



**IT - 214 : DBMS**

**Prof. PM Jat**

**Topic : easyTravel.com**

**Group – 2, Team – 5**

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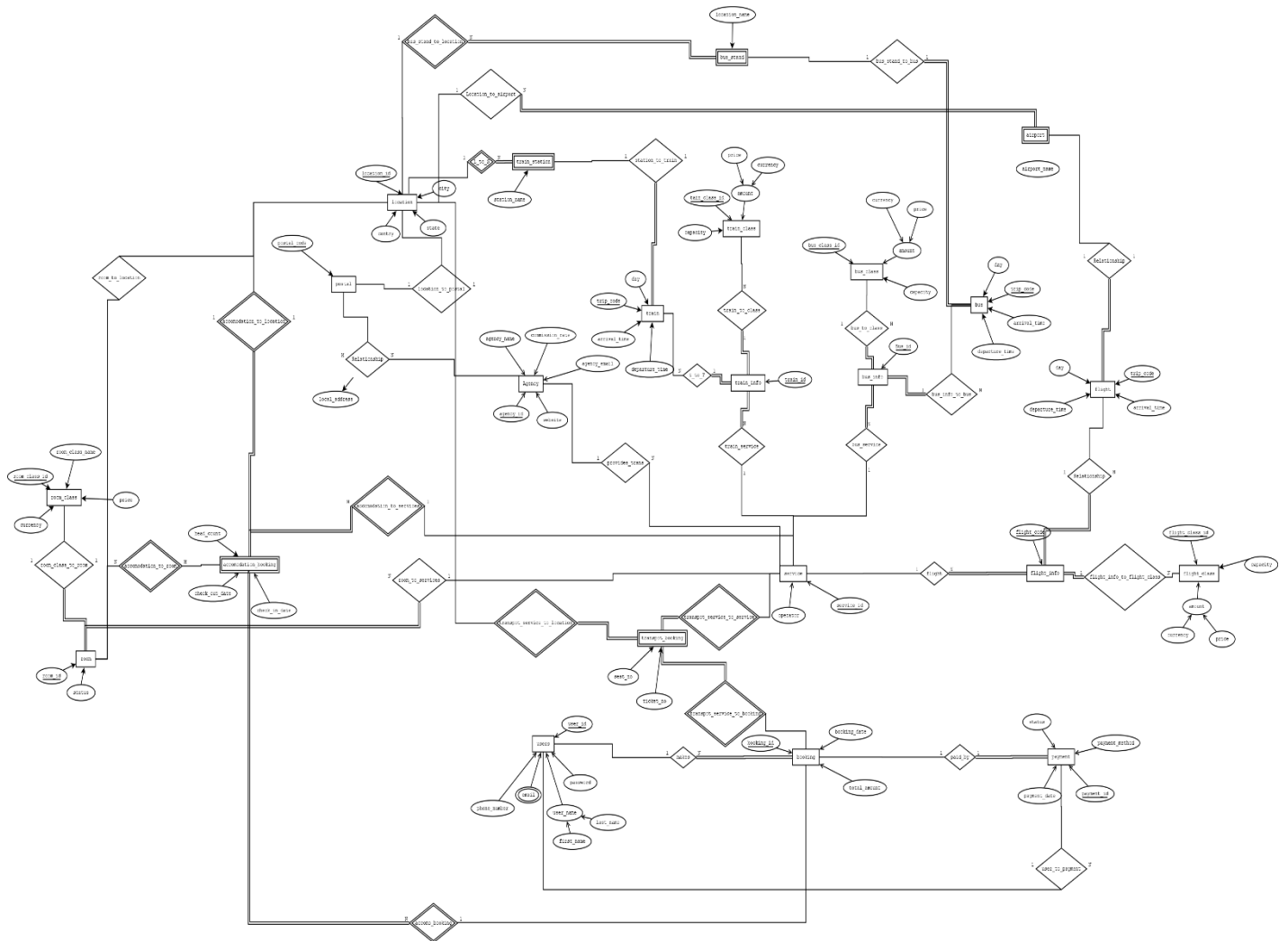
Meetkumar Deepakkumar Patel – 202301091

