Department of Computer Science

Project Report, Fall 2021-22

Course	Introduction to Database [C]	Group	4

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Title:

Railway Management System

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INTRODUCTION:

This project railway management system is for maintaining railway passenger, employee, and trains. The full railway station can be controlled by this management system. Passenger can book tickets and employee also can book their tickets. Passenger can see the train status from the railway station schedule.

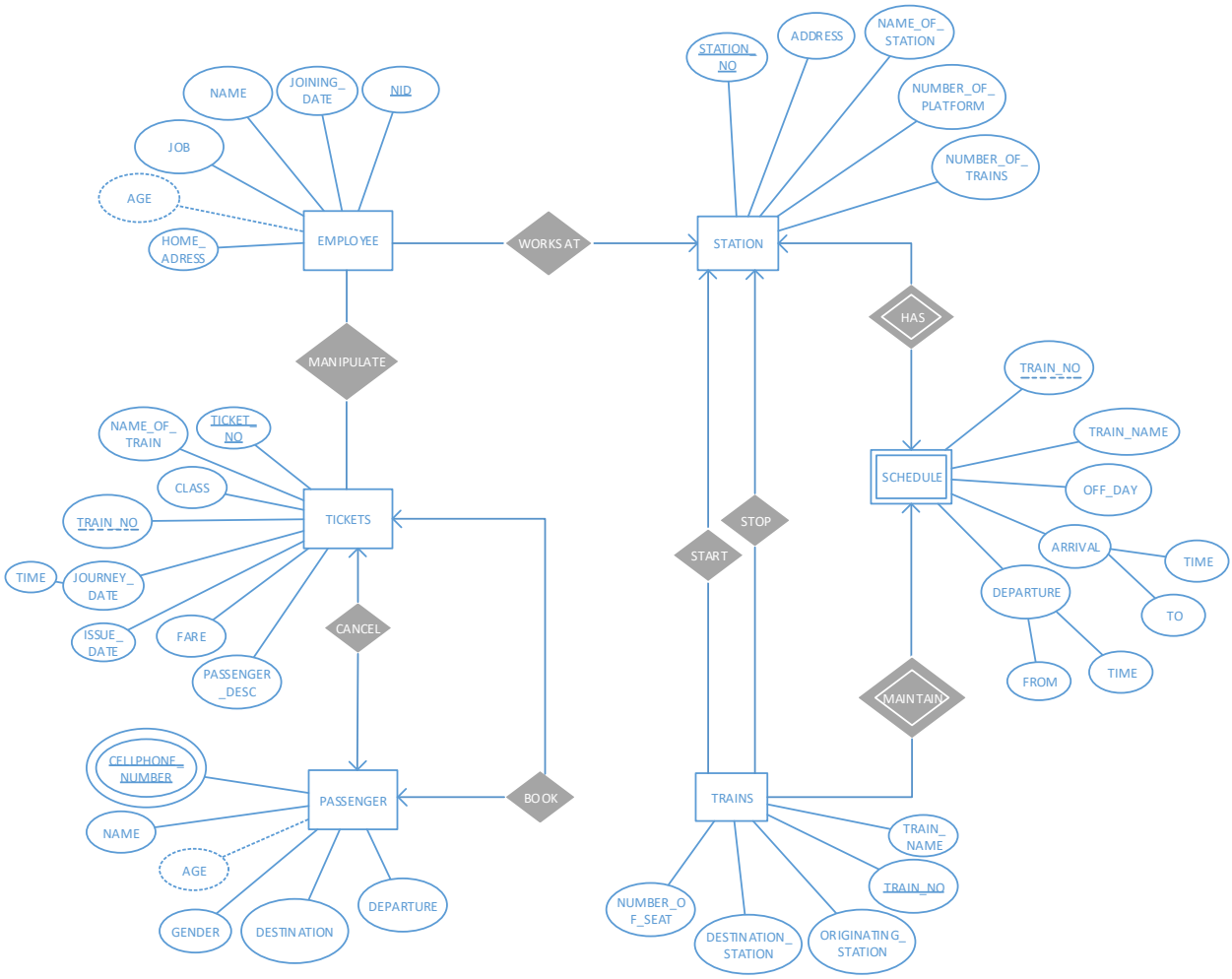
PROJECT SCENARIO:

The Bangladeshi government's railway department wants us to construct a data management system that would contain all the stations and associated information. The station name's, addresses, number of trains, number of platform and station number will be stored in the database. Some important information (NID, Age, Name, Home Address, salary, joining date, job) of employee will be stored in this system. The three employees are going to tour Dhaka, employee can book the tickets also and this will be stored in the data base system. And these all-booked tickets information (issue date, train name, tickets class type, train no, travel time, journey date, fare) will be stored in this system with a unique tickets no. After buy a ticket they will be a valid passenger to travel in train. But every passenger needs mobile number and NID to buy or book the tickets and need some additional information (destination, departure, gender, age, passenger name, NID, tickets no) will be recorded with the unique key passenger mobile phone number. Trains will become the schedule time if there is late then it will show in this. Employee can manage every schedule system and maintain the information of schedule and trains. Train has some important information similarly train name, train unique number, train destination, train originating station and the total number of seats. In this system schedule will show the train no, train name, arrival, departure, and the off day.

