WELCOME TO INDIAN RAILWAYS

National Institute of Technology, Meghalaya

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

DATABASE MANAGEMENT SYSTEM

PROJECT BASED LAB

ON

RAILWAY RESERVATION SYSTEM

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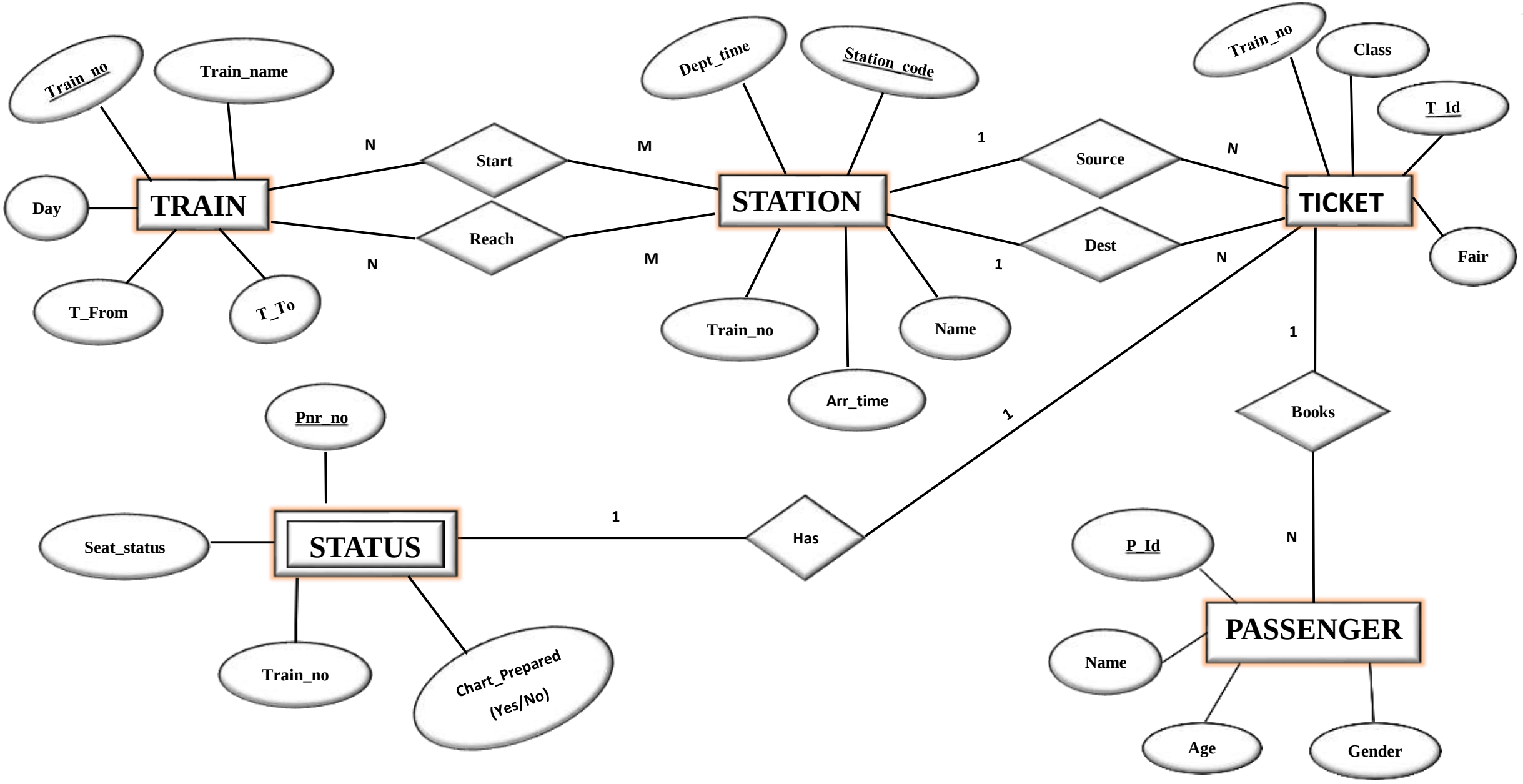
CONTENTS

PROJECT DESCRIPTION

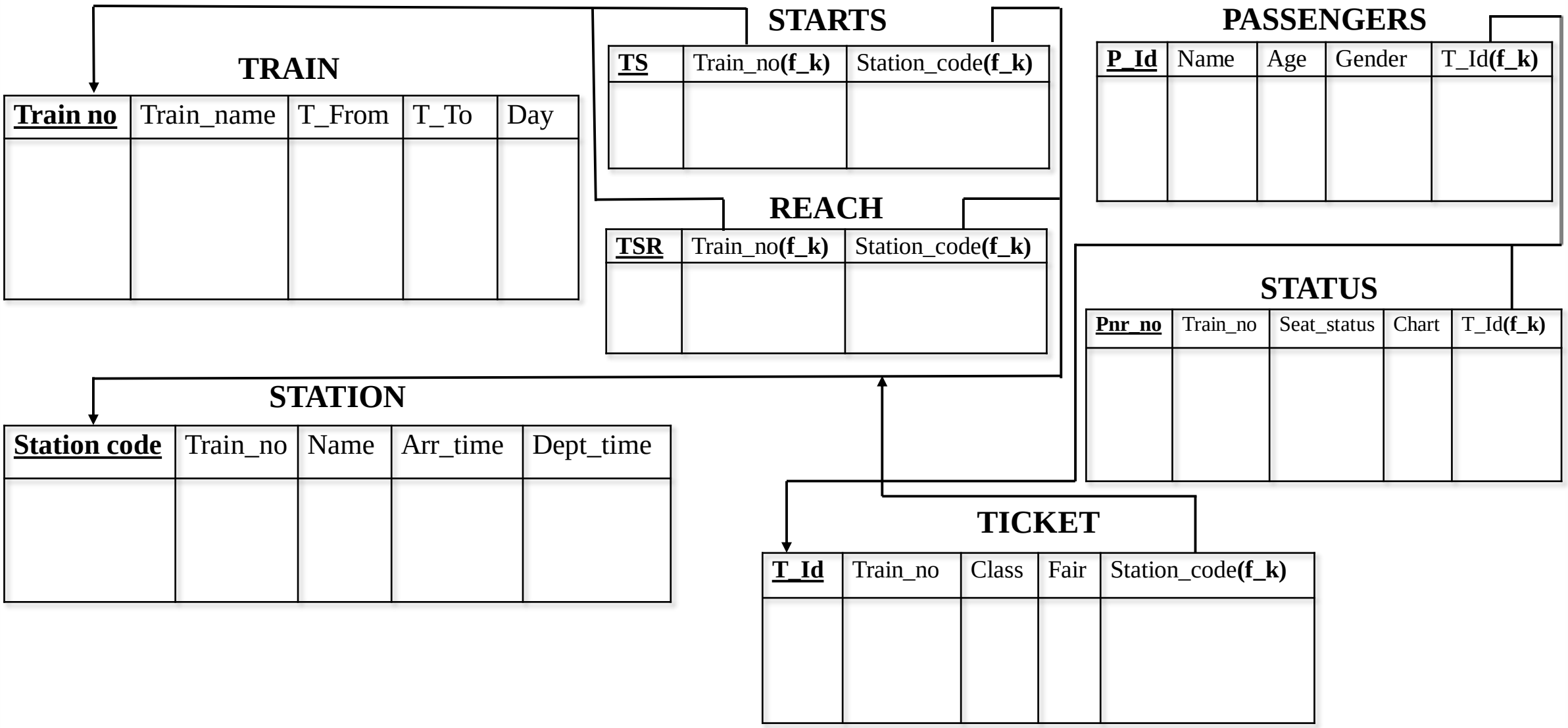
The Railway Reservation System facilitates the passengers to enquire about the trains available on the basis of source and destination, Booking of tickets, enquire about the status of the booked ticket, etc. The aim of case study is to design and develop a database maintaining the records of different trains, train status, and passengers.

