U19CS076 DBMS ASSIGNMENT -5

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create table train (id varchar(5) , name varchar(20), primary key (id));

```
mysql> desc train;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| id    | varchar(5)  | NO   | PRI | NULL    |       |
| name  | varchar(20) | YES  |     | NULL    |       |
+-------+-------------+------+-----+---------+-------+
2 rows in set (0.02 sec)
```

create table station (stcode varchar(5), name varchar(20), primary key (stcode));

```
mysql> desc station;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| stcode | varchar(5)  | NO   | PRI | NULL    |       |
| name   | varchar(20) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

create table track (stcode1 varchar(5) , stcode2 varchar(5), distance integer , primary key(stcode1, stcode2));

```
mysql> desc track;
+----------+-----------+------+-----+---------+-------+
| Field    | Type      | Null | Key | Default | Extra |
+----------+-----------+------+-----+---------+-------+
| stcode1  | varchar(5) | NO   | PRI | NULL    |       |
| stcode2  | varchar(5) | NO   | PRI | NULL    |       |
| distance | int       | YES  |     | NULL    |       |
+----------+-----------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

create table trainhalts (id varchar(5) , seqno integer , stcode varchar(10), timein varchar(5) , timeout varchar(5) , primary key (id, seqno));

```
mysql> desc trainhalts;
+---------+------------+------+-----+---------+-------+
| Field   | Type       | Null | Key | Default | Extra |
+---------+------------+------+-----+---------+-------+
| id      | varchar(5)  | NO   | PRI | NULL    |       |
| seqno   | int         | NO   | PRI | NULL    |       |
| stcode  | varchar(10) | YES  |     | NULL    |       |
| timein  | varchar(5)  | YES  |     | NULL    |       |
| timeout | varchar(5)  | YES  |     | NULL    |       |
+---------+------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

insert into train values ('KP11' ,'CST-KYN');

insert into train values ('KP11L' ,'CST-KYN_LOCAL');

insert into train values ('T129' ,'CST-TNA_LOCAL');

insert into train values ('A63' ,'CST-DL_LOCAL');

insert into train values ('K101' ,'CST-KYN_LOCAL');

insert into train values ('N27' ,'CST-TNA_LOCAL');

insert into train values ('S33' ,'CST-KGR_LOCAL');

insert into train values ('A65' ,'CST-AMR_LOCAL');

insert into station values ('CST' ,'MUMBAI');

insert into station values ('BYC' ,'BYCULLA');

insert into station values ('DR' ,'DADAR');

insert into station values ('KRL' ,'KURLA');

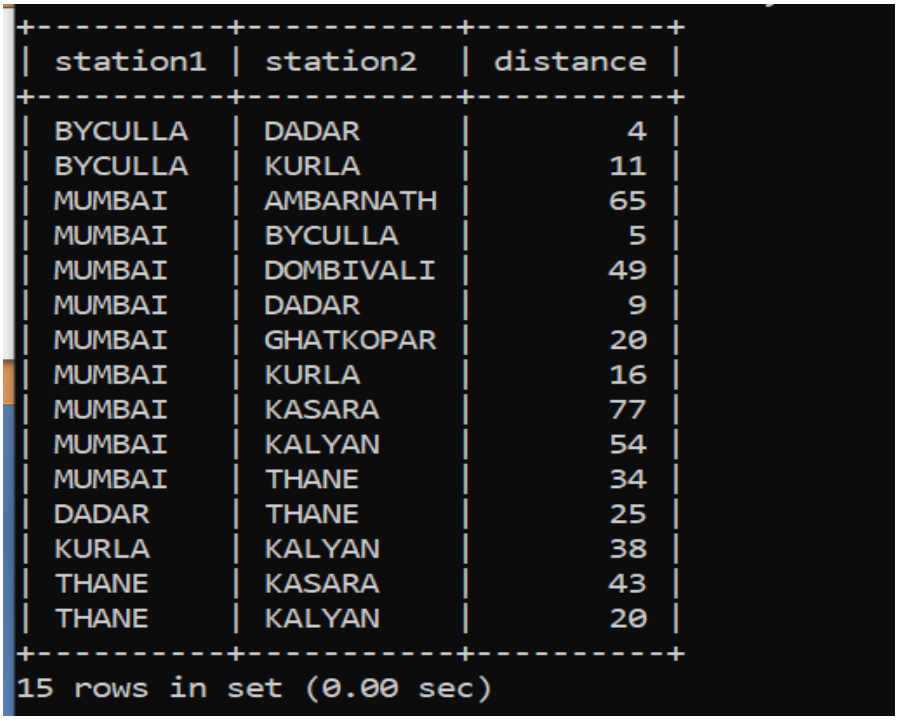
insert into station values ('GPR' ,'GHATKOPAR');

