkaran
kiran

2. List name of train status in descending order.

select * from train_status order by arrival_time desc;

ref_no	trainid	dept_time	arrival_time
R103	5052	2001-12-05 06:05:04	2020-10-05 05:05:05
R104	5053	2001-11-05 07:05:06	2020-10-05 05:05:05
R102	5051	2001-10-05 04:05:10	2020-09-05 05:05:05
R105	5054	2001-09-05 11:11:11	2020-08-05 10:10:10
R101	5050	2020-01-05 05:05:05	2020-01-05 05:05:05
NULL	NULL	NULL	NULL

3. Count total no of seats from a train having first-class as class type.

select sum(seats) as total seats from class where classtype="first-class";

sum(seats)
75

4. List all prices ranging from

select * from fare where price between 80 and 100;

receipt_no	ticket_id	price
F105	20105	100
F106	20106	100
F107	20107	80
F108	20108	80
F109	20109	90
NULL	NULL	NULL

5. Find the minimum and maximum cost of a ticket.

select min(price) as "Min_price", max(price) as "Max_price" from fare;

	Min_price	Max_price
▶	40	100

6. Display all admin which works for appropriate users.

SELECT B.ANAME AS "ADMIN WORKS FOR -" ,A.UNAME AS "USER " FROM USERS A INNER JOIN ADMIN B ON A.UID=B.AID;

	ADMIN WORKS FOR -	USER
▶	RAJA	Ebrahim
	Dev	Arjun
	Dev	Bheem
	Akash	Hanuman
	Dirgh	Ram
	Dirgh	kiran
	Dhruv	Krishna
	Dhruv	Kumbhkaran

7. List all Train name and its arrival and departure time by using train & status table.

SELECT T.tid as "Train no" , T.Tname, TS.Dept_time, TS.Arrival_Time FROM Train T left JOIN TRAIN_STATUS TS ON T.TID = TS.trainid ORDER BY T.Tid;

	Train no	Tname	Dept_time	Arrival_Time
▶	5050	Jan Shatabdi Express	2020-01-05 05:05:05	2020-01-05 05:05:05
	5051	Udyan Express	2001-10-05 04:05:10	2020-09-05 05:05:05
	5052	Surat Mail	2001-12-05 06:05:04	2020-10-05 05:05:05
	5053	Intercity Express	2001-11-05 07:05:06	2020-10-05 05:05:05
	5054	Memoo	2001-09-05 11:11:11	2020-08-05 10:10:10
	5055	Chennai Express	NULL	NULL
	5056	Madras Express	NULL	NULL

8. Details of Trains Which can come at the same station.

SELECT A.SID,A.TID AS Train1 FROM Train A, Train B WHERE A.TID != B.TID AND A.SID = B.SID ORDER BY A.SID;

	SID	Train1
▶	10101	5051
	10101	5055
	10102	5050
	10102	5056

9. Trains having second class compartment.

select train.tname as "Train Name",train.tid as "Train No" from train,class where class.classtype = "Second Class" and train.tid = class.tid

	Train Name	Train No
▶	Surat Mail	5052
	Memoo	5054

10. Display ticket id whose price is the maximum among all.

select ticket_id as "Ticket Id",price as "Max price" from fare f1 where price = (select max(price) from fare f2);

	Ticket Id	Max price
▶	20105	100
	20106	100

5.4 PL/SQL

THIS PL/SQL GIVE USER ID, ADMIN ID,ADHAR NO AND PHONE NUMBER OF KRISHNA.

```
declare
   v_user user1 % rowtype;
begin

select username,userid,uphoneno,adharno,aid into
v_user.username,v_user.userid,v_user.uphoneno,v_user.adharno,v_user.aid from
user1 where username='Krishna';
        dbms_output.put_line(v_user.username||'   '||v_user.userid||'   ||'
'||v_user.uphoneno||'   '||v_user.adharno||'    '||v_user.aid);
End;
```

```
Statement processed.
Krishna   U104     9054203318   741258963258    A105
```

5.5 FUNCTION

A function which counts the total number of seats.

```
        CREATE OR REPLACE FUNCTION totalSeats RETURN
        number IS
        total number(3) := 0;
        BEGIN
                SELECT sum(seats) into total FROM class;
                RETURN total;
        END;

BEGIN
        dbms_output.put_line('Total seats =' || totalSeats);
END;
/
```

```
Statement processed.
Total Seats = 125
```

5.6 CURSORS

This Cursor Gives The Information About People AdharCard number And Their PHONE NUMBER whose NAME starts with either ‘A’ or ‘K ’ .

```
declare
   d1 user1.adharno % type;
        d2 user1.uphoneno % type;
```

```
   cursor c1 is select adharno,uphoneno from user1 where
                username like 'A%'
                or username like 'K%';
        begin
      dbms_output.put_line('Adhar no'||'         '||'Phone Number');
                open c1;
        loop
        fetch c1 into d1,d2;
        exit when c1 % notfound;
       dbms_output.put_line(d1||'      '||d2);
                end loop;
        close c1;
End;
```

```
Statement processed.
Adhar no          Phone Number
857694523641      9537678894
741258963258      9054203318
987456258963      7532648922
889875523510      9824262642
222333456789      9636985258
```

5.7 TRIGGERS

1.This trigger updates price value by 200 whenever new values is Inserted into fare.

```
create trigger farex
before insert
on fare
for each row
set new.price = new.price + 200;
```

BEFORE:

receipt_no	ticket_id	price
F101	20101	50
F102	20102	75
F103	20103	75
F104	20104	60
F105	20105	100
F106	20106	100
F107	20107	80
F108	20108	80
F109	20109	90
F110	20110	40
NULL	NULL	NULL

insert into ticket values(20111,30103,'2001-02-16',"Surat","Nadiad","U108");
insert into fare values('F111',20111,500);

AFTER:

receipt_no	ticket_id	price
F101	20101	50
F102	20102	75
F103	20103	75
F104	20104	60
F105	20105	100
F106	20106	100
F107	20107	80
F108	20108	80
F109	20109	90
F110	20110	40
F111	20111	700
NULL	NULL	NULL

2. This updates the arrival time of train and creates a new table which consists of train's previous and current arrival time.

```
CREATE TABLE Timechanges (
   id INT AUTO_INCREMENT PRIMARY KEY,
   trainid INT,
   previoustime datetime,
   currenttime datetime,
   changedAt TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP
);
```

```
DROP TRIGGER IF EXISTS `railway`.`train_status_AFTER_UPDATE`;

DELIMITER $$
USE `railway`$$
CREATE DEFINER=`root`@`localhost` TRIGGER `train_status_AFTER_UPDATE` AFTER
UPDATE ON `train_status` FOR EACH ROW BEGIN
        IF OLD.arrival_time <> new.arrival_time THEN
      INSERT INTO Timechanges(trainid, previoustime, currenttime)
      VALUES(old.trainid, old.arrival_time, new.arrival_time);
       END IF;
END$$
DELIMITER ;


update train_status SET arrival_time='2020-01-06 12-05-47' where trainid=5051;
```

id	trainid	previoustime	currenttime	changedAt
1	5051	2020-09-05 05:05:05	2020-01-06 12:05:47	2020-10-31 00:56:38
NULL	NULL	NULL	NULL	NULL

6. BIBLIOGRAPHY

- For the implementation of this Railway Reservation System project we referred to many websites and books.

- We created the ER Diagram and Schema Diagram on "https://creately.com/".

Reference Website:

1. **https://www.w3schools.com**
2. **https://www.mysqltutorial.org**
3. **https://stackoverflow.com/**
4. **https://www.w3resource.com**

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