This **Project** contains Introduction to the Railways reservation system In our country India, there are number of counters for the reservation of the seats and one can easily make reservations and get tickets. Then this project contains entity relationship model diagram based on railway reservation system and introduction to relation model . There is also design of the database of the railway reservation system based on relation model. Example of some SQL queries to retrieves data from rail management database.

ENTITY–RELATIONSHIP DIAGRAM (CONCEPTUAL MODEL)


Train_no
Train_name
Day
TRAIN
T_From
T_To
N
Start
N
Reach
M
M
Dept_time
Station_code
STATION
Train_no
Name
Arr_time
1
Source
1
Dest
N
N
Train_no
Class
T_Id
TICKET
Fair
1
Books
N
P_Id
PASSENGER
Name
Age
Gender
1
Has
1
Pnr_no
Seat_status
STATUS
Train_no
Chart_Prepared
(Yes/No)

RELATIONAL MODEL



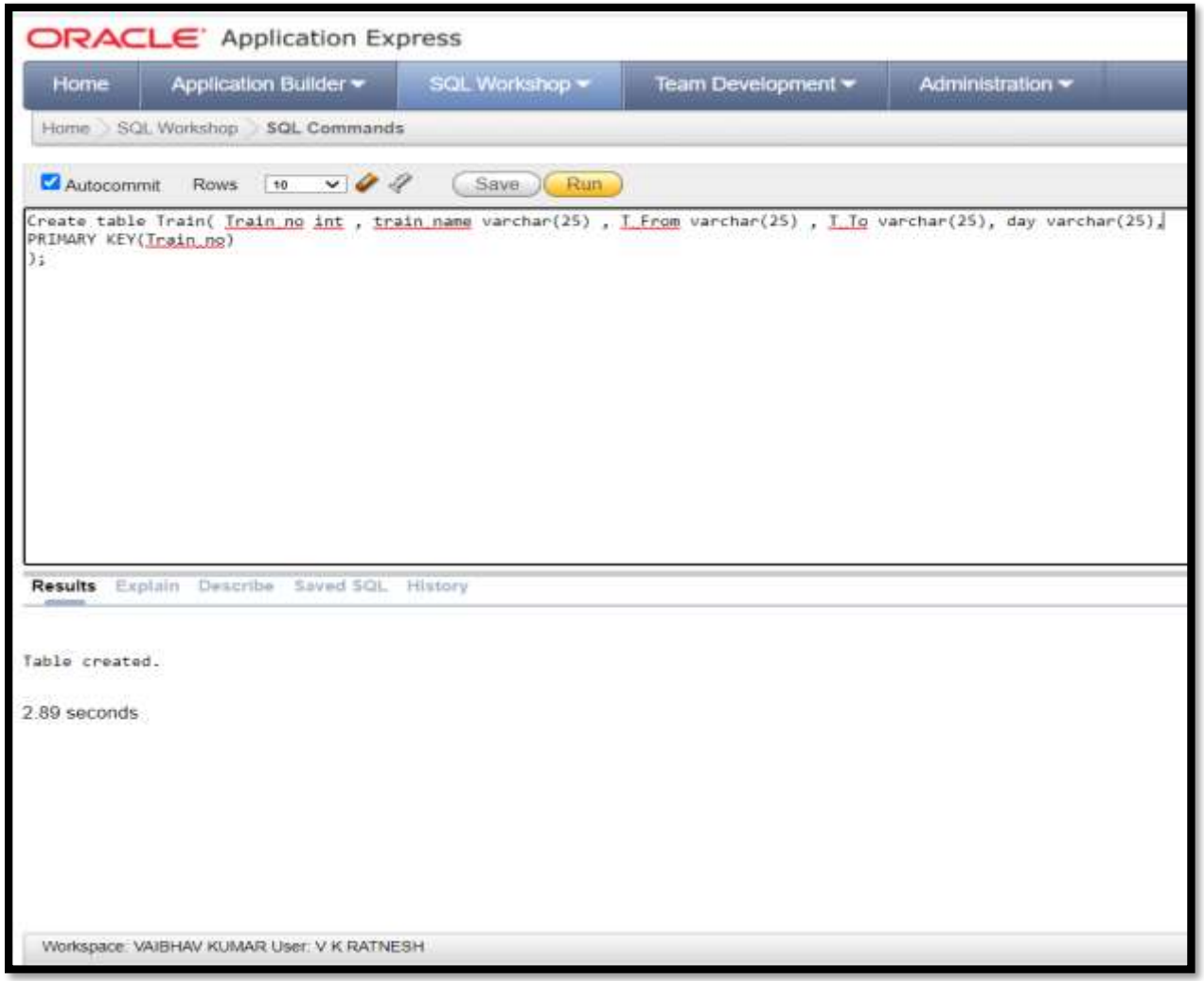
OUTPUT OF RELATIONAL MODEL

TRAIN

Create table Train(Train_no int,Train_name varchar(25), T_From varchar(25) ,T_To varchar(25), day varchar(25),