```
insert into station values ('TNA' ,'THANE');

insert into station values ('DL' ,'DOMBIVALI');

insert into station values ('AMR' , 'AMBARNATH');

insert into station values ('KYN' ,'KALYAN');

insert into station values ('KSR' ,'KASARA');


insert into track values ('CST' ,'BYC', 5);

insert into track values ('CST' ,'DR', 9);
insert into track values ('CST' ,'KRL', 16);

insert into track values ('CST' ,'GPR', 20);

insert into track values ('CST' ,'TNA', 34);

insert into track values ('CST' ,'DL', 49);

insert into track values ('CST' ,'KYN', 54);

insert into track values ('CST' ,'KSR', 77);

insert into track values ('CST' ,'AMR', 65);

insert into track values ('BYC' ,'DR', 4);

insert into track values ('BYC' ,'KRL', 11);

insert into track values ('GRP' ,'TNA', 14);

insert into track values ('DR' ,'TNA', 25);

insert into track values ('KRL' ,'KYN', 38);

insert into track values ('TNA' ,'KYN', 20);

insert into track values ('TNA' ,'KSR', 43);
```

```
insert into trainhalts values ('KP11' , 0 , 'CST' , NULL,
'20.23');

insert into trainhalts values ('KP11' , 1 , 'BYC' , '20.31',
'20.32');

 insert into trainhalts values ('KP11' , 2 , 'DR' , '20.41',
'20.42');

insert into trainhalts values ('KP11' , 3 , 'GPR' , '20.52',
'20.53');

 insert into trainhalts values ('KP11' , 4 , 'GPR' , '20.52',
'20.53');

insert into trainhalts values ('KP11' , 5 , 'DR' , '20.41',
'20.42');

 insert into trainhalts values ('KP11' , 6 , 'GPR' , '20.58',
'20.59');

insert into trainhalts values ('KP11' , 7 , 'TNA' , '21.21',
'21.22');

insert into trainhalts values ('KP11' , 8 , 'DL' , '21.45', '21.46');

insert into trainhalts values ('KP11' , 9 , 'KYN' , '21.54', NULL);

insert into trainhalts values ('A65' , 0 , 'CST' , NULL , '20.52');

insert into trainhalts values ('A65' , 1 , 'BYC' , '21.00' , '21.01');

insert into trainhalts values ('A65' , 2 , 'DR' , '21.10' , '21.11');

insert into trainhalts values ('A65' , 3 , 'KRL' , '21.22' , '21.23');

insert into trainhalts values ('A65' , 4 , 'GPR' , '21.28' , '21.29');

insert into trainhalts values ('A65' , 5 , 'TNA' , '21.49' , '21.50');

insert into trainhalts values ('A65' , 6 , 'DL' , '22.13' , '22.14');

insert into trainhalts values ('A65' , 7 , 'KYN' , '22.22' , '22.23');