ER-Diagram:

MID-TERM:

Railway Management System

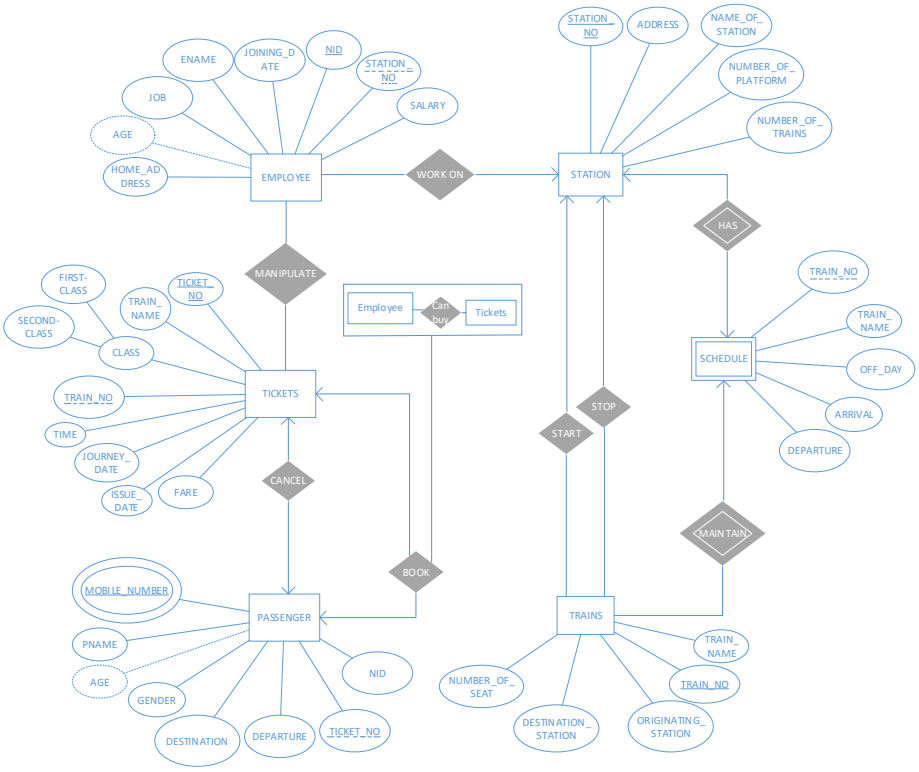


FINAL-TERM:

New Changes:

New relation between employee and tickets, CELLPHONE_NUMBER of PASSENGER table changes into MOBILE_NUMBER, new attributes to passenger named NID, Deletion of attribute named P_DESC from TABLE tickets and new generalization in attribute CLASS.

Final ER-Diagram of Railway Management System



Normalization:

STATION

1NF

STATION_NO, ADDRESS, NAME_OF_STATION, NUMBER_OF_PLATFROM, NUMBER_OF_TRAINS contains one and only one value.

2NF

ADDRESS, NAME_OF_STATION, NUMBER_OF_PLATFROM, NUMBER_OF_TRAINS attributes are fully functionally dependent on STATION_NO (primary key). No partial dependency.

3NF

ADDRESS, NAME_OF_STATION, NUMBER_OF_PLATFROM, NUMBER_OF_TRAINS attributes are fully dependent on STATION_NO (primary key).

EMPLOYEE

1NF

NID, ENAME, JOB, HOME_ADDRESS, JOINING_DATE, SALARY, COMMISSION, STATION_NO contains one and only one value.

2NF

ENAME, JOB, HOME_ADDRESS, JOINING_DATE, SALARY, COMMISSION, STATION_NO attributes are fully functionally dependent on NID (primary key). No partial dependency.

3NF

ENAME, JOB, HOME_ADDRESS, JOINING_DATE, SALARY, COMMISSION, STATION_NO attributes are fully dependent on NID (primary key).

TRAINS

1NF

TRAIN_NO, TRAIN_NAME, ORIGINATING_STATION, DESTINATION_STATION, NUMBER_OF_SEAT contains one and only one value.

2NF

TRAIN_NAME, ORIGINATING_STATION, DESTINATION_STATION, NUMBER_OF_SEAT attributes are fully functionally dependent on TRAIN_NO (primary key). No partial dependency.

3NF

TRAIN_NAME, ORIGINATING_STATION, DESTINATION_STATION, NUMBER_OF_SEAT attributes are fully dependent on TRAIN_NO (primary key).

SCHEDULE (WEAK ENTITY)

1NF

TRAIN_NO, TRAIN_NAME, ARRIVAL, DEPARTURE, OFF_DAY contains one and only one value.

2NF

TRAIN_NAME, ARRIVAL, DEPARTURE, OFF_DAY attributes are fully functionally dependent on TRAIN_NO (foreign key). No partial dependency.

3NF

TRAIN_NAME, ORIGINATING_STATION, DESTINATION_STATION, NUMBER_OF_SEAT attributes are fully dependent on TRAIN_NO (foreign key).

TICKETS

1NF

TICKET_NO, TRAIN_NAME, JOURNEY_DATE, TIME, CLASS, ISSUE_DATE, TRAIN_NO, FARE contains one and only one value.

2NF

TRAIN_NAME, JOURNEY_DATE, TIME, CLASS, ISSUE_DATE, TRAIN_NO, FARE attributes are fully functionally dependent on TICKET_NO (primary key). No partial dependency.

3NF

TRAIN_NAME, JOURNEY_DATE, TIME, CLASS, ISSUE_DATE, TRAIN_NO, FARE attributes are fully dependent on TICKET_NO (primary key).

PASSENGER

1NF

MOBILE_NUMBER is a multivalued attribute.

2NF

PNAME, AGE, GENDER, DEPARTURE, DESTINATION, TICKET_NO, NID attributes are fully functionally dependent on MOBILE_NUMBER (primary key). No partial dependency.

3NF

PNAME, AGE, GENDER, DEPARTURE, DESTINATION, TICKET_NO, NID attributes are fully dependent on MOBILE_NUMBER (primary key). No partial dependency.