Kosha Dalsaniya – 202301122

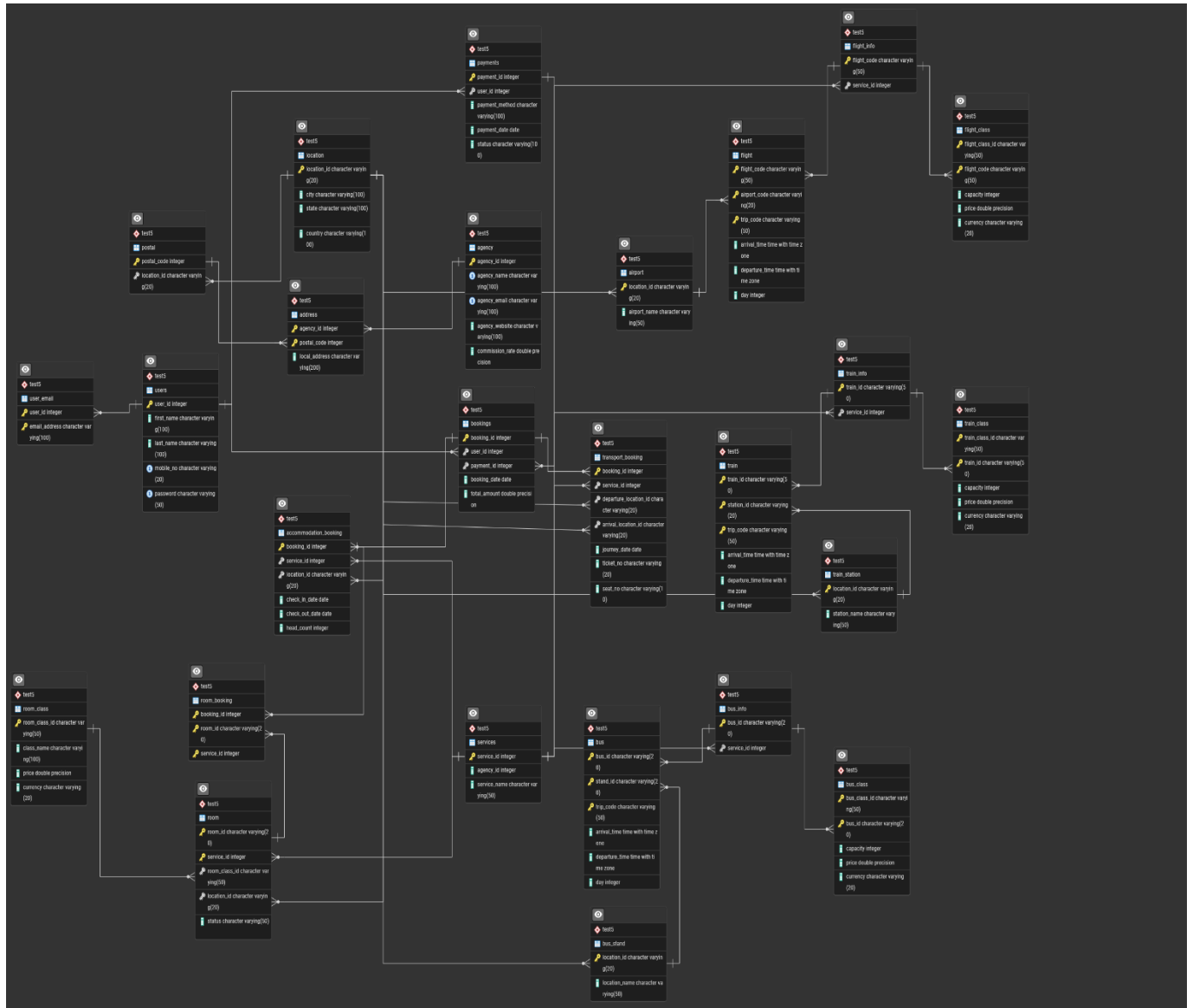
Panchal Yashkumar Kalpeshkumar – 202301094