insert into trainhalts values ('A65' , 8 , 'AMR' , '22.36' , NULL);
```

After the database tables and data are set; write the following queries:

1. Display all the pairs of stations with total distance for given source and destinationsselect s1.name as station1,s2.name as station2, tr.distance from station s1, station s2, track tr where tr.stcode1=s1.stcode and tr.stcode2=s2.stcode;

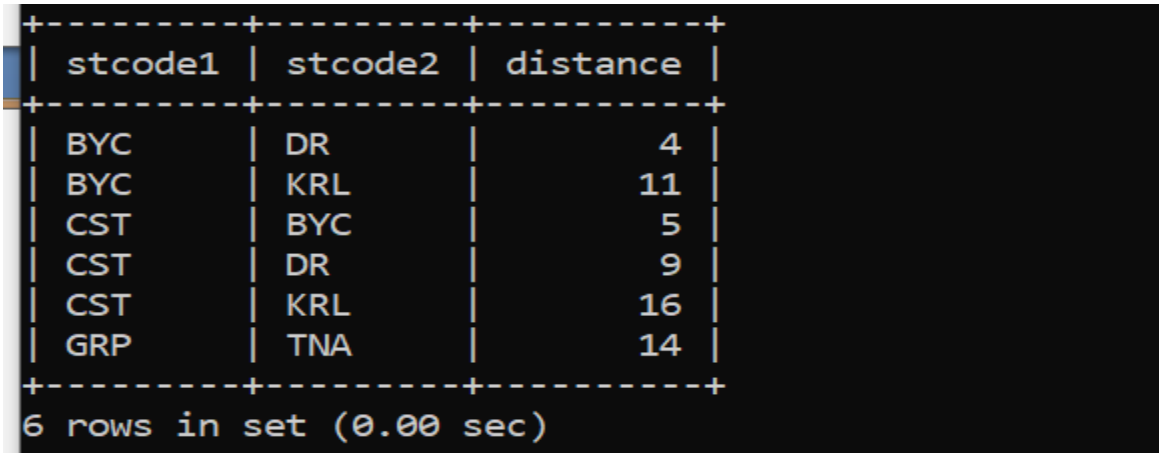


station1	station2	distance
BYCULLA	DADAR	4
BYCULLA	KURLA	11
MUMBAI	AMBARNATH	65
MUMBAI	BYCULLA	5
MUMBAI	DOMBIVALI	49
MUMBAI	DADAR	9
MUMBAI	GHATKOPAR	20
MUMBAI	KURLA	16
MUMBAI	KASARA	77
MUMBAI	KALYAN	54
MUMBAI	THANE	34
DADAR	THANE	25
KURLA	KALYAN	38
THANE	KASARA	43
THANE	KALYAN	20

15 rows in set (0.00 sec)

2. Find the pairs of stations (station codes) which have a track with distance less than 20Kms between them.

select * from track where distance < 20;



stcode1	stcode2	distance
BYC	DR	4
BYC	KRL	11
CST	BYC	5
CST	DR	9
CST	KRL	16
GRP	TNA	14

6 rows in set (0.00 sec)

3. Find the IDs of all the trains which have a stop at GHATKOPAR

select distinct(th.id) from (select stcode from station s where s.name='GHATKOPAR') c, trainhalts th where th.stcode = c.stcode;

```
+------+
| id   |
+------+
| A65  |
| KP11 |
+------+
2 rows in set (0.00 sec)
```

4. Find the ordered list of names of all trains that start at MUMBAI.

select train.name from train join station s join trainhalts th where th.id=train.id and s.stcode= th.stcode and s.name='MUMBAI' and th.timein is null order by train.name;

```
mysql> select train.name from train  join
s.name='MUMBAI' and th.timein is null orc
+---------------+
| name          |
+---------------+
| CST-AMR_LOCAL |
| CST-KYN       |
+---------------+
2 rows in set (0.01 sec)
```

5. List all the stations in order of visit by the train 'CST-AMR_LOCAL'.

select st.name from station st join trainhalts th join train where train.id=th.id and st.stcode=th.stcode and train.name='CST-AMR_LOCAL' order by th.seqno;

```
mysql> select st.name from station st join trainh
ain.name='CST-AMR_LOCAL' order by th.seqno;
+-----------+
| name      |
+-----------+
| MUMBAI    |
| BYCULLA   |
| DADAR     |
| KURLA     |
| GHATKOPAR |
| THANE     |
| DOMBIVALI |
| KALYAN    |
| AMBARNATH |
+-----------+
9 rows in set (0.00 sec)
```

6. Find the name of the trains which stop at Thane, before the 6th stop in the route of the train.

select train.name from train join station st join trainhalts th where train.id=th.id and st.stcode=th.stcode and st.name='THANE' and th.seqno<6;

```
  and st.name='THANE' and th.seqn
+---------------+
| name          |
+---------------+
| CST-AMR_LOCAL |
+---------------+
1 row in set (0.00 sec)
```

7.Display the pair of stations (i.e. station names) having maximum distance between them.

select s1.name, s2.name, tr.distance from station s1, station s2, track tr where tr.stcode1=s1.stcode and tr.stcode2=s2.stcode order by tr.distance desc limit 1;

```
stcode2=s2.stcode order by tr.distance desc limit 1;
+--------+--------+----------+
| name   | name   | distance |
+--------+--------+----------+
| MUMBAI | KASARA |       77 |
+--------+--------+----------+
1 row in set (0.00 sec)
```

8. Display id of the trainhalt having second highest time out.

select id from trainhalts where timeout=(select max(timeout) from trainhalts where timeout<(select max(timeout) from trainhalts));

```
mysql> select id from trainhalts where timeout=(select max(timeout) from trainhalts where timeout<(select max(ti
rom trainhalts));
+-----+
| id  |
+-----+
| A65 |
+-----+
1 row in set (0.00 sec)
```

9. Remove Track “CST” from the track table. Note: If any track is removed from the track table, then that track related information also should be removed from the other tables.

delete from track where stcode1="CST" or stcode2="CST";

delete from trainhalts where stcode="CST";

delete from station where stcode="CST";