Table Creation, Insertion & Modifications:

1.TRAINS

```
CREATE TABLE TRAINS
      (TRAIN_NO NUMBER(4) CONSTRAINT PK_TRAINS PRIMARY KEY,
          TRAIN_NAME VARCHAR2(20),
          ORIGINATING_STATION VARCHAR2(20),
       DESTINATION_STATION VARCHAR2(20),
          NUMBER_OF_SEAT NUMBER(4));
DESCRIBE TRAINS;
```

Object Type **TABLE** Object **TRAINS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
TRAINS	TRAIN_NO	Number	-	4	0	1	-	-	-
	TRAIN_NAME	Varchar2	20	-	-	-	✓	-	-
	ORIGINATING_STATION	Varchar2	20	-	-	-	✓	-	-
	DESTINATION_STATION	Varchar2	20	-	-	-	✓	-	-
	NUMBER_OF_SEAT	Number	-	4	0	-	✓	-	-
									1 - 5

```
INSERT INTO TRAINS VALUES
(001,'MEGHNA_EXPRESS','DHAKA','CHATTOGRAM',1000);
INSERT INTO TRAINS VALUES
(002,'EKOTA_EXPRESS','NATORE','DHAKA',2000);
INSERT INTO TRAINS VALUES
(003,'TISTA_EXPRESS','DHAKA','JAMALPUR',3000);
INSERT INTO TRAINS VALUES
(004,'PARABAT_EXPRESS','BRAHMANBARIA','DHAKA',4000);
INSERT INTO TRAINS VALUES
(005,'TURNA_EXPRESS','JAMALPUR','DHAKA',5000);
```

TRAIN_NO	TRAIN_NAME	ORIGINATING_STATION	DESTINATION_STATION	NUMBER_OF_SEAT
1	MEGHNA_EXPRESS	DHAKA	CHATTOGRAM	1000
2	EKOTA_EXPRESS	NATORE	DHAKA	2000
3	TISTA_EXPRESS	DHAKA	JAMALPUR	3000
4	PARABAT_EXPRESS	BRAHMANBARIA	DHAKA	4000
5	TURNA_EXPRESS	JAMALPUR	DHAKA	5000

5 rows returned in 0.19 seconds CSV Export

2. STATION

CREATE TABLE STATION

(STATION_NO NUMBER(3) CONSTRAINT PK_STATION PRIMARY KEY,

ADDRESS VARCHAR2(20),

NAME_OF_STATION VARCHAR2(20),

NUMBER_OF_PLATFROM NUMBER(3),

NUMBER_OF_TRAINS NUMBER(3));

DESCRIBE STATION

Object Type **TABLE** Object **STATION**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
STATION	STATION_NO	Number	-	3	0	1	-	-	-
	ADDRESS	Varchar2	20	-	-	-	✓	-	-
	NAME_OF_STATION	Varchar2	20	-	-	-	✓	-	-
	NUMBER_OF_PLATFROM	Number	-	3	0	-	✓	-	-
	NUMBER_OF_TRAINS	Number	-	3	0	-	✓	-	-

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INSERT INTO STATION VALUES

(100,'KAMALAPUR,DHAKA','KAMALAPUR STATION',5,5);

INSERT INTO STATION VALUES

(101,'BRAHMANBARIA','BRAHMANBARIA STATION',2,1);

INSERT INTO STATION VALUES

(102,'JAMALPUR','JAMALPUR JUNCTION',4,3);

INSERT INTO STATION VALUES

(103,'NATORE','NATORE STATION',2,1);

INSERT INTO STATION VALUES

(104,'KUSHTIA','KUSHTIA STATION',1,1);

INSERT INTO STATION VALUES

(105,'CHATTOGRAM','CHATTOGRAM JUNCTION',4,2);

INSERT INTO STATION VALUES

(404,'NATORE','AJIMPUR STATION',NULL,NULL);

STATION_NO	ADDRESS	NAME_OF_STATION	NUMBER_OF_PLATFROM	NUMBER_OF_TRAINS
100	KAMALAPUR,DHAKA	KAMALAPUR STATION	5	5
101	BRAHMANBARIA	BRAHMANBARIA STATION	2	1
102	JAMALPUR	JAMALPUR JUNCTION	4	3
103	NATORE	NATORE STATION	2	1
104	KUSHTIA	KUSHTIA STATION	1	1
105	CHATTOGRAM	CHATTOGRAM JUNCTION	4	2
404	NATORE	AJIMPUR STATION	-	-

7 rows returned in 0.08 seconds CSV Export

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3. TICKETS

CREATE TABLE TICKETS

(TICKET_NO NUMBER(5) CONSTRAINT PK_TICKETS PRIMARY KEY,

TRAIN_NAME VARCHAR2(20),

JOURNEY_DATE DATE,

TIME VARCHAR2(7),

CLASS VARCHAR2(15),

ISSUE_DATE DATE,

TRAIN_NO NUMBER(4) CONSTRAINT FK_TRAINS REFERENCES TRAINS,

FARE NUMBER(3));

DESCRIBE TICKETS

Object Type **TABLE** Object **TICKETS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
TICKETS	TICKET_NO	Number	-	5	0	1	-	-	-
	TRAIN_NAME	Varchar2	20	-	-	-	✓	-	-
	JOURNEY_DATE	Date	7	-	-	-	✓	-	-
	TIME	Varchar2	7	-	-	-	✓	-	-
	CLASS	Varchar2	15	-	-	-	✓	-	-
	ISSUE_DATE	Date	7	-	-	-	✓	-	-
	TRAIN_NO	Number	-	4	0	-	✓	-	-
	FARE	Number	-	3	0	-	✓	-	-
									1 - 8

```
CREATE SEQUENCE TICKETS_SEQ
MINVALUE 10001
MAXVALUE 99999
START WITH 10001
NOCACHE
NOCYCLE
INCREMENT BY 1;

INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'TISTA_EXPRESS',
'13-DEC-2021', '14:40', 'FIRST-CLASS','09-DEC-2021', 0003, 480);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'EKOTA_EXPRESS',
'13-DEC-2021', '09:00', 'SECOND-CLASS','09-DEC-2021', 0002, 532);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'PARABAT_EXPRESS',
'15-DEC-2021', '18:40', 'SECOND-CLASS','09-DEC-2021', 0004, 260);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'MEGHNA_EXPRESS',
'17-DEC-2021', '07:15', 'FIRST-CLASS','09-DEC-2021', 0001, 720);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'TURNA_EXPRESS',
'12-DEC-2021', '22:45', 'SECOND-CLASS','09-DEC-2021', 0005, 260);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'MEGHNA_EXPRESS',
'17-DEC-2021', '07:15', 'FIRST-CLASS','09-DEC-2021', 0001, 960);
INSERT INTO TICKETS VALUES (TICKETS_SEQ.NEXTVAL, 'EKOTA_EXPRESS',
'20-DEC-2021', '09:00', 'SECOND-CLASS','10-DEC-2021', 0002, 180);
```