PRIMARY KEY(Train_no)

);

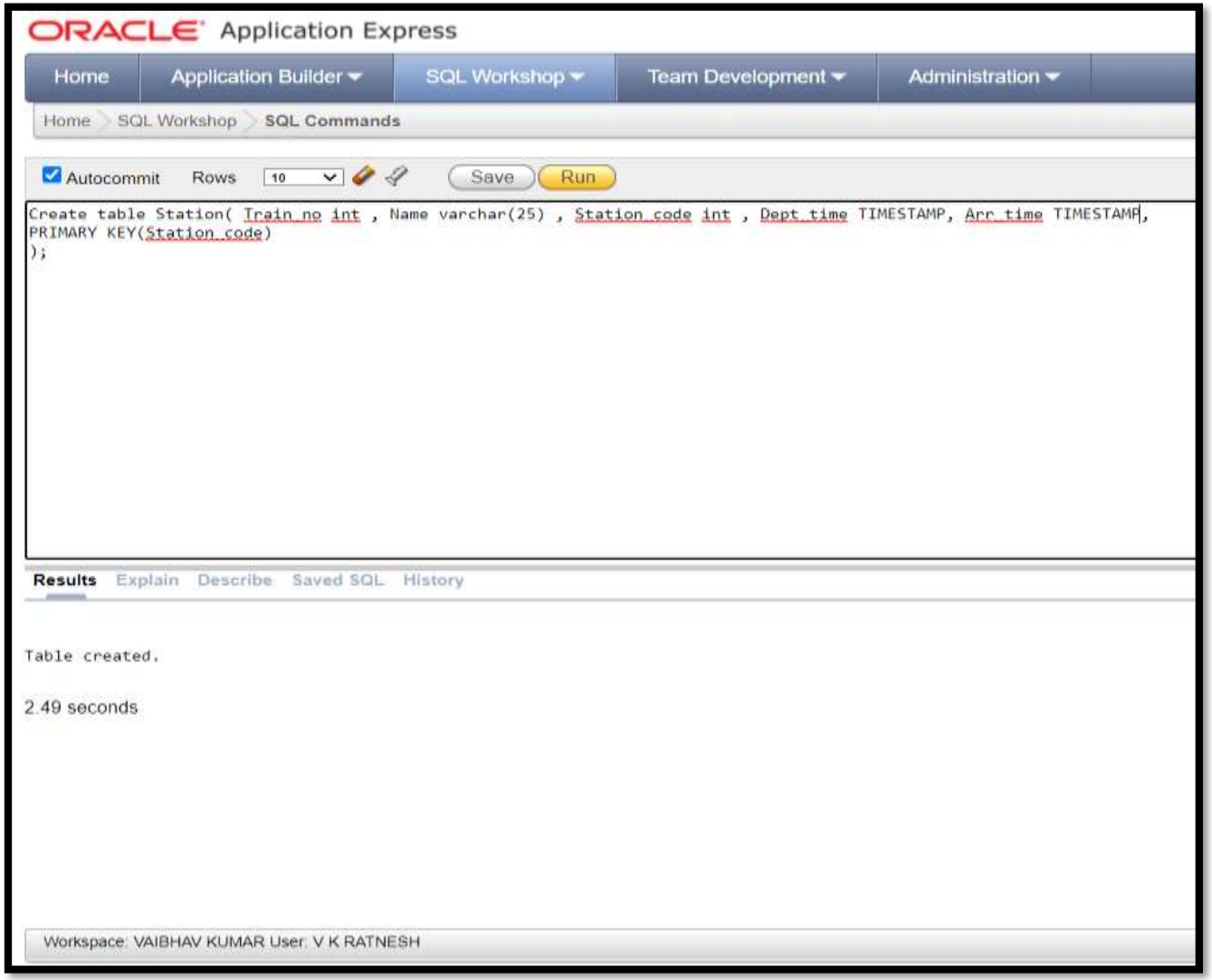


STATION

Create table Station(Train_no int , Name varchar(25) , Station_code int , Dept_time TIMESTAMP, Arr_time TIMESTAMP,

PRIMARY KEY(Station_code)

);