Pala Aaditya Vimalkumar – 202301076

## 1) ERD



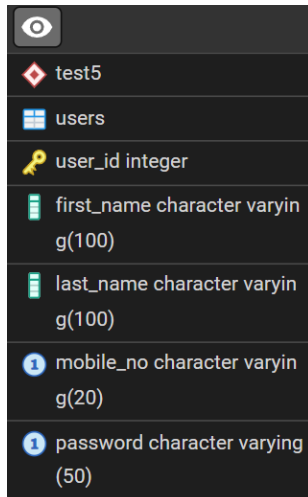
## 2) Relational Schema.



[Link to ERD and Relational Schema Images](#)

### 3) Minimal FD set and BCNF Proof.

#### (i) Users table.



test5
users
user_id integer
first_name character varying(100)
last_name character varying(100)
mobile_no character varying(20)
password character varying(50)

FDs :

$\text{user\_id} \rightarrow \text{first\_name, last\_name, mobile\_no, password}$

$\text{mobile\_no} \rightarrow \text{first\_name, last\_name, user\_id, password}$

Candidate keys : user\_id, mobile\_no

Primary key : user\_id.

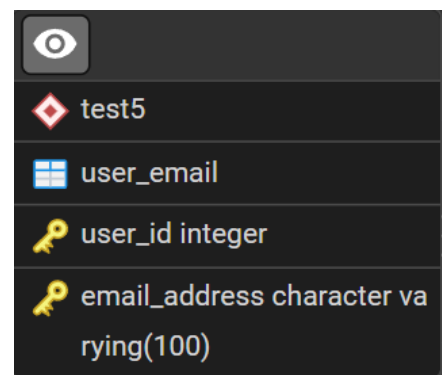
Since there is no transitive relationship, the table is in **BCNF**

#### (ii) User\_Email Table.

In our project, we have allowed users to use multiple email as their contact, so we have created another table to store multiple email addresses.

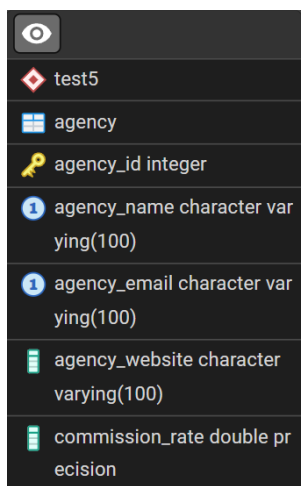
Primary key : (user\_id, email\_address)

**BCNF** form (Trivial).



test5
user_email
user_id integer
email_address character varying(100)

#### (iii) Agency Table.



test5
agency
agency_id integer
agency_name character varying(100)
agency_email character varying(100)
agency_website character varying(100)
commission_rate double precision

FDs:

$\text{Agency\_id} \rightarrow \text{agency\_name, agency\_email, agency\_website, commission\_rate}$

Primary key : agency\_id

Since there is only one FD, the table is in **BCNF** form.

#### (iv) Address Table.

This table stores the address of the agency.

FDs : (agency\_id, postal\_code) → local\_address

Since at a particular location, there can be many agencies, agency\_id and postal\_code both are primary keys.

Table is in **BCNF** form.

