DBMS

LAB ASSIGNMENT 5

In reference to the **Railway database** given below, attempt the following questions:

The queries to create the tables and the data to be inserted are listed below. Run these queries against the database to have your tables and data ready.

Some notes on terms used:

+ table "**trainhalts"** contains one row for every halt of a train.

-- id : id of the train which is the primary key.
-- seqno : the halt number. Assume that the starting station has seqno as 0.
-- stcode : station code of this halt.
-- timein : time at which the train arrives at this station. (will be null for the starting station of a train)
-- timeout: time at which the train departs this station. (will be null for the terminating station of a train)
-- If a train passes through a station without stopping, then there will be an entry with timein = timeout.

+ table "**track"** stores the distances between directly connected stations stcode1 and stcode2.

-- Assume that this represents a directed track. i.e., for two stations A and B, there will be an entry corresponding to (A, B, distance) and another for (B, A, distance).

Script to be run to set up the tables and insert the respective data with the following constraints:

- The stcode of table trainhalts is the code which is available in the station table only. -
The track table should have distance value greater than 0.

- The seqno of the table trainhalts should be automatically generated using the "SEQUENCE".

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

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

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

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

```
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 destinations. 2. Find the pairs of stations (station codes) which have a track with distance less than 20Kms between them.
3. Find the IDs of all the trains which have a stop at GHATKOPAR

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

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

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

7. Display the pair of stations (i.e. station names) having maximum distance between them. 8. Display id of the trainhalt having second highest time out.

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. 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.

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