

DATABASE MANAGEMENT

SYSTEM UE19CS301

ASSIGNMENT-03

COURIER MANAGEMENT SYSTEM

DATE:

TEAM DETAILS

TEAM NUMBER-04

NAME	SRN
RAMYA C	PES1UG19CS379
RAJESHWARI R	PES1UG19CS375
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SIMPLE QUERIES

- ❖ Name of all the route tracers.

➢ select username from C_USER,C_ROLE where C_USER.roleid = C_ROLE.Roleid and rolename = 'ROUTE TRACER';

```
courier_db=# select username from C_USER,C_ROLE where C_USER.roleid = C_ROLE.Roleid and rolename = 'ROUTE TRACER';
username
jimjulietajam
(1 row)
```

- ❖ Name and description of the courier sent by a customer.

➢ select Couriername,Courierdescription from COURIER,CUSTOMER where COURIER.customer_id = CUSTOMER.customer_Id and fname = 'Helen';

```
courier_db=# select Couriername,Courierdescription from COURIER,CUSTOMER where COURIER.customer_id = CUSTOMER.customer_Id and fname = 'Helen';
couriername | courierdescription
chocolate courier | courier has exquisite variety of chocolates
(1 row)
```

- ❖ List the deliveries done on same day.

➢ select * from DELIVERY where delivery_type = 'Same Day Delivery';

```
courier_db=# select * from DELIVERY where delivery_type = 'Same Day Delivery';
deliverycusid | deliveryid | delivery_description | delivery_date | delivery_type
-----+-----+-----+-----+-----+
Helen2448 | 41 | Zepo delivery to MS HANNAH | 2021-08-23 | Same Day Delivery
alice7912 | 43 | Chocolate delivery to MS ALICE | 2021-09-02 | Same Day Delivery
taylor1892 | 45 | Vegetables delivery to MR TAYLOR | 2021-09-08 | Same Day Delivery
chris9932 | 48 | Fruits delivery to MR CHRIS | 2021-09-24 | Same Day Delivery
(4 rows)
```

- ❖ Select customers of maharashtra

➢ select customer_ID, fname from CUSTOMER where customer_address LIKE '%Maharashtra%';

```
courier_db=# select customer_ID, fname from CUSTOMER where customer_address LIKE '%Maharashtra%';
customer_id | fname
-----+-----
Helen2448 | Hannah
(1 row)
```

❖ list the couriers sent by Jake

➢ select couriername, Fname from COURIER, CUSTOMER where CUSTOMER.customer_ID = COURIER.customer_id and Fname = 'Jake';

```
courier_db=# select couriername, Fname from COURIER, CUSTOMER where CUSTOMER.customer_ID = COURIER.customer_id and Fname = 'Jake';
couriername | fname
-----+-----
Flora courier | Jake
(1 row)
```

COMPLEX QUERIES

❖ Find minimum and maximum courier IDs in courier table.

➢ select max(CourierID) as highest, min(CourierID) as least from COURIER;

```
courier_db=# select max(CourierID) as highest,
courier_db-# min(CourierID) as least
courier_db-# from COURIER;
highest | least
-----+-----
28 | 21
(1 row)
```

❖ Select the parameters from the tables role and login that have even numbered role id

➢ SELECT * FROM C_ROLE as role01 INNER JOIN C_LOGIN as user01 ON role01.RoleID=user01.roleid WHERE (role01.RoleID %2)= 0;

```
courier_db=# SELECT * FROM C_ROLE as role01
courier_db-# INNER JOIN C_LOGIN as user01
courier_db-# ON role01.RoleID=user01.roleid
courier_db-# WHERE (role01.RoleID %2)= 0;
roleid | rolename | roledescription | userid | loginid | loginusername | userpassword | userid | roleid
-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 | BILLING AGENT | Person who generates the bill and alters it | 268 | swjohn | JohnWeston | Westjohn1923 | 268 | 2
6 | SCHEDULE INITIATOR | Prepares a schedule for the courier and makes sure that it is adhered | 864 | lulisa | LisaParker | lisali$2821 | 864 | 6
4 | TRACKER AGENT | Tracks the courier until it reaches the customer | 888 | joshuajoshua | Joseph Joshua | joshuak1878 | 888 | 4
8 | ROUTE TRACER | Finds the optimum route between the courier system and the customer location | 546 | pb&jule | Juliette Hannigan | Juli*ette | 546 | 8
(4 rows)
```