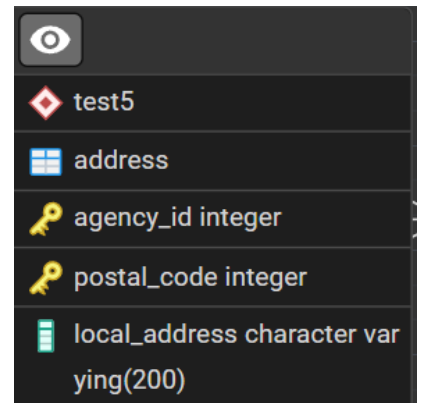


Table structure for Address Table:

- test5
- address
- agency\_id integer (Primary Key)
- postal\_code integer (Primary Key)
- local\_address character varying(200)

#### (v) Postal Table.

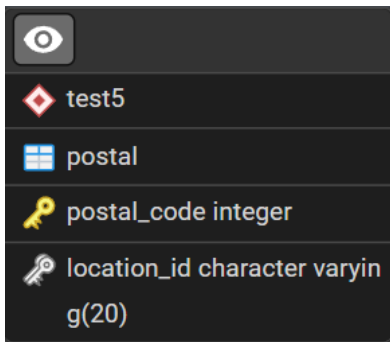


Table structure for Postal Table:

- test5
- postal
- postal\_code integer (Primary Key)
- location\_id character varying(20)

This stable stores the postal code of the location.

FD : postal\_code → location\_id

Primary key : postal\_code

Table is in **BCNF** form.

#### (vi) Location Table.

This table stores the location id of the places and is global table for all the locations.

FD : location\_id → city, state, country

Primary key : location\_id

Table is in **BCNF** form.

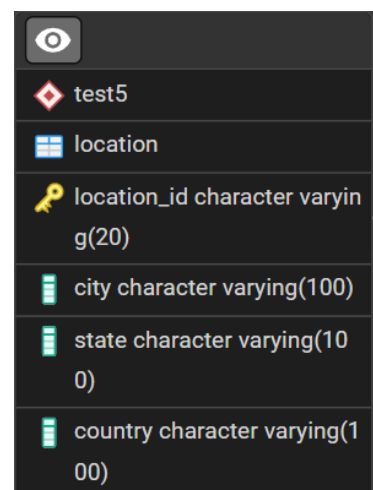
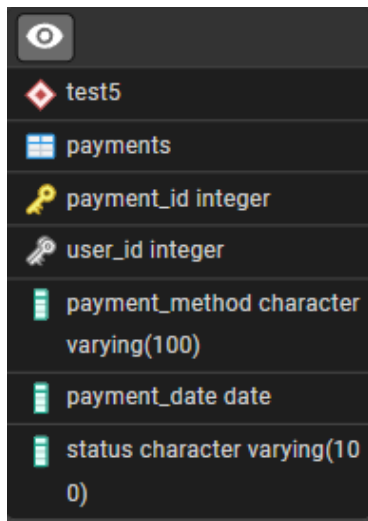


Table structure for Location Table:

- test5
- location
- location\_id character varying(20) (Primary Key)
- city character varying(100)
- state character varying(100)
- country character varying(100)

### (vii) Payments Table.



test5
payments
payment_id integer
user_id integer
payment_method character varying(100)
payment_date date
status character varying(100)

This table is the global table to store the payments of all the services.

FD :  $\text{payment\_id} \rightarrow \text{user\_id}, \text{payment\_method}, \text{payment\_date}, \text{status}$

Primary key : payment\_id

Table is in **BCNF** form.

### (viii) Bookings Table.

This is also a global table which stores the booking ids of all the transactions.

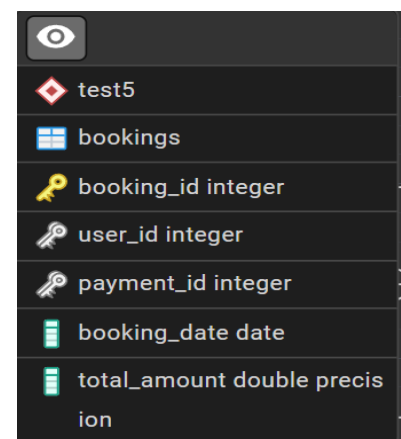
FD :  $\text{booking\_id} \rightarrow \text{user\_id}, \text{payment\_id}, \text{booking\_date}, \text{total\_amount}$

