ASSIGNMENT 4

SCHEMA CREATION & CONSTRAINTS

Statement: Create the schema and constraints on the relations.
Modify the trains schema which we saw earlier to create constraints to check the following:

- The value of time in is always less than or equal to timeout.

```
SQL> alter table trainhalts add constraint chk_const check(timein <= timeout);

Table altered.

SQL> insert into trainhalts values('A65', 9, 'TNA', '22.33', '20.16');
insert into trainhalts values('A65', 9, 'TNA', '22.33', '20.16')
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.CHK_CONST) violated
```

- When a train is removed from service, all its halts should be deleted.

```
SQL> alter table trainhalts add foreign key(id) references train(id) on delete cascade;

Table altered.
```

```
SQL> delete from train where ID='KP11';

1 row deleted.

SQL> select * from trainhalts;

ID          SEQNO STCODE      TIMEI TIMEO
----- ---------- ---------- ----- -----
A65             0 CST                20.52
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

9 rows selected.

SQL> select * from train;

ID    NAME
----- --------------------
KP11L CST-KYN_LOCAL
T129  CST-TNA_LOCAL
A63   CST-DL_LOCAL
K101  CST-KYN_LOCAL
N27   CST-TNA_LOCAL
S33   CST-KGR_LOCAL
A65   CST-AMR_LOCAL
```

- Insert inconsistent data and verify the constraints.

check Constraint violated:-

```
SQL> insert into trainhalts values('A65', 9, 'TNA', '22.33', '20.16');
insert into trainhalts values('A65', 9, 'TNA', '22.33', '20.16')
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.CHK_CONST) violated


SQL> select * from trainhalts;

ID         SEQNO STCODE     TIMEI TIMEO
----- ---------- ---------- ----- -----
KP11           0 CST              20.23
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
A65            0 CST              20.52
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
```

On delete cascade:-

```
SQL> delete from train where ID='KP11';

1 row deleted.

SQL> select * from trainhalts;

ID           SEQNO STCODE      TIMEI TIMEO
----- ---------- ---------- ----- -----
A65              0 CST              20.52
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

9 rows selected.

SQL> select * from train;

ID    NAME
----- --------------------
KP11L CST-KYN_LOCAL
T129  CST-TNA_LOCAL
A63   CST-DL_LOCAL
K101  CST-KYN_LOCAL
N27   CST-TNA_LOCAL
S33   CST-KGR_LOCAL
A65   CST-AMR_LOCAL
```

Write SQL Create table statements to create the following schema. Include all appropriate primary and foreign key declarations. Choose appropriate types for each attribute.

- remotecentre(centreId, college, town, state)

```
SQL> create table remotecentre(
  2  centreId varchar(10),
  3  college varchar(50),
  4  town varchar(50),
  5  state varchar(50),
  6  primary key(centreId)
  7  );

Table created.
```

- person(ID, name, email)

```
SQL> create table person(
  2  ID integer,
  3  name varchar(50),
  4  email varchar(50),
  5  primary key(ID)
  6  );

Table created.
```

- programme(progId, title, fromdate, todate)

```
SQL> create table programme(
  2  progId integer,
  3  title varchar(50),
  4  fromdate date,
  5  todate date,
  6  primary key(progId)
  7  );

Table created.
```

- coordinator(ID, progId, centreId)

```
SQL> create table coordinator(
  2  ID integer,
  3  progId integer,
  4  centreId varchar(50),
  5  primary key(ID, progId, centreId),
  6  foreign key(ID) references person(ID) on delete cascade,
  7  foreign key(progId) references programme(progId),
  8  foreign key(centreId) references remotecentre(centreId)
  9  );

Table created.
```

- participant(ID, progId, centreId)

```
SQL> create table participant(
  2  ID integer,
  3  progId integer,
  4  centreId varchar(50),
  5  primary key(ID, progId, centreId),
  6  foreign key(ID) references person(ID) on delete cascade,
  7  foreign key(progId) references programme(progId),
  8  foreign key(centreId) references remotecentre(centreId)
  9  );

Table created.
```