TICKET_NO	TRAIN_NAME	JOURNEY_DATE	TIME	CLASS	ISSUE_DATE	TRAIN_NO	FARE
10001	TISTA_EXPRESS	13-DEC-21	14:40	FIRST-CLASS	09-DEC-21	3	480
10002	EKOTA_EXPRESS	13-DEC-21	09:00	SECOND-CLASS	09-DEC-21	2	532
10003	PARABAT_EXPRESS	15-DEC-21	18:40	SECOND-CLASS	09-DEC-21	4	260
10004	MEGHNA_EXPRESS	17-DEC-21	07:15	FIRST-CLASS	09-DEC-21	1	720
10005	TURNA_EXPRESS	12-DEC-21	22:45	SECOND-CLASS	09-DEC-21	5	260
10006	MEGHNA_EXPRESS	17-DEC-21	07:15	FIRST-CLASS	09-DEC-21	1	960
10007	EKOTA_EXPRESS	20-DEC-21	09:00	SECOND-CLASS	10-DEC-21	2	180

7 rows returned in 0.02 seconds CSV Export

4. PASSENGER

```
CREATE TABLE PASSENGER
(MOBILE_NUMBER NUMBER(11) CONSTRAINT PK_PASSENGER PRIMARY KEY,
PNAME VARCHAR2(20),
AGE NUMBER(2),
GENDER VARCHAR2(10),
DEPARTURE VARCHAR2(20),
DESTINATION VARCHAR2(20),
TICKET_NO NUMBER(5) CONSTRAINT FK_TICKETNO REFERENCES TICKETS,
NID NUMBER(12));
```

```
DESCRIBE  PASSENGER;
```

Object Type **TABLE** Object **PASSENGER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PASSENGER	MOBILE_NUMBER	Number	-	11	0	1	-	-	-
	PNAME	Varchar2	20	-	-	-	✓	-	-
	AGE	Number	-	2	0	-	✓	-	-
	GENDER	Varchar2	10	-	-	-	✓	-	-
	DEPARTURE	Varchar2	20	-	-	-	✓	-	-
	DESTINATION	Varchar2	20	-	-	-	✓	-	-
	TICKET_NO	Number	-	5	0	-	✓	-	-
	NID	Number	-	12	0	-	✓	-	-

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```
INSERT INTO PASSENGER VALUES (01799898999,'SUMON', 25,'MALE', 'DHAKA', 'JAMALPUR',
10001,2799898999);
```

INSERT INTO PASSENGER VALUES (01799897888,'JONEY', 45,'MALE', 'NATORE', 'DHAKA',

10002,1799897888);

INSERT INTO PASSENGER VALUES (01799897889,'ALI', 35,'MALE', 'NATORE', 'DHAKA',

10002,1799897889);

INSERT INTO PASSENGER VALUES (01799897777,'TAMIMA', 20,'FEMALE', 'BRAHMANBARIA', 'DHAKA',

10003,1799897777);

INSERT INTO PASSENGER VALUES (01799897007,'KAKON', 30,'MALE', 'DHAKA', 'CHATTOGRAM',

10004,1799897007);

INSERT INTO PASSENGER VALUES (01702667007,'RUBEL', 29,'MALE', 'JAMALPUR', 'DHAKA',

10005,1212121212);

INSERT INTO PASSENGER VALUES (01702667017,'WASI', 27,'MALE', 'DHAKA', 'CHATTOGRAM',

10006,1702667017);

INSERT INTO PASSENGER VALUES (01702667027,'FAHIMA', 33,'FEMALE', 'DHAKA', 'CHATTOGRAM',

10006,1702667027);

INSERT INTO PASSENGER VALUES (01702667127,'PARAMANIK', 30,'MALE', 'NATORE', 'DHAKA',

10007,0505050505);

INSERT INTO PASSENGER VALUES (01702667050,'SHARMIN', 23,'FEMALE', 'NATORE', 'DHAKA',

10007,9191919191);

MOBILE_NUMBER	PNAME	AGE	GENDER	DEPARTURE	DESTINATION	TICKET_NO	NID
1799898999	SUMON	25	MALE	DHAKA	JAMALPUR	10001	2799898999
1799897888	JONEY	45	MALE	NATORE	DHAKA	10002	1799897888
1799897889	ALI	35	MALE	NATORE	DHAKA	10002	1799897889
1799897777	TAMIMA	20	FEMALE	BRAHMANBARIA	DHAKA	10003	1799897777
1799897007	KAKON	30	MALE	DHAKA	CHATTOGRAM	10004	1799897007
1702667007	RUBEL	29	MALE	JAMALPUR	DHAKA	10005	1212121212
1702667017	WASI	27	MALE	DHAKA	CHATTOGRAM	10006	1702667017
1702667027	FAHIMA	33	FEMALE	DHAKA	CHATTOGRAM	10006	1702667027
1702667127	PARAMANIK	30	MALE	NATORE	DHAKA	10007	505050505
1702667050	SHARMIN	23	FEMALE	NATORE	DHAKA	10007	9191919191

10 rows returned in 0.00 seconds CSV Export

5. EMPLOYEE

```
CREATE TABLE EMPLOYEE
(NID NUMBER(12) CONSTRAINT PK_EMPLOYEE PRIMARY KEY,
ENAME VARCHAR2(20),
JOB VARCHAR2(20),
HOME_ADDRESS VARCHAR2(20),
JOINING_DATE DATE,
SALARY NUMBER(7,2),
COMMISSION NUMBER(7,2),
STATION_NO NUMBER(3) CONSTRAINT FK_STATION REFERENCES STATION);
```

