DBMS LAB 3

Railway Reservation

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Create tables for the Above-mentioned Relational design and add check, default, not null and unique constraints.

1) Added PK and FK constraints for all applicable Relations

CREATE DATABASE PES1UG20CS648_railway

```
postgres=# create database PES1UG20CS648_railway;
CREATE DATABASE
postgres=# \c pes1ug20cs648_railway;
Password:
You are now connected to database "pes1ug20cs648_railway" as user "postgres".
pes1ug20cs648_railway=#
```

2) For Train_name, Train_Type in Train table add not null constraints value

Create Table Train

```
pes1ug20cs648_railway=# Create table train(train_no int not null, name varchar(20) unique, arrival timestamp, destination timestamp, availabilit
y boolean default '1', train_type varchar(20) not null, primary key(train_no));
CREATE TABLE
pes1ug20cs648_railway=# \d train
                    Table "public.train"
    Column    |            Type             | Collation | Nullable | Default
--------------+-----------------------------+-----------+----------+---------
 train_no     | integer                     |           | not null |
 name         | character varying(20)       |           |          |
 arrival      | timestamp without time zone |           |          |
 destination  | timestamp without time zone |           |          |
 availability | boolean                     |           |          | true
 train_type   | character varying(20)       |           | not null |
Indexes:
    "train_pkey" PRIMARY KEY, btree (train_no)
    "train_name_key" UNIQUE CONSTRAINT, btree (name)
```

Train name is unique (which is not null). Train type and train number is not null.

3) Add default constraint for compartment table setting Availability attribute to Yes –

Availability constraint is default to ‘yes’ as the data type for availability is Boolean – 1 for yes and 0 for no.

Create Table Compartment

```
pes1ug20cs648_railway=# create table compartment(type varchar(10), compartment_number int not null, capacity int, availa
bility boolean default '1', train_no int, primary key(compartment_number), foreign key(train_no) references train(train_
no));
CREATE TABLE
pes1ug20cs648_railway=# \d compartment
                   Table "public.compartment"
       Column       |         Type          | Collation | Nullable | Default
--------------------+-----------------------+-----------+----------+---------
 type               | character varying(10) |           |          |
 compartment_number | integer               |           | not null |
 capacity           | integer               |           |          |
 availability       | boolean               |           |          | true
 train_no           | integer               |           |          |
Indexes:
    "compartment_pkey" PRIMARY KEY, btree (compartment_number)
Foreign-key constraints:
    "compartment_train_no_fkey" FOREIGN KEY (train_no) REFERENCES train(train_no)
```

create table route_info

```
pes1ug20cs648_railway=# create table route_info(from_station_no int not null, from_station_name varchar(20), to_station_
no int not null, to_station_name varchar(20), distance int, train_no int, primary key(from_station_no, to_station_no), f
oreign key(train_no) references train(train_no));
CREATE TABLE
pes1ug20cs648_railway=# \d route_info
                        Table "public.route_info"
      Column       |         Type          | Collation | Nullable | Default
-------------------+-----------------------+-----------+----------+---------
 from_station_no   | integer               |           | not null |
 from_station_name | character varying(20) |           |          |
 to_station_no     | integer               |           | not null |
 to_station_name   | character varying(20) |           |          |
 distance          | integer               |           |          |
 train_no          | integer               |           |          |
Indexes:
    "route_info_pkey" PRIMARY KEY, btree (from_station_no, to_station_no)
Foreign-key constraints:
    "route_info_train_no_fkey" FOREIGN KEY (train_no) REFERENCES train(train_no)
```

create table user_t

```
pes1ug20cs648_railway=# create table user_t(user_id int not null, user_type varchar(10), fname  varchar(10), lname  varc
har(10), age int, dob date,  pincode int, street_no int, primary key(user_id));
CREATE TABLE
pes1ug20cs648_railway=# \d user_t
                     Table "public.user_t"
  Column   |         Type          | Collation | Nullable | Default
-----------+-----------------------+-----------+----------+---------
 user_id   | integer               |           | not null |
 user_type | character varying(10) |           |          |
 fname     | character varying(10) |           |          |
 lname     | character varying(10) |           |          |
 age       | integer               |           |          |
 dob       | date                  |           |          |
 pincode   | integer               |           |          |
 street_no | integer               |           |          |
Indexes:
    "user_t_pkey" PRIMARY KEY, btree (user_id)
```

