

1) select \* from RTO;

```
postgres=# \c rto1;
You are now connected to database "rto1" as user "postgres".
rto1=# select * from RTO;
 rto_code |      rto_loc      | rto_state
-----+-----+-----
 KA01    | Bengaluru Central | Karnataka
 KA02    | Bengaluru West   | Karnataka
 MH01    | Mumbai Central   | Maharashtra
 MH05    | Pune             | Maharashtra
 KA07    | Kolar            | Karnataka
 TS14    | Hyderabad        | Telangana
 WB36    | Kharagpur        | West Bengal
(7 rows)
```

2) select owner, veh\_no, rto\_loc

from RTO, vehicle, reg\_veh

where rto\_code = rto\_code\_veh and veh\_no = veh\_no\_reg

and right(veh\_no,3) = '456' and veh\_color = 'red';

```
rto1=# select owner, veh_no, rto_loc
rto1-# from RTO, vehicle, reg_veh
rto1-# where rto_code = rto_code_veh and veh_no = veh_no_reg
rto1-# and right(veh_no,3) = '456' and veh_color = 'red';
 owner |   veh_no   |      rto_loc
-----+-----+-----
 suheb | KA02 Q3456 | Bengaluru West
(1 row)
```

3) select owner, veh\_no, offence\_type, amount

from vehicle, vehicle\_has\_offence, offence

where veh\_no=veh\_no\_off and notice\_no=notice\_no\_veh;

```
rto1=# select owner, veh_no, offence_type, amount
rto1=# from vehicle, vehicle_has_offence, offence
rto1=# where veh_no=veh_no_off and notice_no=notice_no_veh;
 owner | veh_no | offence_type | amount
-----+-----+-----+-----
sreesha | KA01 R9365 | Overspeeding | 1000
suheb | KA02 Q3456 | Driving with Intoxicating Substance | 5000
ajit m | MH01 R4567 | Driving without Licence | 100
sujay | MH05 R2723 | Violating Road Regulations | 100
arjun | TS14 J1987 | Overloading Two-Wheelers | 1000
suheb | KA02 Q3456 | Overspeeding | 2000
(6 rows)
```

4) select lic\_no,lic\_holder

from license where right(lic\_holder,6) = 'maitra' ;

```
rto1=# select lic_no,lic_holder
rto1=# from license where right(lic_holder,6) = 'maitra' ;
 lic_no | lic_holder
-----+-----
KA02 20180007858 | srinjay maitra
(1 row)
```

5) select \* from vehicle where Fuel\_type='Petrol';

```
rto1=# select * from vehicle where Fuel_type='Petrol';
 veh_no | owner | veh_color | fuel_type
-----+-----+-----+-----
KA01 R9365 | sreesha | black | Petrol
KA02 Q3456 | suheb | red | Petrol
MH01 S2756 | ganesh n | silver | Petrol
KA07 T3456 | suraj | yellow | Petrol
TS14 J1987 | arjun | grey | Petrol
(5 rows)
```

## Complex Queries

1) select sum(offence.amount) from offence inner join vehicle\_has\_offence on  
offence.notice\_no=vehicle\_has\_offence.notice\_no\_veh

where left(veh\_no\_off,2)='KA';

```
rto1=# select sum(offence.amount) from offence inner join vehicle_has_offence on offence.notice_no=vehicle_has_offence.n
notice_no_veh
rto1=# where left(veh_no_off,2)='KA';
      sum
-----
    8000
(1 row)
```

2) select owner, veh\_no, lic\_no from vehicle

full outer join license on vehicle.owner=license.lic\_holder

where veh\_color='silver';

```
rto1=# select owner, veh_no, lic_no from vehicle
rto1=# full outer join license on vehicle.owner=license.lic_holder
rto1=# where veh_color='silver';
  owner |   veh_no   |      lic_no
-----+-----+-----
ganesh n | MH01 S2756 | MH01 20200004567
sujay   | MH05 R2723 | MH05 20200002345
(2 rows)
```

