

# DBMS LAB 3

Hita Juneja  
PES1UG20CS645  
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## Railway Reservation System DDL Commands

### 1. Create Database pes1ug20cs645\_railway , Table train

```
Create database PES1UG20CS645_railway;
\c PES1UG20CS645_railway;
```

```
Create table train(train_no int not null, name varchar(20), arrival timestamp,
destination timestamp, availability boolean default '1', train_type varchar(20),
primary key(train_no));
```

```
[hitajuneja=# create database PES1UG20CS645_railway;
ERROR:  database "pes1ug20cs645_railway" already exists
[hitajuneja=# \c pes1ug20cs645_railway;
You are now connected to database "pes1ug20cs645_railway" as user "hitajuneja".
[pes1ug20cs645_railway=# create table train(train_no int not null, name varchar(20),
arrival timestamp, destination timestamp, availability boolean default '1', train_
type varchar(20), primary key(train_no));
CREATE TABLE
[pes1ug20cs645_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)
```

## 2. Create table compartment

```
Create table compartment(type varchar(10), compartment_number int not null,  
capacity int, availability boolean default '1', train_no int, primary  
key(compartment_number),foreign key(train_no) references train(train_no);
```

```
[pes1ug20cs645_railway=# Create table compartment(type varchar(10), compartment_number  
int not null, capacity int, availability boolean default '1', train_no int, primary  
key(compartment_number),foreign key(train_no) references train(train_no));  
CREATE TABLE  
pes1ug20cs645_railway=# \d compartment;  
          Table "public.compartment"  
+-----+-----+-----+-----+-----+  
| Column | Type   | Collation | Nullable | Default |  
+-----+-----+-----+-----+-----+  
| type   | character varying(10) | | not null | |  
| 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)  
pes1ug20cs645_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), foreign  
key(train_no) references train(train_no));  
CREATE TABLE
```

## 3. Create table route\_info

```
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), foreign key(train_no)  
references train(train_no));
```

```

[pes1ug20cs645_railway=#] \d route_info;
Table "public.route_info"
 Column | Type | Collation | Nullable | Default
-----+-----+-----+-----+-----+
 from_station_no | integer | Nullable | Default | 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 | true | | |
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)

```

#### 4. Create table user\_t

Create table user\_t(user\_id int not null, user\_type varchar(10), fname varchar(10), lname varchar(10), age int, dob date, pincode int, street\_no int, primary key(user\_id))

```

[pes1ug20cs645_railway=#] Create table user_t(user_id int not null, user_type varchar(10), fname varchar(10), lname varchar(10), age int, dob date, pincode int, street_no int, primary key(user_id));
CREATE TABLE Name
[pes1ug20cs645_railway=#] \d user_t;
Table "public.user_t" juneja".
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)

```

#### 5. Create table user\_train

Create table user\_train(train\_no int not null, user\_id int not null, date\_timestamp timestamp, primary key(date\_timestamp), foreign key(train\_no) references train(train\_no), foreign key(user\_id) references user\_t(user\_id));

```

[pes1ug20cs645_railway=# Create table user_train(train_no int not null, user_id int
not null, date_timestamp timestamp, primary key(date_timestamp), foreign key(train
_no) references train(train_no), foreign key(user_id) references user_t(user_id));
CREATE TABLE
[pes1ug20cs645_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)
[pes1ug20cs645_railway=#

```

## 6. Create table user\_phone

Create table user\_phone(user\_id int not null, phone\_no int, foreign key(user\_id) references user\_t(user\_id));

```

[pes1ug20cs645_railway=# Create table user_phone(user_id int not null, phone_no int,
foreign key(user_id) references user_t(user_id));
CREATE TABLE
[pes1ug20cs645_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)

```

## 7. Create table ticket

Create table ticket(pnr int not null,train\_num int,travel\_data date,departure varchar(20),arrival varchar(10),departure\_time time,arrival\_time time,user\_id int,train\_type varchar(10),comp\_type varchar(10),comp\_num int,primary key(pnr),foreign key(user\_id) references user\_t(user\_id));

```

| pes1ug20cs645_railway=# Create table ticket(pnr int not null,train_num int,travel_d
| ata date,departure varchar(20),arrival varchar(10),departure_time time,arrival_time
| time,user_id int,train_type varchar(10),comp_type varchar(10),comp_num int,primary
| key(pnr),foreign key(user_id) references user_t(user_id));
CREATE TABLE
| pes1ug20cs645_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)

```

## 8. Create table payment\_info

Create table payment\_info( transaction\_id int not null, bank varchar(20), card\_no varchar(16), price int, pnr int not null, primary key(transaction\_id), foreign key(pnr) references ticket(pnr));

```

| pes1ug20cs645_railway=# Create table payment_info( transaction_id int not null, ban
| k varchar(20), card_no varchar(16), price int, pnr int not null, primary key(transactio
| n_id), foreign key(pnr) references ticket(pnr));
CREATE TABLE
| pes1ug20cs645_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            |           |           | user_t(user_id);
 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)