$\text{Payment\_id} \rightarrow \text{user\_id}, \text{booking\_id}, \text{booking\_date}, \text{total\_amount}$

Primary key : booking\_id

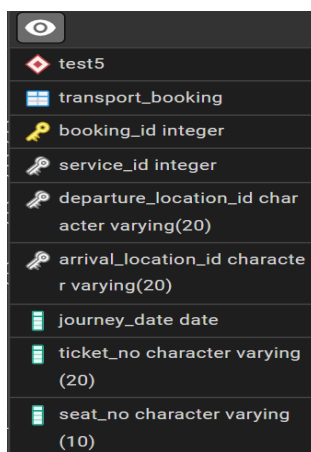
Candidate keys : booking\_id, payment\_id.

Table is in **BCNF** form



test5
bookings
booking_id integer
user_id integer
payment_id integer
booking_date date
total_amount double precision

### (ix) Transport\_Booking Table.



test5
transport_booking
booking_id integer
service_id integer
departure_location_id character varying(20)
arrival_location_id character varying(20)
journey_date date
ticket_no character varying(20)
seat_no character varying(10)

This table stores the bookings of transports (train, bus, flight).

FD :  $\text{booking\_id} \rightarrow \text{service\_id}, \text{departure\_location\_id}, \text{arrival\_location\_id}, \text{ticket\_no}, \text{seat\_no}$

Primary key : booking\_id

Table is in **BCNF** form.

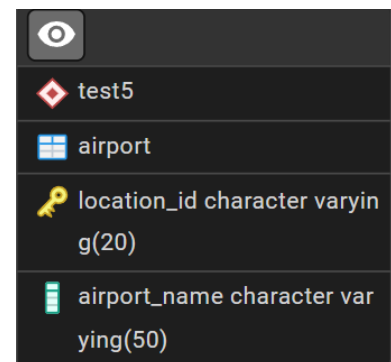
### (x) Airport Table.

This table stores the location of the airport.

FD : location\_id → airport\_name

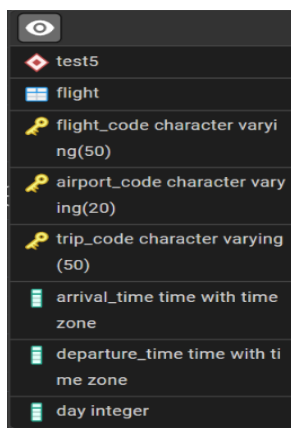
Primary key : location\_id

Table is in **BCNF** form.



test5
airport
location_id character varying(20)
airport_name character varying(50)

### (xi) Flight Table.



test5
flight
flight_code character varying(50)
airport_code character varying(20)
trip_code character varying(50)
arrival_time time with time zone
departure_time time with time zone
day integer

Stores the flight information and airports which the flight visits.

FD : (flight\_id, airport\_code, trip\_code) → departure\_time, arrival\_time, day

(flight\_id, airport\_code, trip\_code) is composite key.

Table is in **BCNF** form.

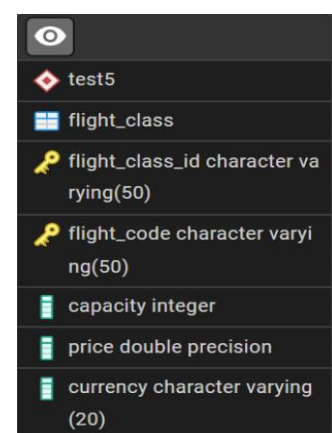
### (xii) Flight\_Class Table.

It stores the classes (economy, business) that a flight provide.