```
DESCRIBE  EMPLOYEE;
```

Object Type **TABLE** Object **EMPLOYEE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	NID	Number	-	12	0	1	-	-	-
	ENAME	Varchar2	20	-	-	-	✓	-	-
	JOB	Varchar2	20	-	-	-	✓	-	-
	HOME_ADDRESS	Varchar2	20	-	-	-	✓	-	-
	JOINING_DATE	Date	7	-	-	-	✓	-	-
	SALARY	Number	-	7	2	-	✓	-	-
	COMMISSION	Number	-	7	2	-	✓	-	-
	STATION_NO	Number	-	3	0	-	✓	-	-

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```
INSERT INTO EMPLOYEE VALUES
(0101010101,'JAHANGIR','STATION MASTER','BANANI,DHAKA','22-JAN-1988',20500,NULL,100);

INSERT INTO EMPLOYEE VALUES
(909090909,'MANIK','GANDY DANCER','ASUGONG','19-FEB-1999',11500,NULL,101);

INSERT INTO EMPLOYEE VALUES
```

(0202020202,'HASAN','T.T.','NIMTOLA,JAMALPUR','03-SEP-1994',10500,1050.5,102);

INSERT INTO EMPLOYEE VALUES
(0303030303,'RAJASHREE','TICKET CONTROLLER','BARISAL','05-MAR-2000',15500,150,103);

INSERT INTO EMPLOYEE VALUES
(0404040404,'PREM','TRAIN DISPATCHER','ALUPOTTI,RAJSHAHI','25-DEC-2010',25500,550,104);

INSERT INTO EMPLOYEE VALUES
(0505050505,'PARAMANIK','POWER MAINTAINER','CHAPAI','18-NOV-2005',17500,250,105);

INSERT INTO EMPLOYEE VALUES
(1212121212,'RUBEL','CLEANER',NULL,'11-NOV-2017',5500,50.5,102);

INSERT INTO EMPLOYEE VALUES
(2525252525,'RAHIM','CLEANER','CHAPAI','22-NOV-2011',5500,50.55,105);

INSERT INTO EMPLOYEE VALUES
(0232323232,'MIRAJUL','STATION MASTER','RANINOGOR','28-OCT-2006',13500,650,102);

INSERT INTO EMPLOYEE VALUES
(3131313131,'NUHASH','T.T.','BARIDHARA,DHAKA','22-JAN-1988',16500,350.25,100);

INSERT INTO EMPLOYEE VALUES
(4545454545,'RAJU','TICKET CONTOLLER','BOGURA','09-FEB-2001',9500,NULL,105);

INSERT INTO EMPLOYEE VALUES
(1414141414,'TALUKDAR','GANDY DANCER','NOAKHALI','05-APR-2012',5500,550,104);

INSERT INTO EMPLOYEE VALUES

(4414441444,'SHAHIN','STATION MASTER','NATORE','13-MAY-2004',20500,550,104);

INSERT INTO EMPLOYEE VALUES

(3232323232,'BASAK','POWER MAINTAINER','TANGAIL','07-OCT-2001',10500,50.5,102);

INSERT INTO EMPLOYEE VALUES

(9191919191,'SHARMIN','TICKET CONTROLLER','SHYLET','25-SEP-1997',10500,NULL,100);

NID	ENAME	JOB	HOME_ADDRESS	JOINING_DATE	SALARY	COMMISSION	STATION_NO
101010101	JAHANGIR	STATION MASTER	BANANI,DHAKA	22-JAN-88	20500	-	100
909090909	MANIK	GANDY DANCER	ASUGONG	19-FEB-99	11500	-	101
202020202	HASAN	T.T.	NIMTOLA,JAMALPUR	03-SEP-94	10500	1050.5	102
303030303	RAJASHREE	TICKET CONTROLLER	BARISAL	05-MAR-00	15500	150	103
404040404	PREM	TRAIN DISPATCHER	ALUPOTTI,RAJSHAHI	25-DEC-10	25500	550	104
505050505	PARAMANIK	POWER MAINTAINER	CHAPAI	18-NOV-05	17500	250	105
1212121212	RUBEL	CLEANER	-	11-NOV-17	5500	50.5	102
2525252525	RAHIM	CLEANER	CHAPAI	22-NOV-11	5500	50.55	105
232323232	MIRAJUL	STATION MASTER	RANINOGOR	28-OCT-06	13500	650	102
3131313131	NUHASH	T.T.	BARIDHARA,DHAKA	22-JAN-88	16500	350.25	100
4545454545	RAJU	TICKET CONTOLLER	BOGURA	09-FEB-01	9500	-	105
1414141414	TALUKDAR	GANDY DANCER	NOAKHALI	05-APR-12	5500	550	104
4414441444	SHAHIN	STATION MASTER	NATORE	13-MAY-04	20500	550	104
3232323232	BASAK	POWER MAINTAINER	TANGAIL	07-OCT-01	10500	50.5	102
9191919191	SHARMIN	TICKET CONTROLLER	SHYLET	25-SEP-97	10500	-	100

15 rows returned in 0.00 seconds CSV Export

6. SCHEDULE

CREATE TABLE SCHEDULE

(TRAIN_NO NUMBER(4) CONSTRAINT FK_TRAINS2 REFERENCES TRAINS,

TRAIN_NAME VARCHAR2(20),

ARRIVAL VARCHAR2(20),

DEPARTURE VARCHAR2(20),

OFF_DAY VARCHAR(20));

DESCRIBE SCHEDULE;

Object Type **TABLE** Object **SCHEDULE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
SCHEDULE	TRAIN_NO	Number	-	4	0	-	✓	-	-
	TRAIN_NAME	Varchar2	20	-	-	-	✓	-	-
	ARRIVAL	Varchar2	20	-	-	-	✓	-	-
	DEPARTURE	Varchar2	20	-	-	-	✓	-	-
	OFF_DAY	Varchar2	20	-	-	-	✓	-	-

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```
INSERT INTO SCHEDULE VALUES
(001,'MEGHNA_EXPRESS','06:45','07:15','SUNDAY');
INSERT INTO SCHEDULE VALUES
(002,'EKOTA_EXPRESS','08:30','09:00','TUESDAY');
INSERT INTO SCHEDULE VALUES
(003,'TISTA_EXPRESS','14:10','14:40','SUNDAY');
INSERT INTO SCHEDULE VALUES
(004,'PARABAT_EXPRESS','18:10','18:40','TUESDAY');
INSERT INTO SCHEDULE VALUES
(005,'TURNA_EXPRESS','22:15','22:45','SUNDAY');
```

Results Explain Describe Saved SQL History

TRAIN_NO	TRAIN_NAME	ARRIVAL	DEPARTURE	OFF_DAY
1	MEGHNA_EXPRESS	06:45	07:15	SUNDAY
2	EKOTA_EXPRESS	08:30	09:00	TUESDAY
3	TISTA_EXPRESS	14:10	14:40	SUNDAY
4	PARABAT_EXPRESS	18:10	18:40	TUESDAY
5	TURNA_EXPRESS	22:15	22:45	SUNDAY

5 rows returned in 0.00 seconds CSV Export