❖ Deliveries that had their courier delivered in September

➢ SELECT * FROM DELIVERY WHERE to_char(delivery_date,'MM')='09';

```
courier_db=# SELECT * FROM DELIVERY
courier_db-# WHERE
courier_db-# to char(delivery_date,'MM')='09';
deliverycusid | deliveryid | delivery_description | delivery_date | delivery_type
-----+-----+-----+-----+-----+
alice7912 | 43 | Chocolate delivery to MS ALICE | 2021-09-02 | Same Day Delivery
tom7281 | 44 | Fruits delivery to MR TOM | 2021-09-08 | Next Day Delivery
taylor1892 | 45 | Vegetables delivery to MR TAYLOR | 2021-09-08 | Same Day Delivery
robin8733 | 46 | Clothes delivery to MR ROBIN | 2021-09-16 | Next Day Delivery
helly9238 | 47 | Chocolate Delivery to MS HELEN | 2021-09-17 | Next Day Delivery
chris9932 | 48 | Fruits delivery to MR CHRIS | 2021-09-24 | Same Day Delivery
(6 rows)
```

- ❖ Display the username and the mail id of the user that have the product of userid and role id greater than 1000

➢ SELECT username AS user_name ,useremail AS user_email_id FROM C_USER WHERE userID*roleid>1000;

```
courier_db=# SELECT username as user_name
courier_db-# ,useremail as user_email_id
courier_db-# from C_USER
courier_db-# where userID*roleid>1000;
+-----+-----+
| user_name | user_email_id |
+-----+-----+
| livilisa | lisaparker559@gmail.com
| brewjoseph | josephjoshua326@yahoo.com
| aureliava | avawinters2534@yahoo.com
| beckybeth | bethsummers290@gmail.com
| jimjulietejam | juliettehannigan3892@gmail.com
(5 rows)
```

- ❖ Use LEFT OUTER JOIN on tables role and login

➢ SELECT * FROM C_ROLE LEFT OUTER JOIN C_LOGIN ON C_ROLE.RoleID=C_LOGIN.roleid;

```
courier_db=# SELECT * FROM C_ROLE LEFT OUTER JOIN C_LOGIN ON C_ROLE.RoleID=C_LOGIN.roleid;
+-----+-----+
| roleid | rolename | roledescription |
+-----+-----+
| 3 | PACKAGE CHECKER | Person who checks the quality and efficiency of the courier to be delivered
| 2 | BILLING AGENT | Person who generates the bill and alters it
| 1 | ADMINISTRATOR | Manages the entire working of the system efficiently
| 6 | SCHEDULE INITIATOR | Prepares a schedule for the courier and makes sure that it is adhered
| 4 | TRACKER AGENT | Tracks the courier until it reaches the customer
| 5 | CRITIC | Accounts to the entire performance of the team and states pros and cons of the strategies applied
| 7 | PLAN AGENT | Plans the entire blueprint of the courier until it reaches the customer
| 8 | ROUTE TRACER | Finds the optimum route between the courier system and the customer location
+-----+-----+
(8 rows)
```

	userid	loginid	loginusername	userpassword	userid	roleid
258	alexenrol	Alexicalvert	AlexCalv@24	258	3	
268	swjohn	JohnWeston	Westjohn1923	268	2	
235	maccmary	Marydwhite	mariamit7112	235	1	
864	lulisa	LisaParker	lisaliz12821	864	6	
888	joshiyjoshu	Joseph Joshua	joshuak1878	888	4	
937	aveawa	Ava Winters	vani^ava	937	5	
762	bossbeth	Beth Summers	beth&ilie	762	7	
546	pb&julie	Juliette Hannigan	Juli*ette	546	8	

NESTED QUERIES

- ❖ Display the names and the customerID of the customer with the courier named "Chocolate courier"

```
courier_db-# select fname, lname, customer_ID
courier_db-# from customer as cus
courier_db-# where exists ( select cus.customer_ID
courier_db-# from courier cr
courier_db-# where cus.customer_ID = cr.customer_id
courier_db-# and cr.couriername = 'Chocolate courier');
+-----+-----+-----+
| fname | lname | customer_id |
+-----+-----+-----+
| Alice | Autumn | alice7912
| Helen | Wright | helly9238
(2 rows)
```