FD : (flight\_class\_id, flight\_code) → capacity, price, currency

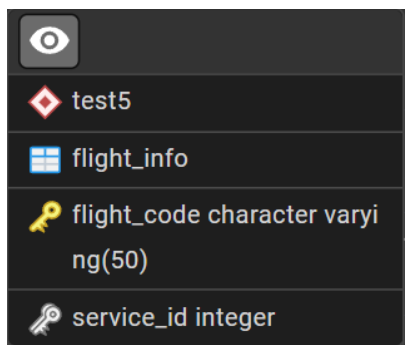
(flight\_class\_id, flight\_code) is composite key.

Table is in **BCNF** form.



test5
flight_class
flight_class_id character varying(50)
flight_code character varying(50)
capacity integer
price double precision
currency character varying(20)

### (xiii) Flight\_Info Table.



test5
flight_info
flight_code character varying(50)
service_id integer

This table stores the information about flight's agency\_id and service\_id.

FD : flight\_code  $\rightarrow$  service\_id

Flight\_code is Primary key.

Table is in **BCNF** form.

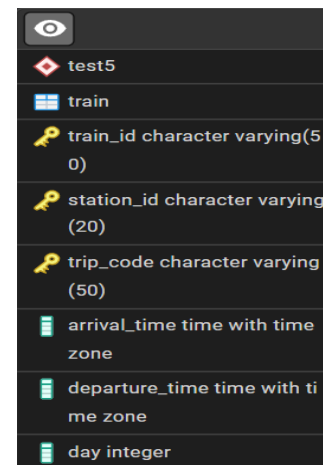
### (xiv) Train Table.

Similar to the flight table, this table stores the stations that a train visits.

FD : (train\_id, station\_id, trip\_code)  $\rightarrow$  departure\_time, arrival\_time, day

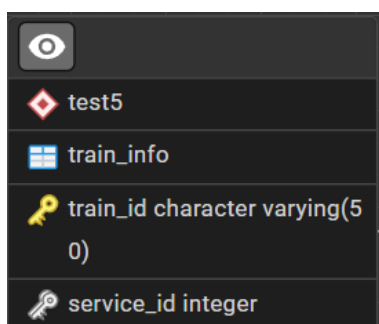
(train\_id, station\_id, trip\_code) is composite key.

Table is in **BCNF** form.



test5
train
train_id character varying(50)
station_id character varying(20)
trip_code character varying(50)
arrival_time time with time zone
departure_time time with time zone
day integer

### (xv) Train\_Info Table.



test5
train_info
train_id character varying(50)
service_id integer

Similar to flight\_info table.

FD : train\_id  $\rightarrow$  service\_id

Train\_id is Primary key.

Table is in **BCNF** form.



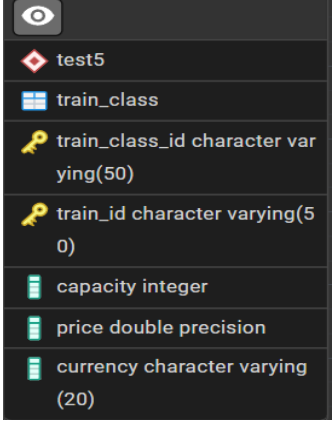
#### (xvi) Train\_Class Table.

Similar to flight\_class table.

FD : (train\_class\_id, train\_id)  $\rightarrow$  capacity, price, currency.

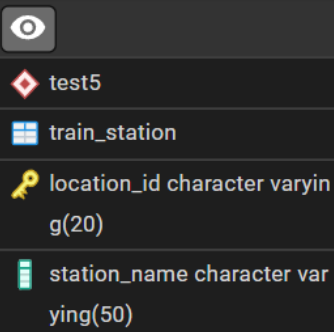
(train\_class\_id, train\_id) is the composite key.

Table is in **BCNF** form.



test5
train_class
train_class_id character varying(50)
train_id character varying(50)
capacity integer
price double precision
currency character varying(20)

#### (xvii) Train\_Station Table.



test5
train_station
location_id character varying(20)
station_name character varying(50)

Similar to airport table.