```
ALTER TABLE SCHEDULE ADD(LATE VARCHAR2(7));
```

```
Table altered.
```

0.37 seconds

UPDATE SCHEDULE SET LATE='3_HOUR' WHERE TRAIN_NAME='MEGHNA_EXPRESS'

UPDATE SCHEDULE SET LATE='5_HOUR' WHERE TRAIN_NAME='EKOTA_EXPRESS'

UPDATE SCHEDULE SET LATE='7_HOUR' WHERE TRAIN_NAME='TISTA_EXPRESS'

UPDATE SCHEDULE SET LATE='9_HOUR' WHERE TRAIN_NAME='PARABAT_EXPRESS'

TRAIN_NO	TRAIN_NAME	ARRIVAL	DEPARTURE	OFF_DAY	LATE
1	MEGHNA_EXPRESS	06:45	07:15	SUNDAY	3_HOUR
2	EKOTA_EXPRESS	08:30	09:00	TUESDAY	5_HOUR
3	TISTA_EXPRESS	14:10	14:40	SUNDAY	9_HOUR
4	PARABAT_EXPRESS	18:10	18:40	TUESDAY	9_HOUR
5	TURNA_EXPRESS	22:15	22:45	SUNDAY	-

5 rows returned in 0.00 seconds CSV Export

RENAME SCHEDULE TO AGENDA

Object Type **TABLE** Object **AGENDA**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
AGENDA	TRAIN_NO	Number	-	4	0	-	✓	-	-
	TRAIN_NAME	Varchar2	20	-	-	-	✓	-	-
	ARRIVAL	Varchar2	20	-	-	-	✓	-	-
	DEPARTURE	Varchar2	20	-	-	-	✓	-	-
	OFF_DAY	Varchar2	20	-	-	-	✓	-	-
	LATE	Varchar2	7	-	-	-	✓	-	-

1 - 6

RENAME AGENDA TO SCHEDULE

Results Explain Describe Saved SQL History

Object Type TABLE Object SCHEDULE

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
SCHEDULE	TRAIN_NO	Number	-	4	0	-	✓	-	-
	TRAIN_NAME	Varchar2	20	-	-	-	✓	-	-
	ARRIVAL	Varchar2	20	-	-	-	✓	-	-
	DEPARTURE	Varchar2	20	-	-	-	✓	-	-
	OFF_DAY	Varchar2	20	-	-	-	✓	-	-
	LATE	Varchar2	7	-	-	-	✓	-	-

1 - 6

DELETE FROM SCHEDULE WHERE LATE IS NULL;

TRAIN_NO	TRAIN_NAME	ARRIVAL	DEPARTURE	OFF_DAY	LATE
1	MEGHNA_EXPRESS	06:45	07:15	SUNDAY	3_HOUR
2	EKOTA_EXPRESS	08:30	09:00	TUESDAY	5_HOUR
3	TISTA_EXPRESS	14:10	14:40	SUNDAY	9_HOUR
4	PARABAT_EXPRESS	18:10	18:40	TUESDAY	9_HOUR

4 rows returned in 0.00 seconds CSV Export

ALTER TABLE SCHEDULE DROP COLUMN LATE

TRAIN_NO	TRAIN_NAME	ARRIVAL	DEPARTURE	OFF_DAY
1	MEGHNA_EXPRESS	06:45	07:15	SUNDAY
2	EKOTA_EXPRESS	08:30	09:00	TUESDAY
3	TISTA_EXPRESS	14:10	14:40	SUNDAY
4	PARABAT_EXPRESS	18:10	18:40	TUESDAY

4 rows returned in 0.01 seconds CSV Export

ALTER TABLE SCHEDULE RENAME COLUMN ARRIVAL TO ARRIVAL_TIME

ALTER TABLE SCHEDULE RENAME COLUMN ARRIVAL_TIME TO ARRIVAL

TRAIN_NO	TRAIN_NAME	ARRIVAL	DEPARTURE	OFF_DAY
1	MEGHNA_EXPRESS	06:45	07:15	SUNDAY
2	EKOTA_EXPRESS	08:30	09:00	TUESDAY
3	TISTA_EXPRESS	14:10	14:40	SUNDAY
4	PARABAT_EXPRESS	18:10	18:40	TUESDAY

4 rows returned in 0.00 seconds CSV Export

TRUNCATE TABLE SCHEDULE

```
Table truncated.