- ❖ List all the customer details whose delivery was received on the same day

```
courier_db=# select fname, customer_id, customer_mobile, customer_email
courier_db-# from customer as cus
courier_db-# where exists ( select deliveryID
courier_db-# from delivery d
courier_db-# where d.deliverycusid = cus.customer_id
courier_db-# and delivery_type = 'Next Day Delivery');
+-----+-----+-----+-----+
| fname | customer_id | customer_mobile | customer_email |
+-----+-----+-----+-----+
| Helen | helly9238 | 9727938364 | helenwright9839@yahoo.com
| Jake | Jake2386 | 9953916935 | jakerainfold3279@yahoo.com
| Tom | tom7281 | 6328393490 | tomsawyer3872@yahoo.com
| Robin | robin8733 | 7829384673 | greenhood932@yahoo.com
(4 rows)
```

- ❖ List the customer names whose deliveries were obtained in the month of September.

```
courier_db=# select fname, lname, customer_id
courier_db-# from customer cus
courier_db-# where exists( select deliveryID
courier_db(# from delivery d
courier_db(# where d.deliverycusid = cus.customer_id
courier_db(# and delivery_date <= '2021-09-01' and delivery_date >= '2021-08-01');
  fname | lname | customer_id
-----+-----+-----
 Jake | Rainfold | Jake2386
 Hannah | Dawson | Helen2448
(2 rows)
```

- ❖ Display the usernames of the users with the roles "SCHEDULE INITIATOR" or "BILLING AGENT".

➤ select username from c_user where roleid in(select roleid from c_role where rolename = 'SCHEDULE INITIATOR' or rolename = 'BILLING AGENT');

```
courier_db=# select username, userID, useremail
courier_db-# from c_user
courier_db-# where roleid in( select roleid
courier_db(# from c_role
courier_db(# where rolename = 'SCHEDULE INITIATOR' or rolename = 'BILLING AGENT');
  username | userid |      useremail
-----+-----+-----
 hogjohn |    268 | johnweston2298@yahoo.com
 livilisa |    864 | lisaparker559@gmail.com
(2 rows)
```

- ❖ List of all the users with exactly 1 role.

➤ select username, roleid from c_user cu where(select count(roleid) from c_role cr where cu.userid = cr.userid) =1;

```
courier_db=# select cu.username, cu.roleid, rolename
courier_db-# from c_user cu inner join c_role cr
courier_db-# on cu.userID = cr.userID
courier_db-# where (select count(roleid)
courier_db(# from c_role cr where cu.userid = cr.userid) =1;
  username | roleid |      rolename
-----+-----+-----
 crabeealex |      3 | PACKAGE CHECKER
 hogjohn |      2 | BILLING AGENT
 hueremary |      1 | ADMINISTRATOR
 livilisa |      6 | SCHEDULE INITIATOR
 brewjoseph |      4 | TRACKER AGENT
 aureliava |      5 | CRITIC
 beckybeth |      7 | PLAN AGENT
 jimjulietejam |     8 | ROUTE TRACER
(8 rows)
```

PERFORMANCE ANALYSIS

Postgresql builds a tree structure of plan nodes representing the different actions taken. The Explain command is used to see the query plan generated for a query. It estimates the start-up cost, total cost, number of rows output, and average width. Analyze command collects statistics about the contents of the tables in the database, and stores the results in the pg_statistics system catalog.

1 Display the names and the customerID of the customer with the courier named "Chocolate courier"

The below query plan estimates certain details of the query execution. The total time taken for running the query and returning the result of the following nested query is 0.088 milliseconds. The estimated time for execution planned by the server is 0.393 ms. Out of all the records in the table, 7 are removed as they do not meet the query condition and the remaining rows are returned. The total cost estimated for the sequential scan is 12.75 and for index scan it is 8.16.

```
courier_db=# explain analyze select fname, lname, customer_ID
courier_db# from customer as cus
courier_db# where exists ( select cus.customer_ID
courier_db# from courier cr
courier_db# where cus.customer_ID = cr.customer_id
courier_db# and cr.couriername = 'Chocolate courier');
                                         QUERY PLAN
-----
Nested Loop  (cost=12.89..21.12 rows=1 width=134) (actual time=0.038..0.045 rows=2 loops=1)
    -> HashAggregate  (cost=12.75..12.76 rows=1 width=58) (actual time=0.024..0.025 rows=2 loops=1)
        Group Key: (cr.customer_id)::text
        -> Seq Scan on courier cr  (cost=0.00..12.75 rows=1 width=58) (actual time=0.015..0.018 rows=2 loops=1)
            Filter: ((couriername)::text = 'Chocolate courier'::text)
            Rows Removed by Filter: 7
    -> Index Scan using customer_pkey on customer cus  (cost=0.14..8.16 rows=1 width=134) (actual time=0.007..0.007 rows=1 loops=2)
        Index Cond: ((customer_id)::text = (cr.customer_id)::text)
Planning Time: 0.393 ms
Execution Time: 0.088 ms
(10 rows)
```