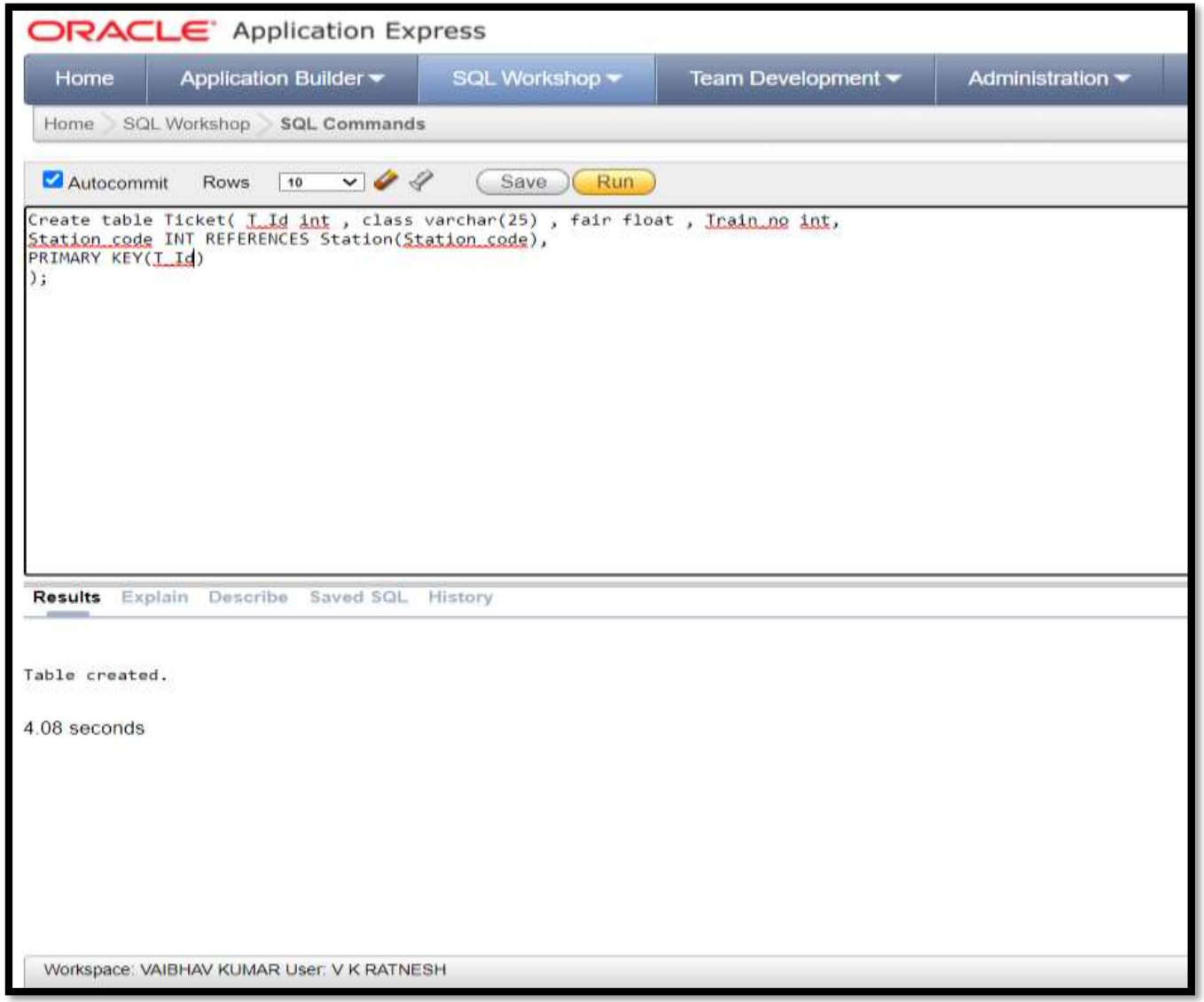
TICKET

Create table Ticket(T_Id int , class varchar(25) , fair float , Train_no int,

Station_code INT REFERENCES Station(Station_code),

PRIMARY KEY(T_Id)

);



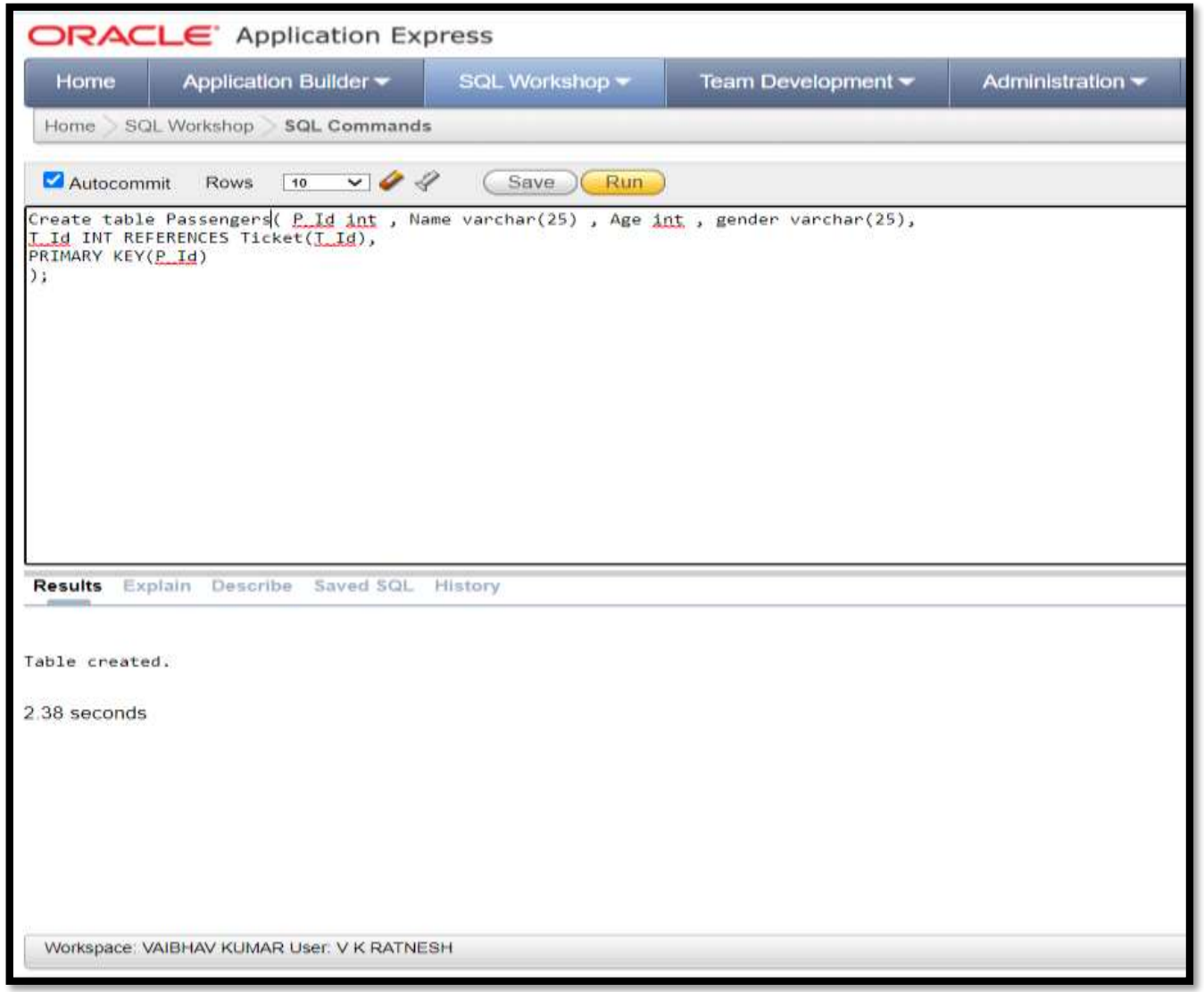
PASSENGERS

Create table Passengers(P_Id int , Name varchar(25) , Age int , gender varchar(25),