0.93 seconds
```

1. Simple queries with simple conditions

(a) **Question:** Write a SQL query to print details of the Employees whose Ename ends with 'N'

NID	ENAME	JOB	HOME_ADDRESS	JOINING_DATE	SALARY	COMMISSION	STATION_
202020202	HASAN	T.T.	NIMTOLA,JAMALPUR	03-SEP-94	10500	1050.5	102
4414441444	SHAHIN	STATION MASTER	NATORE	13-MAY-04	20500	550	104
9191919191	SHARMIN	TICKET CONTROLLER	SHYLET	25-SEP-97	10500	-	100

3 rows returned in 0.00 seconds CSV Export

(b) Write an SQL query to fetch unique values of STATION NUMBER from EMPLOYEE table.

STATION_NO
100
102
101
104
105
103

6 rows returned in 0.00 seconds

2. Single row function query:

Question: Show employee name, job, home address where employee name is 'Jahangir'.

Query: SELECT ENAME, JOB, HOME_ADDRESS FROM EMPLOYEE WHERE INITCAP(ENAME)='Jahangir';

ENAME	JOB	HOME_ADDRESS
JAHANGIR	STATION MASTER	BANANI,DHAKA

1 rows returned in 0.00 seconds CSV Export

3. .Multiple row function query

Question: Show name of station and number of platform as "name of station & platform" and show the length of address where the number of trains is greater than 2.

Query: SELECT NAME_OF_STATION ||'-'|| NUMBER_OF_PLATFROM AS "NAME OF STATION & PLATFORMS", LENGTH(ADDRESS) AS "LENGTH OF ADDRESS" FROM STATION WHERE NUMBER_OF_TRAINS>2;

NAME OF STATION & PLATFORMS	LENGTH OF ADDRESS
KAMALAPUR STATION-5	15
JAMALPUR JUNCTION-4	8

2 rows returned in 0.00 seconds CSV Export

4. Single row sub queries

(a)Question: Show the number of seats on the train of ticket number 10003.

Query: SELECT NUMBER_OF_SEAT FROM TRAINS WHERE TRAIN_NO=(SELECT TRAIN_NO FROM TICKETS WHERE TICKET_NO=10003);

NUMBER_OF_SEAT
4000

1 rows returned in 0.00 seconds CSV Export

(b Question: show passenger name, age, ticket no. Where the passenger age is 27, ticket class is FIRST-CLASS, time is 7:15, and fare is 960.

Query: SELECT PNAME AS "PASSENGER NAME", AGE,TICKET_NO FROM PASSENGER WHERE TICKET_NO=(SELECT TICKET_NO FROM TICKETS WHERE TIME='07:15' AND CLASS='FIRST-CLASS' AND FARE=960) AND AGE=27;

PASSENGER NAME	AGE	TICKET_NO
WASI	27	10006

1 rows returned in 0.02 seconds CSV Export

5. Multi row sub query

Question: Show gender, age NID from passenger where destination = Dhaka

```
SELECT GENDER,AGE, NID FROM PASSENGER WHERE (AGE,NID) IN ( SELECT AGE, NID FROM PASSENGER WHERE DESTINATION='DHAKA');
```

Results Explain Describe Saved SQL History

GENDER	AGE	NID
MALE	45	1799897888
MALE	35	1799897889
FEMALE	20	1799897777
MALE	29	1212121212
MALE	30	505050505
FEMALE	23	9191919191

6 rows returned in 0.00 seconds CSV Export

6. Complex sub queries:

(a)Question: Display the third maximum salary

SELECT MAX(SALARY) FROM EMPLOYEE WHERE SALARY <> (SELECT MAX(SALARY) FROM EMPLOYEE WHERE SALARY <>(SELECT MAX(SALARY) FROM EMPLOYEE))

AND SALARY <>(SELECT MAX(SALARY) FROM EMPLOYEE)