2 List all the customer details whose delivery was received on the next day

The estimated cost to run the : first row = 12.14 , last row = 20.37

It will run a scan on 1 row and width (average row size) is 252 Bytes

Planning time = 2.663 ms, Execution time = 2.446 ms

```
courier_db=# explain analyze select fname, customer_id, customer_mobile, customer_email
courier_db# from customer as cus
courier_db# where exists ( select deliveryID
courier_db# from delivery d
courier_db# where d.deliverycusid = cus.customer_id
courier_db# and delivery_type = 'Next Day Delivery');
                                         QUERY PLAN
-----
Nested Loop  (cost=12.14..20.37 rows=1 width=252) (actual time=2.249..2.263 rows=4 loops=1)
    -> HashAggregate  (cost=12.00..12.01 rows=1 width=58) (actual time=2.196..2.199 rows=4 loops=1)
        Group Key: (d.deliverycusid)::text
        -> Seq Scan on delivery d  (cost=0.00..12.00 rows=1 width=58) (actual time=2.180..2.183 rows=4 loops=1)
            Filter: ((delivery_type)::text = 'Next Day Delivery'::text)
            Rows Removed by Filter: 4
    -> Index Scan using customer_pkey on customer cus  (cost=0.14..8.16 rows=1 width=252) (actual time=0.012..0.012 rows=1 loops=4)
        Index Cond: ((customer_id)::text = (d.deliverycusid)::text)
Planning Time: 2.663 ms
Execution Time: 2.446 ms
(10 rows)
```

3 List the customer names whose deliveries were obtained in the month of August.

Start up cost = 12.54 total cost = 20.77

It will run a scan on 1 row and width (average row size) is 134 Bytes

Planning time = 0.187 ms, Execution time = 0.096 ms

```
courier_db=# explain analyze select fname, lname, customer_id
courier_db# from customer cus
courier_db# where exists( select deliveryID
courier_db# from delivery d
courier_db# where d.deliverycusid = cus.customer_id
courier_db# and delivery_date <= '2021-09-01' and delivery_date >= '2021-08-01';
                                         QUERY PLAN
-----
Nested Loop  (cost=12.54..20.77 rows=1 width=134) (actual time=0.036..0.042 rows=2 loops=1)
  -> HashAggregate  (cost=12.40..12.41 rows=1 width=58) (actual time=0.021..0.022 rows=2 loops=1)
      Group Key: (d.deliverycusid)::text
      -> Seq Scan on delivery d  (cost=0.00..12.40 rows=1 width=58) (actual time=0.011..0.014 rows=2 loops=1)
          Filter: ((delivery_date <= '2021-09-01'::date) AND (delivery_date >= '2021-08-01'::date))
          Rows Removed by Filter: 6
  -> Index Scan using customer_pkey on customer cus  (cost=0.14..8.16 rows=1 width=134) (actual time=0.007..0.007 rows=1 loops=2)
      Index Cond: ((customer_id)::text = (d.deliverycusid)::text)
Planning Time: 0.187 ms
Execution Time: 0.096 ms
(10 rows)
```

4 Display the usernames of the users with the roles "SCHEDULE INITIATOR" or "BILLING AGENT".

Start up cost = 12.88 total cost = 23.76

It will run a scan on 1 row and width (average row size) is 380 Bytes

Planning time = 6.968 ms, Execution time = 2.658 ms

```
courier_db=# explain analyze select username, userID, useremail
courier_db# from c_user
courier_db# where roleid in( select roleid
courier_db# from c_role
courier_db# where rolename = 'SCHEDULE INITIATOR' or rolename = 'BILLING AGENT');
                                         QUERY PLAN
-----
Hash Join  (cost=12.88..23.76 rows=1 width=380) (actual time=2.623..2.628 rows=2 loops=1)
  Hash Cond: (c_user.roleid = c_role.roleid)
  -> Seq Scan on c_user  (cost=0.00..10.70 rows=70 width=384) (actual time=1.949..1.951 rows=8 loops=1)
  -> Hash  (cost=12.85..12.85 rows=2 width=4) (actual time=0.627..0.628 rows=2 loops=1)
      Buckets: 1024 Batches: 1 Memory Usage: 9kB
      -> Seq Scan on c_role  (cost=0.00..12.85 rows=2 width=4) (actual time=0.615..0.618 rows=2 loops=1)
          Filter: (((rolename)::text = 'SCHEDULE INITIATOR'::text) OR ((rolename)::text = 'BILLING AGENT'::text))
          Rows Removed by Filter: 6
Planning Time: 6.968 ms
Execution Time: 2.658 ms
(10 rows)
```