FD : location\_id  $\rightarrow$  station\_name

Location\_id is the primary key.

Table is in **BCNF** form.

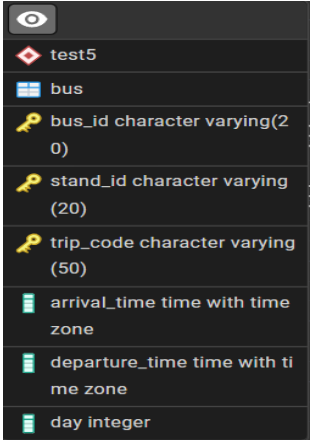
#### (xviii) Bus Table.

Similar to flight table.

FD : (bus\_id, stand\_id, trip\_code)  $\rightarrow$  departure\_time, arrival\_time, day

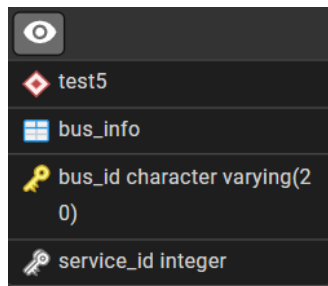
(bus\_id, stand\_id, trip\_code) is composite key.

Table is in **BCNF** form.



test5
bus
bus_id character varying(20)
stand_id character varying(20)
trip_code character varying(50)
arrival_time time with time zone
departure_time time with time zone
day integer

### (xix) Bus\_Info Table.



test5
bus_info
bus_id character varying(20)
service_id integer

Similar to flight\_info table.

FD :  $\text{bus\_id} \rightarrow \text{service\_id}$

Bus\_id is primary key.

Table is in **BCNF** form.

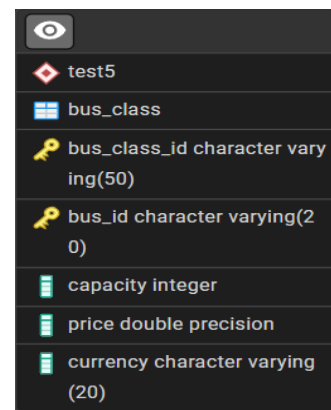
### (xx) Bus\_Class Table.

Similar to flight\_class table.

FD :  $(\text{bus\_class\_id}, \text{bus\_id}) \rightarrow \text{capacity}, \text{price}, \text{currency}.$

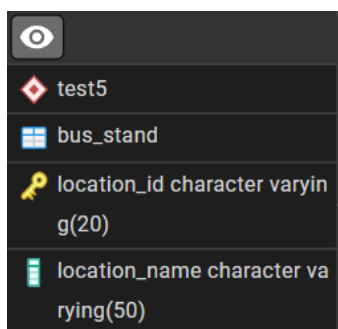
(bus\_id, bus\_class\_id) is composite key.

Table is in **BCNF** form.



test5
bus_class
bus_class_id character varying(50)
bus_id character varying(20)
capacity integer
price double precision
currency character varying(20)

### (xxi) Bus\_Stand Table.



test5
bus_stand
location_id character varying(20)
location_name character varying(50)

Similar to airport table.

FD :  $\text{location\_id} \rightarrow \text{location\_name}$

Location\_id is primary key.

Table is in **BCNF** form.

### (xxii) Accommodation\_Booking Table.

Maintains the record of accommodation bookings.

FD : booking\_id  $\rightarrow$  service\_id, location\_id,  
check\_in\_date, check\_out\_date, head\_count

Booking\_id is primary key.

Table is in **BCNF** form.