3) select vehicle.owner, vehicle.veh\_no, ins.valid\_till from vehicle

inner join veh\_has\_ins on veh\_has\_ins.veh\_no\_ins=vehicle.veh\_no

inner join ins on ins.ins\_no=veh\_has\_ins.ins\_no\_veh

where ins.valid\_till<'01-12-2021';

```
rto1=# select vehicle.owner, vehicle.veh_no, ins.valid_till from vehicle
rto1=# inner join veh_has_ins on veh_has_ins.veh_no_ins=vehicle.veh_no
rto1=# inner join ins on ins.ins_no=veh_has_ins.ins_no_veh
rto1=# where ins.valid_till<'01-12-2021';
  owner |   veh_no   | valid_till
-----+-----+-----
suheb  | KA02 Q3456 | 2021-11-28
suraj  | KA07 T3456 | 2021-11-27
arjun  | TS14 J1987 | 2021-11-23
(3 rows)
```

```

4) select vehicle.owner,vehicle.veh_no, offence.challan_due_date from vehicle
inner join vehicle_has_offence on vehicle_has_offence.veh_no_off=vehicle.veh_no
inner join offence on offence.notice_no=vehicle_has_offence.notice_no_veh
where offence.challan_due_date<'01-12-2021';

```

```

rto1=# select vehicle.owner,vehicle.veh_no, offence.challan_due_date from vehicle
rto1=# inner join vehicle_has_offence on vehicle_has_offence.veh_no_off=vehicle.veh_no
rto1=# inner join offence on offence.notice_no=vehicle_has_offence.notice_no_veh
rto1=# where offence.challan_due_date<'01-12-2021';
  owner |   veh_no   | challan_due_date
-----+-----+-----
sreesha | KA01 R9365 | 2021-11-28
ajit m  | MH01 R4567 | 2021-11-16
arjun   | TS14 J1987 | 2021-11-25
suheb   | KA02 Q3456 | 2021-11-23
(4 rows)

```

```

5) select license.lic_holder, license.veh_class from license
inner join RTO on left(license.lic_no,4)=RTO.rto_code
where RTO.rto_loc = 'Bengaluru West';

```

```

rto1=# select license.lic_holder, license.veh_class from license
rto1=# inner join RTO on left(license.lic_no,4)=RTO.rto_code
rto1=# where RTO.rto_loc = 'Bengaluru West';
  lic_holder | veh_class
-----+-----
srinjay maitra | LMV,MCWOG
suheb         | LMV,MCWG
(2 rows)

```

## Granting privileges

```
rto1=# create user sreesha with password '123';
CREATE ROLE
rto1=# grant select on RTO to sreesha;
GRANT
rto1=# grant insert on RTO to sreesha;
GRANT
rto1=# grant select on vehicle to sreesha;
GRANT
rto1=# grant update on RTO to sreesha;
GRANT
rto1=# grant insert on vehicle to sreesha;
GRANT
rto1=#
```

```
rto1=# create user srinjay with password '456';
CREATE ROLE
rto1=# grant select on RTO to srinjay;
GRANT
rto1=# grant select on vehicle to srinjay;
GRANT
rto1=# grant select on license to srinjay;
GRANT
rto1=#
```

## Concurrency control

```
postgres=# select count(distinct rto_code) BeforeTransactionStarts from RTO
postgres=# where rto_state='Karnataka';
beforetransactionstarts
-----
                2
(1 row)

postgres=# begin transaction;
BEGIN
postgres=*# Update RTO
postgres=*# set rto_state='Maharashtra';
UPDATE 5
postgres=*# select count(distinct rto_code) DuringTransaction from RTO where rto_state='Karnataka';
duringtransaction
-----
                0
(1 row)

postgres=*# pg_sleep(20);
ERROR:  syntax error at or near "pg_sleep"
LINE 1: pg_sleep(20);
          ^
postgres=!# rollback transaction;
ROLLBACK
postgres=# select count(distinct rto_code) AfterTransaction from RTO
postgres=# where rto_state='Karnataka';
aftertransaction
-----
                2
(1 row)
```

## Other terminal

```
postgres=# select count(distinct rto_code) SecondSession from RTO
postgres=# where rto_state='Karnataka';
secondsession
-----
                2
(1 row)
```