```
SELECT MAX(SALARY) FROM EMPLOYEE WHERE SALARY <> (SELECT MAX(SALARY)
FROM EMPLOYEE WHERE SALARY <>(SELECT MAX(SALARY) FROM EMPLOYEE )) AND
SALARY <>(SELECT MAX(SALARY ) FROM EMPLOYEE )
```

Results Explain Describe Saved SQL History

MAX(SALARY)
17500

1 rows returned in 0.00 seconds CSV Export

(b)Question: Show the destination of an employee of NID '1212121212' who purchased a ticket.

SELECT DESTINATION_STATION FROM TRAINS WHERE TRAIN_NO=(SELECT TRAIN_NO FROM TICKETS WHERE TICKET_NO=(SELECT TICKET_NO FROM PASSENGER WHERE NID=1212121212))

DESTINATION_STATION
DHAKA

1 rows returned in 0.00 seconds

Joining queries:

1. Equijoining:

Question: Display TRAIN_NO,TRAIN_NAME,ORIGINATING_STATION,ORIGINATING_STATION,TICKET_NO,JOURNEY_DATE,TIME,CLASS,FARE,FOR MEGHNA_EXPRESS

SELECT T.TRAIN_NO,T.TRAIN_NAME,T.ORIGINATING_STATION,T.ORIGINATING_STATION,C.TICKET_NO,C.JOURNEY_DATE,C.TIME,C.CLASS,C.FARE FROM TRAINS T ,TICKETS C WHERE T.TRAIN_NO=C.TRAIN_NO AND C.TRAIN_NAME ='MEGHNA_EXPRESS';

Results Explain Describe Saved SQL History

TRAIN_NO	TRAIN_NAME	ORIGINATING_STATION	ORIGINATING_STATION	TICKET_NO	JOURNEY_DATE	TIME	CLASS	FARE
1	MEGHNA_EXPRESS	DHAKA	DHAKA	10004	17-DEC-21	07:15	FIRST-CLASS	720
1	MEGHNA_EXPRESS	DHAKA	DHAKA	10006	17-DEC-21	07:15	FIRST-CLASS	960

2 rows returned in 0.00 seconds CSV Export

2. Non-equijoining:

Question: Select ticket no. of trains has seats number between 2000 to 4000

SELECT TK.TICKET_NO, T.TRAIN_NO FROM TICKETS TK, TRAINS T WHERE T.NUMBER_OF_SEAT BETWEEN 2000 AND 4000 AND T.TRAIN_NO=TK.TRAIN_NO;

TICKET_NO	TRAIN_NO
10001	3
10002	2
10003	4
10007	2

4 rows returned in 0.00 seconds

3. Left outer join

Question :Show all stations working employee name if there is no employee then show "NO EMPLOYEE".

SELECT S.NAME_OF_STATION,NVL(E.ENAME,'NO EMPLOYEE')AS "EMPLOYEE NAME" FROM STATION S LEFT OUTER JOIN EMPLOYEE E ON (E.STATION_NO=S.STATION_NO);

NAME_OF_STATION	EMPLOYEE NAME
KAMALAPUR STATION	JAHANGIR
BRAHMANBARIA STATION	MANIK
JAMALPUR JUNCTION	HASAN
NATORE STATION	RAJASHREE
KUSHTIA STATION	PREM
CHATTOGRAM JUNCTION	PARAMANIK
JAMALPUR JUNCTION	RUBEL
CHATTOGRAM JUNCTION	RAHIM
JAMALPUR JUNCTION	MIRAJUL
KAMALAPUR STATION	NUHASH
CHATTOGRAM JUNCTION	RAJU
KUSHTIA STATION	TALUKDAR
KUSHTIA STATION	SHAHIN
JAMALPUR JUNCTION	BASAK
KAMALAPUR STATION	SHARMIN
AJIMPUR STATION	NO EMPLOYEE

16 rows returned in 0.00 seconds CSV Export

4. Right outer join :

Question: SHOW THE EMPLOYEE NAME AND DESTINATION WHO ARE TRAVELING DHAKA IF SOME DID NOT TRAVEL THEN MENTION THEM " NO VACATION"

SELECT E.ENAME,NVL(P.DESTINATION,'NO VACATION')AS "DESTINATION" FROM PASSENGER P RIGHT OUTER JOIN EMPLOYEE E ON (E.NID=P.NID);

ENAME	DESTINATION
JAHANGIR	NO VACATION
MANIK	NO VACATION
HASAN	NO VACATION
RAJASHREE	NO VACATION
PREM	NO VACATION
PARAMANIK	DHAKA
RUBEL	DHAKA
RAHIM	NO VACATION
MIRAJUL	NO VACATION
NUHASH	NO VACATION
More than 10 rows available. Increase rows selector to view more rows.	

10 rows returned in 0.02 seconds CSV Export

5. Full outer join :

Question Display all the stations and if there is any station without employees show NO EMPLOYEE

SELECT S.NAME_OF_STATION, NVL(E.ENAME,'NO EMPLOYEE') AS "EMPLOYEE NAME" FROM STATION S FULL OUTER JOIN EMPLOYEE E ON (E.STATION_NO=S.STATION_NO);

Results Explain Describe Saved SQL

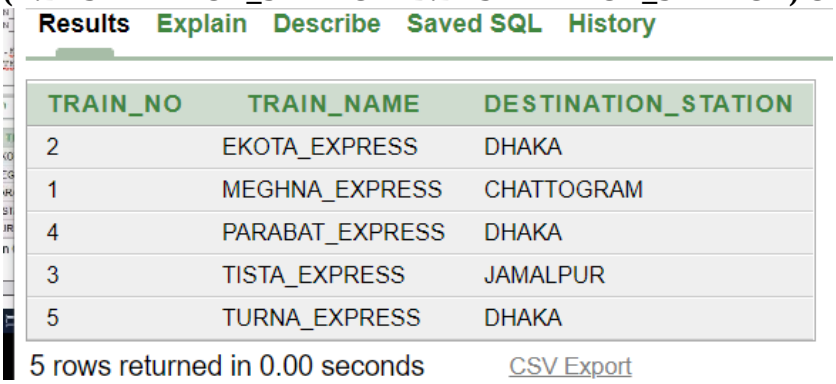
NAME_OF_STATION	ENAME
KAMALAPUR STATION	JAHANGIR
BRAHMANBARIA STATION	MANIK
JAMALPUR JUNCTION	HASAN
NATORE STATION	RAJASHREE
KUSHTIA STATION	PREM
CHATTOGRAM JUNCTION	PARAMANIK
JAMALPUR JUNCTION	RUBEL
CHATTOGRAM JUNCTION	RAHIM
JAMALPUR JUNCTION	MIRAJUL
KAMALAPUR STATION	NUHASH
CHATTOGRAM JUNCTION	RAJU
KUSHTIA STATION	TALUKDAR
KUSHTIA STATION	SHAHIN
JAMALPUR JUNCTION	BASAK
KAMALAPUR STATION	SHARMIN
AJIMPUR STATION	-

16 rows returned in 0.00 seconds

6. Self-join:

Question: Display trains that has the same destination station

SELECT A.TRAIN_NO, A.TRAIN_NAME, A.DESTINATION_STATION FROM TRAINS A, TRAINS B WHERE (A.TRAIN_NAME=B.TRAIN_NAME) AND (A.DESTINATION_STATION=B.DESTINATION_STATION) ORDER BY A.TRAIN_NAME;



Results Explain Describe Saved SQL History

TRAIN_NO	TRAIN_NAME	DESTINATION_STATION
2	EKOTA_EXPRESS	DHAKA
1	MEGHNA_EXPRESS	CHATTOGRAM
4	PARABAT_EXPRESS	DHAKA
3	TISTA_EXPRESS	JAMALPUR
5	TURNA_EXPRESS	DHAKA

5 rows returned in 0.00 seconds CSV Export

View:

CREATE OR REPLACE VIEW EMPLOYEEVIEW102(EMPLOYEE_NAME, EMPLOYEE_NID,EMPLOYEE_JOB,SALARY,STATION_NO) AS SELECT ENAME, NID,JOB, SALARY, STATION_NO FROM EMPLOYEE WITH READ ONLY;

SELECT*FROM EMPLOYEEVIEW102

```
SELECT*FROM EMPLOYEEVIEW102
```

Results | Explain | Describe | Saved SQL | History

EMPLOYEE_NAME	EMPLOYEE_NID	EMPLOYEE_JOB	SALARY	STATION_NO
JAHANGIR	101010101	STATION MASTER	20500	100
MANIK	909090909	GANDY DANCER	11500	101
HASAN	202020202	T.T.	10500	102
RAJASHREE	303030303	TICKET CONTROLLER	15500	103
PREM	404040404	TRAIN DISPATCHER	25500	104
PARAMANIK	505050505	POWER MAINTAINER	17500	105
RUBEL	1212121212	CLEANER	5500	102
RAHIM	2525252525	CLEANER	5500	105
MIRAJUL	232323232	STATION MASTER	13500	102
NUHASH	3131313131	T.T.	16500	100

More than 10 rows available. Increase rows selector to view more rows.

10 rows returned in 0.00 seconds CSV Export

Sequence:

CREATE CREATE SEQUENCE TICKETS_SEQ

MINVALUE 10001

MAXVALUE 99999

START WITH 10001

NOCACHE

NOCYCLE

INCREMENT BY 1;