```
mysql> delete from track where stcode1="CST" or stcode2="CST";
Query OK, 9 rows affected (0.01 sec)

mysql> delete from trainhalts where stcode="CST";
Query OK, 2 rows affected (0.01 sec)

mysql> delete from station where stcode="CST";
Query OK, 1 row affected (0.01 sec)
```

SHOWING ALL RECORDS FROM ALL TABLES

MySQL 8.0 Command Line Client

```
mysql> select * from station;
+--------+-----------+
| stcode | name      |
+--------+-----------+
| AMR    | AMBARNATH |
| BYC    | BYCULLA   |
| DL     | DOMBIVALI |
| DR     | DADAR     |
| GPR    | GHATKOPAR |
| KRL    | KURLA     |
| KSR    | KASARA    |
| KYN    | KALYAN    |
| TNA    | THANE     |
+--------+-----------+
9 rows in set (0.00 sec)

mysql> select * from track;
+---------+---------+----------+
| stcode1 | stcode2 | distance |
+---------+---------+----------+
| BYC     | DR      |        4 |
| BYC     | KRL     |       11 |
| DR      | TNA     |       25 |
| GRP     | TNA     |       14 |
| KRL     | KYN     |       38 |
| TNA     | KSR     |       43 |
| TNA     | KYN     |       20 |
+---------+---------+----------+
7 rows in set (0.00 sec)
```

```
mysql> select * from trainhalts;
+------+-------+--------+--------+---------+
| id   | seqno | stcode | timein | timeout |
+------+-------+--------+--------+---------+
| A65  |     1 | BYC    | 21.00  | 21.01   |
| A65  |     2 | DR     | 21.10  | 21.11   |
| A65  |     3 | KRL    | 21.22  | 21.23   |
| A65  |     4 | GPR    | 21.28  | 21.29   |
| A65  |     5 | TNA    | 21.49  | 21.50   |
| A65  |     6 | DL     | 22.13  | 22.14   |
| A65  |     7 | KYN    | 22.22  | 22.23   |
| A65  |     8 | AMR    | 22.36  | NULL    |
| KP11 |     1 | BYC    | 20.31  | 20.32   |
| KP11 |     2 | DR     | 20.41  | 20.42   |
| KP11 |     3 | GPR    | 20.52  | 20.53   |
| KP11 |     4 | GPR    | 20.52  | 20.53   |
| KP11 |     5 | DR     | 20.41  | 20.42   |
| KP11 |     6 | GPR    | 20.58  | 20.59   |
| KP11 |     7 | TNA    | 21.21  | 21.22   |
| KP11 |     8 | DL     | 21.45  | 21.46   |
| KP11 |     9 | KYN    | 21.54  | NULL    |
+------+-------+--------+--------+---------+
17 rows in set (0.00 sec)
```

10. Remove Track “KP11” from the train table.If any train is removed from the train table that track related information also should be removed from the other tables.

delete from train where id = "KP11";

delete from trainhalts where id = "KP11";

```
mysql> delete from train where id = "KP11";
Query OK, 1 row affected (0.01 sec)

mysql> delete from trainhalts where id = "KP11";
Query OK, 9 rows affected (0.01 sec)

mysql>
```

SHOWING ALL RECORDS FROM ALL TABLES

```
mysql> select * from trainhalts;
+-----+-------+--------+--------+---------+
| id  | seqno | stcode | timein | timeout |
+-----+-------+--------+--------+---------+
| A65 |     1 | BYC    | 21.00  | 21.01   |
| A65 |     2 | DR     | 21.10  | 21.11   |
| A65 |     3 | KRL    | 21.22  | 21.23   |
| A65 |     4 | GPR    | 21.28  | 21.29   |
| A65 |     5 | TNA    | 21.49  | 21.50   |
| A65 |     6 | DL     | 22.13  | 22.14   |
| A65 |     7 | KYN    | 22.22  | 22.23   |
| A65 |     8 | AMR    | 22.36  | NULL    |
+-----+-------+--------+--------+---------+
8 rows in set (0.00 sec)
```

```
mysql> select * from track;
+---------+---------+----------+
| stcode1 | stcode2 | distance |
+---------+---------+----------+
| BYC     | DR      |        4 |
| BYC     | KRL     |       11 |
| DR      | TNA     |       25 |
| GRP     | TNA     |       14 |
| KRL     | KYN     |       38 |
| TNA     | KSR     |       43 |
| TNA     | KYN     |       20 |
+---------+---------+----------+
7 rows in set (0.01 sec)
```