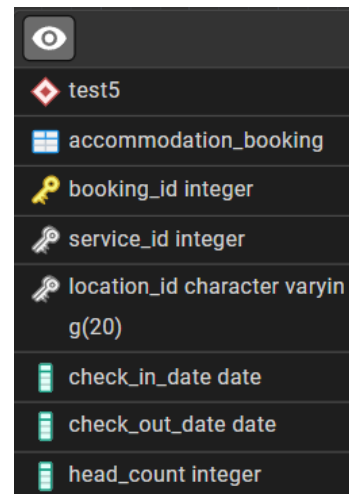


Table structure for Accommodation\_Booking:

- test5
- accommodation\_booking
- booking\_id integer (Primary Key)
- service\_id integer
- location\_id character varying(20)
- check\_in\_date date
- check\_out\_date date
- head\_count integer

### (xxiii) Room\_Booking Table.

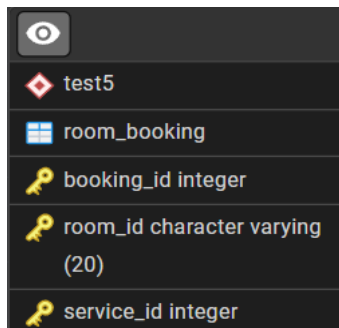


Table structure for Room\_Booking:

- test5
- room\_booking
- booking\_id integer (Primary Key)
- room\_id character varying(20)
- service\_id integer

Maps the booking\_id to room\_id.

FD : (booking\_id, room\_id, service\_id)  $\rightarrow$  booking\_id,  
room\_id, service\_id

Trivial

The table is in **BCNF** form.

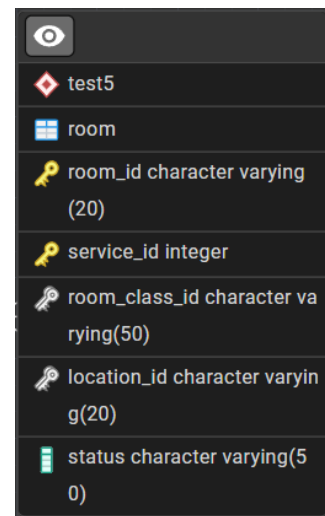
#### (xiv) Room Table.

Stores the information of room that a particular agency provides.

FD : (room\_id, service\_id)  $\rightarrow$  room\_class\_id, location\_id, status.

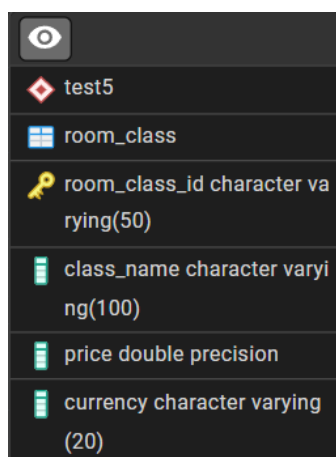
(room\_id, service\_id) is the composite key.

Table is in **BCNF** form.



test5
room
room_id character varying (20)
service_id integer
room_class_id character varying(50)
location_id character varying(20)
status character varying(50)

#### (xxv) Room\_Class Table.



test5
room_class
room_class_id character varying(50)
class_name character varying(100)
price double precision
currency character varying (20)

Stores the information of room class (Delux, single, double, etc.)

FD : room\_class\_id  $\rightarrow$  class\_name, price, currency

Room\_class\_id is primary key.

Table is in **BCNF** form.

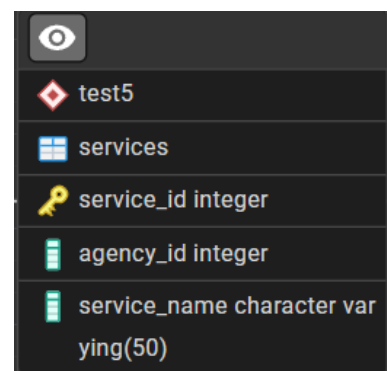
#### (xxvi) Services table.

Maps the services (accommodation, flight, bus, train) to the agency id.

FD : service\_id  $\rightarrow$  service\_name, agency\_id.

Primary Key : service\_id

Table is in **BCNF** form.



test5
services
service_id integer
agency_id integer
service_name character varying(50)