create table user_train

```
pes1ug20cs648_railway=# create table user_train(train_no int not null, user_id int not null, date_timestamp timestamp, p
rimary key(date_timestamp),  foreign key(train_no) references train(train_no), foreign key(user_id) references user_t(us
er_id));
CREATE TABLE
pes1ug20cs648_railway=# \d user_train;
                       Table "public.user_train"
     Column     |            Type             | Collation | Nullable | Default
----------------+-----------------------------+-----------+----------+---------
 train_no       | integer                     |           | not null |
 user_id        | integer                     |           | not null |
 date_timestamp | timestamp without time zone |           | not null |
Indexes:
    "user_train_pkey" PRIMARY KEY, btree (date_timestamp)
Foreign-key constraints:
    "user_train_train_no_fkey" FOREIGN KEY (train_no) REFERENCES train(train_no)
    "user_train_user_id_fkey" FOREIGN KEY (user_id) REFERENCES user_t(user_id)
```

Create table user_phone

```
pes1ug20cs648_railway=# create table user_phone(user_id int not null, phone_no int,  foreign key(user_id) references use
r_t(user_id));
CREATE TABLE
pes1ug20cs648_railway=# \d user_phone;
             Table "public.user_phone"
  Column  |  Type   | Collation | Nullable | Default
----------+---------+-----------+----------+---------
 user_id  | integer |           | not null |
 phone_no | integer |           |          |
Foreign-key constraints:
    "user_phone_user_id_fkey" FOREIGN KEY (user_id) REFERENCES user_t(user_id)
```

Create table ticket

```
pes1ug20cs648_railway=# create table ticket(pnr int not null,train_num int,travel_data date,departure varchar(20),arriva
l varchar(10),departure_time time,arrival_time time,user_id int,train_type varchar(10),comp_type varchar(10),comp_num in
t,primary key(pnr),foreign key(user_id) references user_t(user_id));
CREATE TABLE
pes1ug20cs648_railway=# \d ticket;
                      Table "public.ticket"
     Column     |          Type          | Collation | Nullable | Default
----------------+------------------------+-----------+----------+---------
 pnr            | integer                |           | not null |
 train_num      | integer                |           |          |
 travel_data    | date                   |           |          |
 departure      | character varying(20)  |           |          |
 arrival        | character varying(10)  |           |          |
 departure_time | time without time zone |           |          |
 arrival_time   | time without time zone |           |          |
 user_id        | integer                |           |          |
 train_type     | character varying(10)  |           |          |
 comp_type      | character varying(10)  |           |          |
 comp_num       | integer                |           |          |
Indexes:
    "ticket_pkey" PRIMARY KEY, btree (pnr)
Foreign-key constraints:
    "ticket_user_id_fkey" FOREIGN KEY (user_id) REFERENCES user_t(user_id)
```

Create table payment_info

```
pes1ug20cs648_railway=# Create table payment_info( transaction_id int not null, bank varchar(20), card_no varchar(16), p
rice int, pnr int not null, primary key(transaction_id), foreign key(pnr) references ticket(pnr));
CREATE TABLE
pes1ug20cs648_railway=# \d payment_info;
                   Table "public.payment_info"
     Column     |         Type          | Collation | Nullable | Default
----------------+-----------------------+-----------+----------+---------
 transaction_id | integer               |           | not null |
 bank           | character varying(20) |           |          |
 card_no        | character varying(16) |           |          |
 price          | integer               |           |          |
 pnr            | integer               |           | not null |
Indexes:
    "payment_info_pkey" PRIMARY KEY, btree (transaction_id)
Foreign-key constraints:
    "payment_info_pnr_fkey" FOREIGN KEY (pnr) REFERENCES ticket(pnr)
```

Create table ticket_passenger

```
pes1ug20cs648_railway=# Create table ticket_passenger(  seat_no int not null, name varchar(20), age int, pnr int not nul
l, primary key(seat_no), foreign key(pnr) references ticket(pnr));
CREATE TABLE
pes1ug20cs648_railway=# \d ticket_passenger;
                Table "public.ticket_passenger"
 Column  |         Type          | Collation | Nullable | Default
---------+-----------------------+-----------+----------+---------
 seat_no | integer               |           | not null |
 name    | character varying(20) |           |          |
 age     | integer               |           |          |
 pnr     | integer               |           | not null |
Indexes:
    "ticket_passenger_pkey" PRIMARY KEY, btree (seat_no)
Foreign-key constraints:
    "ticket_passenger_pnr_fkey" FOREIGN KEY (pnr) REFERENCES ticket(pnr)
```