T_Id INT REFERENCES Ticket(T_Id),

PRIMARY KEY(P_Id)

);



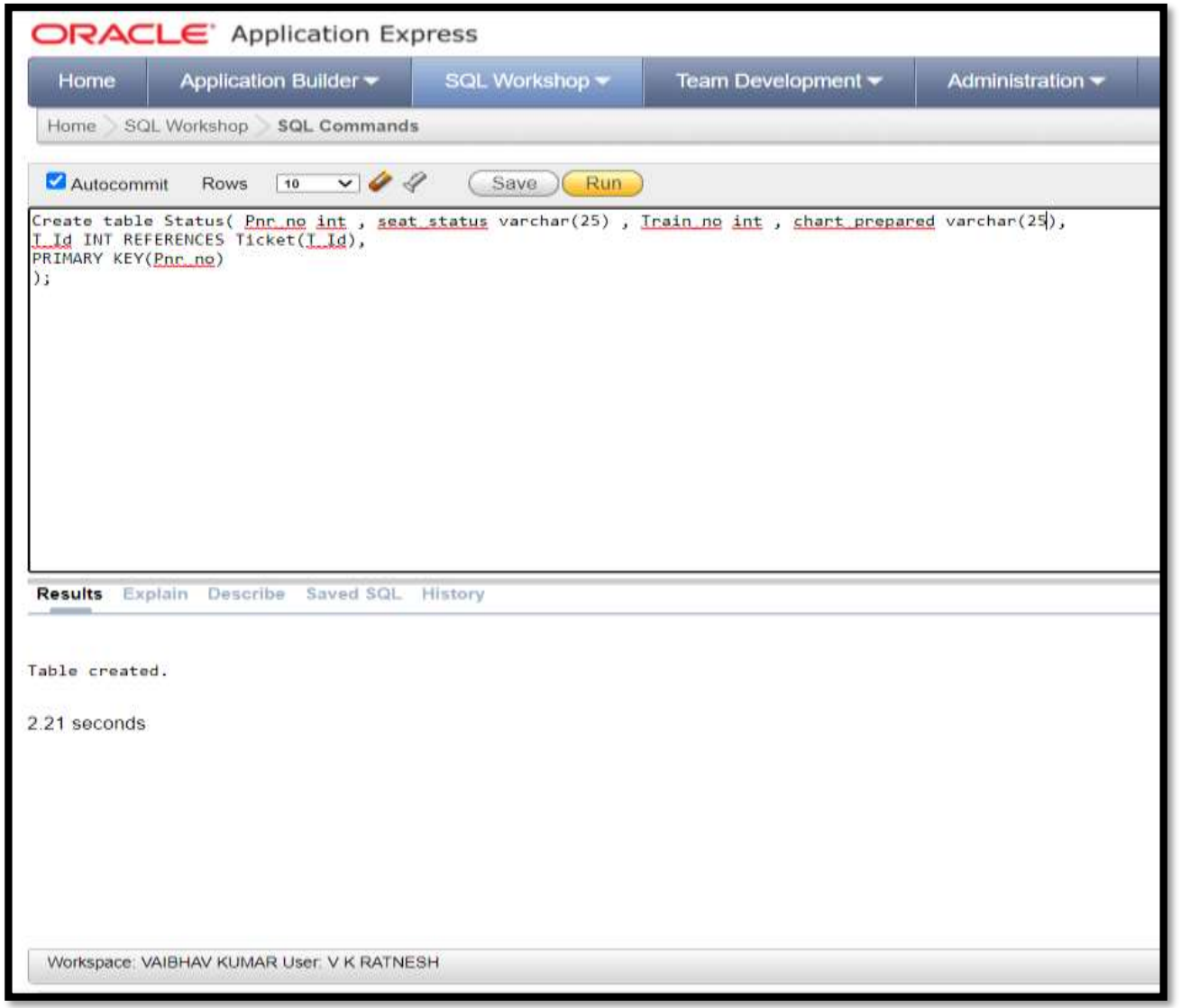
STATUS

Create table Status(Pnr_no int ,
seat_status varchar(25) , Train_no int ,
chart_prepared varchar(25),

T_Id INT REFERENCES Ticket(T_Id),

PRIMARY KEY(Pnr_no)

);