```

## 9. Create table ticket\_passenger

```
Create table ticket_passenger( seat_no int not null, name varchar(20), age int, pnr int not null, primary key(seat_no), foreign key(pnr) references ticket(pnr));
```

```
[pes1ug20cs645_railway=# Create table ticket_passenger(seat_no int not null, name va  
rchar(20), age int, pnr int not null, primary key(seat_no), foreign key(pnr) refere  
nces ticket(pnr));  
CREATE TABLE  
[pes1ug20cs645_railway=# \d ticket_passenger;  
Table "public.ticket_passenger"  
Column | Type | Collation | Nullable | Default  
-----+-----+-----+-----+-----  
seat_no | integer | | not null |  
name | character varying(20) | | Default |  
age | integer | | |  
pnr | integer | not null | not null |  
Indexes:  
"ticket_passenger_pkey" PRIMARY KEY, btree (seat_no)  
Foreign-key constraints:  
"ticket_passenger_pnr_fkey" FOREIGN KEY (pnr) REFERENCES ticket(pnr)  
PRIMARY KEY, btree (transaction_id)  
pes1ug20cs645_railway=#[/pre>
```

## 10.

## Create table fare

```
Create table fare(train_type varchar(10) not null,comp_type varchar(10),fareperkm int,primary key(train_type,comp_type));
```

```
[pes1ug20cs645_railway=# Create table fare(train_type varchar(10) not null,comp_type  
varchar(10),fareperkm int,primary key(train_type,comp_type));  
CREATE TABLE  
[pes1ug20cs645_railway=# \d fare;  
Table "public.fare"  
Column not null | 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)  
pes1ug20cs645_railway=#[/pre>
```

## 11. Truncate table train

truncate train cascade;

```
|pes1ug20cs645_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
|pes1ug20cs645_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)
Referenced by:
  TABLE "compartment" CONSTRAINT "compartment_train_no_fkey" FOREIGN KEY (train_no)
    REFERENCES train(train_no)
  TABLE "route_info" CONSTRAINT "route_info_train_no_fkey" FOREIGN KEY (train_no)
    REFERENCES train(train_no)
  TABLE "user_train" CONSTRAINT "user_train_train_no_fkey" FOREIGN KEY (train_no)
    REFERENCES train(train_no)
pes1ug20cs645_railway=#

```

## 12. Rename table user\_t to new\_user

alter table user\_t rename to new\_user;

```

[pes1ug20cs645_railway=# alter table user_t rename to new_user;
ALTER TABLE
[pes1ug20cs645_railway=# \d new_user;
      Table "public.new_user"
      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)
Referenced by:
  TABLE "ticket" CONSTRAINT "ticket_user_id_fkey" FOREIGN KEY (user_id) REFERENCES new_user(user_id)
  TABLE "user_phone" CONSTRAINT "user_phone_user_id_fkey" FOREIGN KEY (user_id) REFERENCES new_user(user_id)
  TABLE "user_train" CONSTRAINT "user_train_user_id_fkey" FOREIGN KEY (user_id) REFERENCES new_user(user_id)

pes1ug20cs645_railway=#

```

### 13. Drop table user\_train

```
drop table user_train;
```

```

[pes1ug20cs645_railway=# drop table user_train;
DROP TABLE
[pes1ug20cs645_railway=# \d user_train;
Did not find any relation named "user_train".
pes1ug20cs645_railway=#

```

### 14. Availability constraint is default to 'yes'. As I have chosen datatype Boolean, '1' denotes 'yes' and '0' denotes 'no'.

Create table train(train\_no int not null, name varchar(20), arrival timestamp, destination timestamp, **availability boolean default '1'**, train\_type varchar(20), primary key(train\_no));

```

pes1ug20cs645_railway=# Create table train(train_no int not null, name varchar(20) unique, arrival timestamp, destination timestamp, availability boolean default '1', train_type varchar(20) not null, primary key(train_no));
CREATE TABLE
pes1ug20cs645_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)

```

## 15. Add check constraints to check if age>5 in user table

age int check(age>5)

```

pes1ug20cs645_railway=# Create table new_user(user_id int not null, user_type varchar(10), fname varchar(10), lname varchar(10), age int check(age>5), dob date, pincode int, street_no int, primary key(user_id));
CREATE TABLE 'yes'. As I have chosen datatype Boolean, '1'
pes1ug20cs645_railway=# \d new_user;
      Table "public.new_user"
  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:
    "new_user_pkey" PRIMARY KEY, btree (user_id)
Check constraints:
    "new_user_age_check" CHECK (age > 5)

```

## 16. UNIQUE train name, train\_type and train\_no as NOT NULL

train\_no int not null, train\_type varchar(20) not null, name varchar(20) unique

```
pes1ug20cs645_railway=# Create table train(train_no int not null, name varchar(20) )  
unique, arrival timestamp, destination timestamp, availability boolean default '1',  
train_type varchar(20) not null, primary key(train_no));  
CREATE TABLE  
pes1ug20cs645_railway=# \d train;  
          Table "public.train"           22:39  
   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 | default '1' |           | true  
train_type | character varying(20) | not null |  
Indexes:  
  "train_pkey" PRIMARY KEY, btree (train_no)  
  "train_name_key" UNIQUE CONSTRAINT, btree (name)
```