Create table fare

```
pes1ug20cs648_railway=# Create table fare(train_type varchar(10) not null,comp_type varchar(10),fareperkm int,primary ke
y(train_type,comp_type));
CREATE TABLE
pes1ug20cs648_railway=# \d fare
                      Table "public.fare"
   Column   |         Type          | Collation | Nullable | Default
------------+-----------------------+-----------+----------+---------
 train_type | character varying(10) |           | not null |
 comp_type  | character varying(10) |           | not null |
 fareperkm  | integer               |           |          |
Indexes:
    "fare_pkey" PRIMARY KEY, btree (train_type, comp_type)
```

4)train name should be unique-

```
pes1ug20cs648_railway=# create table train(train_no int not null, name varchar(20) unique, arrival timestamp, destination timestamp, availabilit
y boolean default '1', train_type varchar(20), primary key(train_no));
CREATE TABLE
pes1ug20cs648_railway=# \d train
                          Table "public.train"
    Column    |            Type             | Collation | Nullable | Default
--------------+-----------------------------+-----------+----------+---------
 train_no     | integer                     |           | not null |
 name         | character varying(20)       |           |          |
 arrival      | timestamp without time zone |           |          |
 destination  | timestamp without time zone |           |          |
 availability | boolean                     |           |          | true
 train_type   | character varying(20)       |           |          |
Indexes:
    "train_pkey" PRIMARY KEY, btree (train_no)
    "train_name_key" UNIQUE CONSTRAINT, btree (name)
```

5) Add check constraints to Ticket to check if the passenger age is above 5

```
pes1ug20cs648_railway=# create table user_t(user_id int not null, user_type varchar(10), fname  varchar(10), lname  varchar(10), age int check(a
ge>5), dob date,  pincode int, street_no int, primary key(user_id));
CREATE TABLE
pes1ug20cs648_railway=# \d user_t
                       Table "public.user_t"
  Column   |         Type          | Collation | Nullable | Default
-----------+-----------------------+-----------+----------+---------
 user_id   | integer               |           | not null |
 user_type | character varying(10) |           |          |
 fname     | character varying(10) |           |          |
 lname     | character varying(10) |           |          |
 age       | integer               |           |          |
 dob       | date                  |           |          |
 pincode   | integer               |           |          |
 street_no | integer               |           |          |
Indexes:
    "user_t_pkey" PRIMARY KEY, btree (user_id)
Check constraints:
    "user_t_age_check" CHECK (age > 5)
```

6) Rename any existing table name : alter table user_t

```
pes1ug20cs648_railway=# \d
              List of relations
 Schema |       Name       | Type  |  Owner
--------+------------------+-------+----------
 public | compartment      | table | postgres
 public | fare             | table | postgres
 public | payment_info     | table | postgres
 public | route_info       | table | postgres
 public | ticket           | table | postgres
 public | ticket_passenger | table | postgres
 public | train            | table | postgres
 public | user_phone       | table | postgres
 public | user_t           | table | postgres
 public | user_train       | table | postgres
(10 rows)


pes1ug20cs648_railway=# alter table user_t rename to new_user;
ALTER TABLE
pes1ug20cs648_railway=# \d
              List of relations
 Schema |       Name       | Type  |  Owner
--------+------------------+-------+----------
 public | compartment      | table | postgres
 public | fare             | table | postgres
 public | new_user         | table | postgres
 public | payment_info     | table | postgres
 public | route_info       | table | postgres
 public | ticket           | table | postgres
 public | ticket_passenger | table | postgres
 public | train            | table | postgres
 public | user_phone       | table | postgres
 public | user_train       | table | postgres
(10 rows)
```

7) use Truncate and drop commands

```
pes1ug20cs648_railway=# truncate train cascade;
NOTICE:  truncate cascades to table "compartment"
NOTICE:  truncate cascades to table "route_info"
NOTICE:  truncate cascades to table "user_train"
TRUNCATE TABLE
```