STARTS

CREATE TABLE Starts(

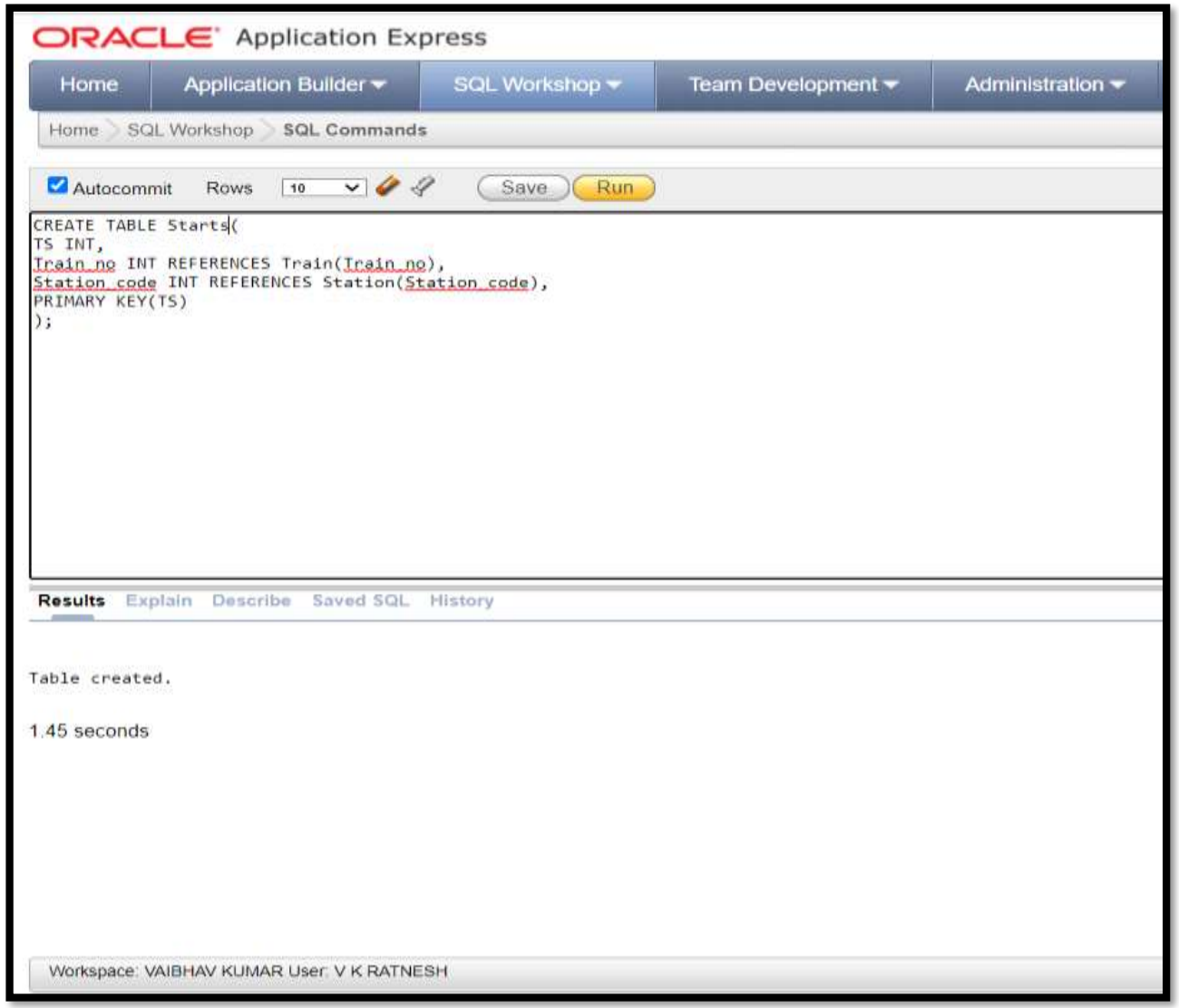
TS INT,

Train_no INT REFERENCES Train(Train_no),

Station_code INT REFERENCES Station(Station_code),

PRIMARY KEY(TS)

);



REACH

CREATE TABLE Reach(

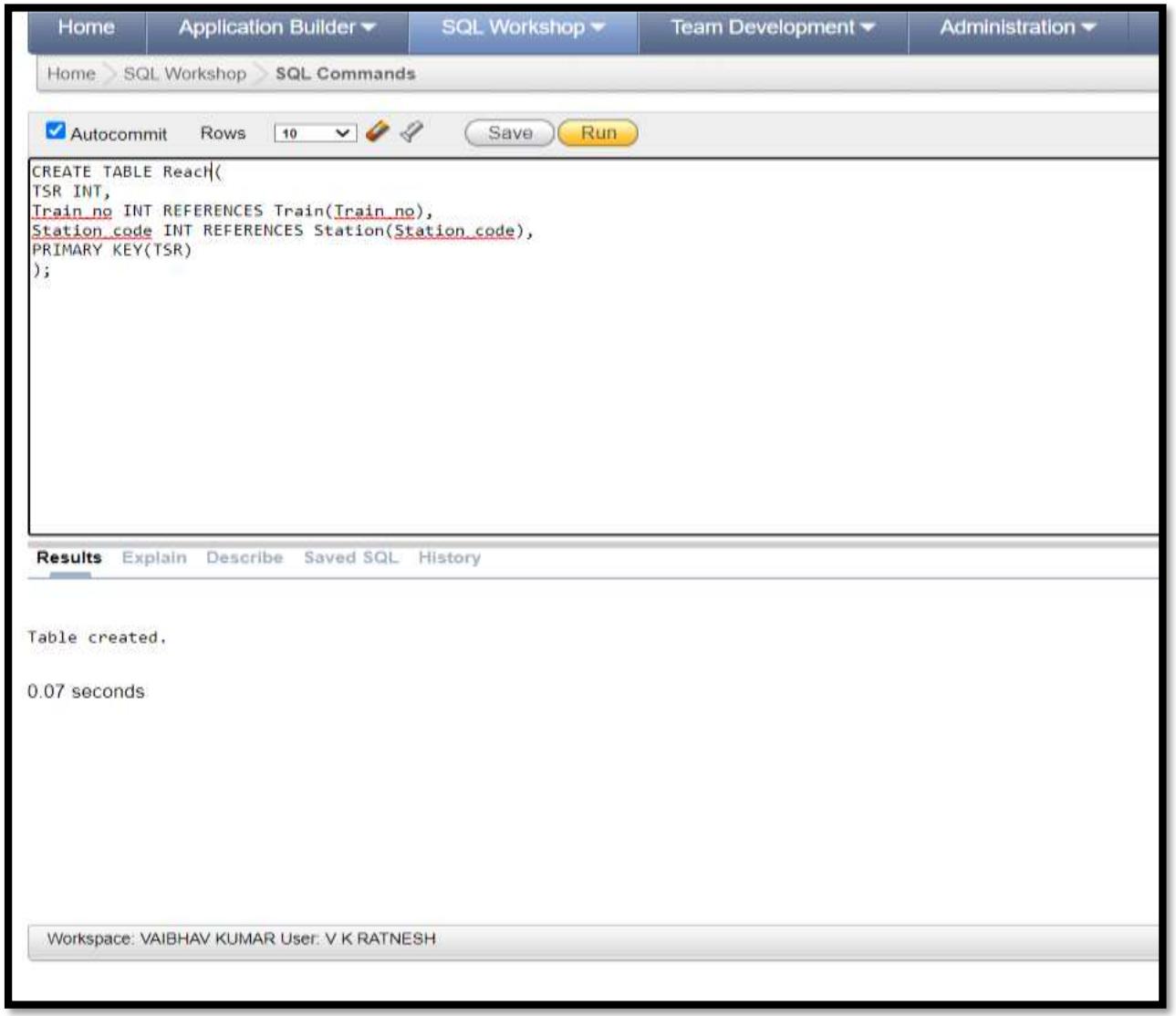
TSR INT,

Train_no INT REFERENCES Train(Train_no),

Station_code INT REFERENCES Station(Station_code),

PRIMARY KEY(TSR)

);



FUNCTIONAL DEPENDENCY

1. TRAIN(Train_no, Train_name, T_From, T_To, Day**)**

FD { Train_no→Train_name, Train_no→From, Train_no→To, Train_no→Date **}**

2. STATION(Station_code, Train_no, Name, Arr_time, Dept_time)

FD { Station_code→Name, Station_code→Train_no, Station_code→Arr_time, Station_code→Dept_name **}**

3. TICKET(T_Id, Train_no, Class, Fair **)**

FD { T_Id→Train_no,T_Id→Class,T_Id→Fair **}**

4. PASSENGER(P_Id, Name, Age, Gender **)**

FD { P_Id→Name, P_Id→Age, P_Id→Gender **}**

5. STATUS (Pnr_no, Seat_status, Train_no, Chart_prepared(Yes/No) **)**

FD { Pnr_no→Seat_status, Pnr_no→Train_no, Pnr_no→Chart_prepared(Yes/no) **}**

NORMALIZATION

1. TRAIN(Train_no, Train_name, T_From, T_To, Day**)**

FD { Train_no→Train_name, Train_no→From, Train_no→To, Train_no→Date **}**

Closure:-

(Train_no)$^{+}$ = {Train_no,Train_name,T_From,T_To,Day}

Candidate key { Train_no }

Prime attribute {Train_no}

Non-Prime attributes {Train_name,T_From,T_To,Day}

Normal Forms	Train_no→Train_name	Train_no→T_From	Train_no→T_To	Train_no→Day
BCNF	✓	✓	✓	✓
3NF	✓	✓	✓	✓
2NF	✓	✓	✓	✓
1NF	✓	✓	✓	✓

The highest Normal Form of above FD is <u>BCNF (Here, In each case L.H.S have Candidate Key)</u>

2. **STATION**(Station_code, Train_no, Name, Arr_time, Dept_time)

FD { Station_code→Name, Station_code→Train_no, Station_code→Arr_time, Station_code→Dept_name **}**

Closure:-

(Station_code)$^{+}$ = {Train_no,Name,Arr_time,Dept_time,Station_code}

Candidate key { Station_code }

Prime attribute {Station_code}

Non-Prime attributes {Name,Train_no,Arr_time,Dept_time}

Normal Forms	Station_code→Name	Station_code→Train_no	Station_code→Arr_time	Station_code→Dept_time
BCNF	✓	✓	✓	✓
3NF	✓	✓	✓	✓
2NF	✓	✓	✓	✓
1NF	✓	✓	✓	✓

The highest Normal Form of above FD is <u>BCNF (Here, In each case L.H.S have Candidate Key)</u>

3. TICKET(T_Id, Train_no, Class, Fair **)**

FD { T_Id→Train_no,T_Id→Class,T_Id→Fair **}**

Closure:-

(T_Id)$^{+}$ = {Train_no,T_Id,Class,Fair}

Candidate key { T_Id }

Prime attribute {T_Id}

Non-Prime attributes { Train_no,Class,Fair }

Normal Forms	T_Id→Train_no	T_Id→Class	T_Id→Fair
BCNF	✓	✓	✓
3NF	✓	✓	✓
2NF	✓	✓	✓
1NF	✓	✓	✓

The highest Normal Form of above FD is BCNF (Here, In each case L.H.S have Candidate Key)

4. PASSENGER(P_Id, Name, Age, Gender)

FD { P_Id→Name, P_Id→Age, P_Id→Gender **}**

Closure:-

$(P\_Id)^+$ = {Name,P_Id,Age,Gender}

Candidate key { P_Id }

Prime attribute {P_Id}

Non-Prime attributes { Name,Age,Gender }

Normal Forms	P_Id→Name	P_Id→Gender	P_Id→Age
BCNF	✓	✓	✓
3NF	✓	✓	✓
2NF	✓	✓	✓
1NF	✓	✓	✓

The highest Normal Form of above FD is BCNF (Here, In each case L.H.S have Candidate Key)

5. STATUS (Pnr_no, Seat_status, Train_no, Chart_prepared(Yes/No))

FD { Pnr_no→Seat_status, Pnr_no→Train_no, Pnr_no→Chart_prepared(Yes/no) **}**

Closure:-

(Pnr_no)$^{+}$ = {Train_no,Pnr_no,Seat_status,Chart_prepared(Yes/No)}

Candidate key { Pnr_No }

Prime attribute {Pnr_No}

Non-Prime attributes {Train_no,Seat_status,Char_prepared(Yes/No) }

Normal Forms	Pnr_No→Train_no	Pnr_No→Seat_status	Pnr_No→Chart_prepared(Yes/No)
BCNF	✓	✓	✓
3NF	✓	✓	✓
2NF	✓	✓	✓
1NF	✓	✓	✓

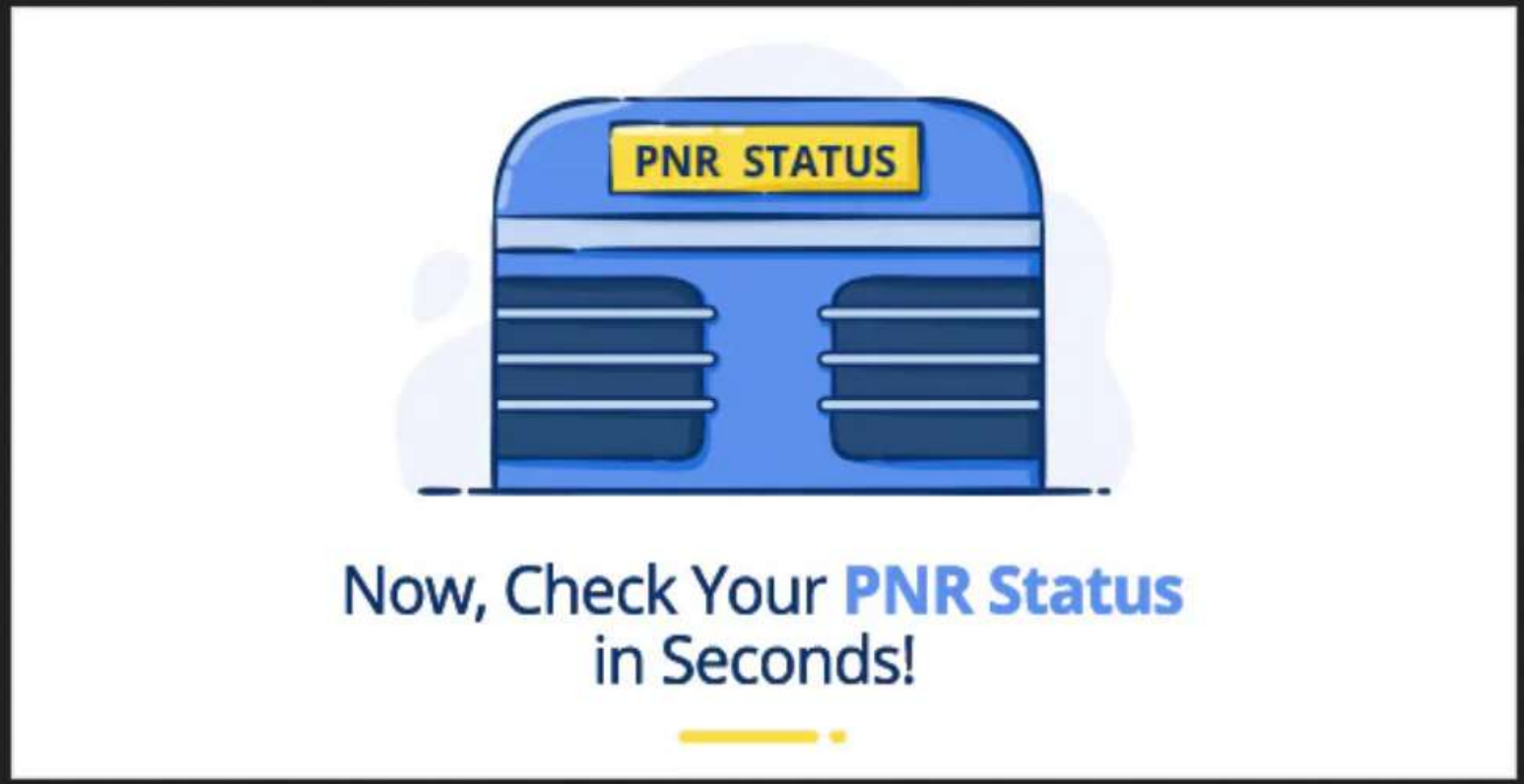
The highest Normal Form of above FD is <u>BCNF (Here, In each case L.H.S have Candidate Key)</u>


FRONT END
HTML
CSS
JS
BACK END
JAVA
SQL
RUBY
PHP

READING DATA FROM DATABASE

WELCOME TO INDIAN RAILWAYS

sl/no.	Train Name	Train Number	Start From	End at	Days
1	avad assam	15909	delhi	Dibrugarh	all days



Enter the 5-digit PNR number below

12345

Get PNR Status

sl/no.	Name	PNR Number	Age	Gender
1	Ram Singh	12345	50	Male
2	sushant	12345	23	Male

रेलवे स्टेशन

आपकी यात्रा मंगलमय हो।

Train Ticket

ENTER TICKET ID 13579

Submit

WRITING DATA TO DATABASE

ADD PASSENGER

ADD TRAIN

Insert Passenger Details

Name	Enter name
PNR Number	Enter your 5 digit PNR
Age	Enter Age
Gender	Enter student gender
	Submit

Insert Train Details

Train Name	Enter train name
Train Number	Enter train number
Train Starts From	Start station of the train
End Station	End station of the train
Train running day	days on which train runs
Submit	

localhost/rms/addtrain.php | localhost / MariaDB / railway | ph

http://localhost/phpmyadmin/db_structure.php?server=1&db=railway

phpMyAdmin

Recent Favorites

- New
- alumni
- dbfood
- information_schema
- mysql
- mywebsite
- perfect_cup
- performance_schema
- railway
  - New
  - passenger
  - train
- sms
- tayytrun_db
- test
- website2

Server: MariaDB:3306 » Database: railway

Structure | SQL | Search | Query | Export | Import | Operations | Privileges | Routines | Events | Triggers | Designer

Filters

Containing the word:

	Table	Action	Rows	Type	Collation	Size	Overhead
☐	passenger	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.1 KiB	-
☐	train	Browse Structure Search Insert Empty Drop	2	MyISAM	latin1_swedish_ci	2.1 KiB	-
	2 tables	Sum	5	MyISAM	latin1_swedish_ci	4.2 KiB	0 B

Check all With selected:

Print Data dictionary

Create table

Name: Number of columns: 4

Go

Console

localhost/rms/addtrain.php | localhost / MariaDB / railway / p

http://localhost/phpmyadmin/sql.php?server=1&db=railway&table=passenger&pos=0

phpMyAdmin

Recent Favorites

- New
- alumni
- dbfood
- information_schema
- mysql
- mywebsite
- perfect_cup
- performance_schema
- railway
  - New
  - passenger
  - train
- sms
- tayytrun_db
- test
- website2

Server: MariaDB:3306 » Database: railway » Table: passenger

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Triggers

Showing rows 0 - 2 (3 total, Query took 0.0009 seconds.)

```
SELECT * FROM `passenger`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	id	pnr	name	age	gender
Edit Copy Delete	1	12345	Ram Singh	50	Male
Edit Copy Delete	2	12345	sushant	23	Male
Edit Copy Delete	3	2345	Yash	12	Male

Check all | With selected: Edit | Copy | Delete | Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print | Copy to clipboard | Export | Display chart | Create view

Console

localhost/rms/addtrain.php | localhost / MariaDB / railway / tr

http://localhost/phpmyadmin/sql.php?server=1&db=railway&table=train&pos=0

phpMyAdmin

Recent Favorites

- New
- alumni
- dbfood
- information_schema
- mysql
- mywebsite
- perfect_cup
- performance_schema
- railway
  - New
  - passenger
  - train
- sms
- tayytrun_db
- test
- website2

Server: MariaDB:3306 » Database: railway » Table: train

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Triggers

Showing rows 0 - 1 (2 total, Query took 0.0008 seconds.)

```
SELECT * FROM `train`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	id	train_no	train_name	t_from	t_to	day
Edit Copy Delete	1	15909	avad assam	delhi	Dibrugarh	all days
Edit Copy Delete	2	13452	B Mail	Bangalore	Dibrugarh	M,W,F

Check all | With selected: Edit | Copy | Delete | Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print | Copy to clipboard | Export | Display chart | Create view

Console

END OF PROJECT