5 Display all the usernames and the roles of the users with exactly 1 role.

Start up cost = 0.00 total cost = 892.27

It will run a scan on 3 row and width (average row size) is 120 Bytes

Planning time = 0.278 ms, Execution time = 0.108 ms

```

courier_db=# explain analyze select cu.username, cu.roleid, rolename
courier_db-# from c_user cu inner join c_role cr
courier_db-# on cu.userID = cr.userID
courier_db-# where (select count(roleid)
courier_db(# from c_role cr where cu.userid = cr.userid) =1;
                                         QUERY PLAN
-----
Nested Loop (cost=0.00..892.27 rows=3 width=120) (actual time=0.027..0.071 rows=8 loops=1)
  Join Filter: (cu.userid = cr.userid)
  Rows Removed by Join Filter: 56
    -> Seq Scan on c_user cu  (cost=0.00..878.00 rows=1 width=66) (actual time=0.022..0.046 rows=8 loops=1)
        Filter: ((SubPlan 1) = 1)
        SubPlan 1
          -> Aggregate (cost=12.38..12.39 rows=1 width=8) (actual time=0.003..0.003 rows=1 loops=8)
              -> Seq Scan on c_role cr_1  (cost=0.00..12.38 rows=1 width=4) (actual time=0.001..0.002 rows=1 loops=8)
                  Filter: (cu.userid = userid)
                  Rows Removed by Filter: 7
    -> Seq Scan on c_role cr  (cost=0.00..11.90 rows=190 width=62) (actual time=0.001..0.001 rows=8 loops=8)
Planning Time: 0.278 ms
Execution Time: 0.108 ms
(13 rows)

```

MULTIPLE USERS WITH DIFFERENT ACCESS PRIVILEGES

➤ CREATE USERS

- create user user01 with password 'abcd' createdb;
- create user user02 with password 'bcde' createdb;
- create user user03 with password 'cdef' createdb;
- create user user04 with password 'defg' createdb;
- create user user05 with password 'efgh' createdb;

```

courier_db=# create user user01 with password 'abcd' createdb;
CREATE ROLE
courier_db=# create user user02 with password 'bcde' createdb;
CREATE ROLE
courier_db=# create user user03 with password 'cdef' createdb;
CREATE ROLE
courier_db=# create user user04 with password 'defg' createdb;
CREATE ROLE
courier_db=# create user user05 with password 'efgh' createdb;
CREATE ROLE

```

➤ PRIVILEGES GIVEN TO EACH USER

- grant select on COURIER to user01;
- grant select on C_LOGIN to user01;
- grant select(userID) on C_USER to user02;
- grant select(RoleID) on C_ROLE to user02;
- grant select(customer_ID) on CUSTOMER to user02;
- grant select(loginID) on C_LOGIN to user02;
- grant select(PermissionID) on PERMISSION to user02;
- grant select(ManagerID) on MANAGER to user02;
- grant select(DeliveryID) on DELIVERY to user02;
- grant select,delete,update on PERMISSION to user03;
- grant select,insert on MANAGER to user04;
- grant all on all tables in schema public to user05;

```

courier_db=# grant select on COURIER to user01;
GRANT
courier_db=# grant select on C_LOGIN to user01;
GRANT
courier_db=# grant select(userID) on C_USER to user02;
GRANT
courier_db=# grant select(RoleID) on C_ROLE to user02;
GRANT
courier_db=# grant select(customer_ID) on CUSTOMER to user02;
GRANT
courier_db=# grant select(loginID) on C_LOGIN to user02;
GRANT
courier_db=# grant select(PermissionID) on PERMISSION to user02;
GRANT
courier_db=# grant select(ManagerID) on MANAGER to user02;
GRANT
courier_db=# grant select(DeliveryID) on DELIVERY to user02;
GRANT
courier_db=# grant select,delete,update on PERMISSION to user03;
GRANT
courier_db=# grant insert on MANAGER to user04;
GRANT
courier_db=# grant all on all tables in schema public to user05;
GRANT

```

➤ USER 01 ACCESS

```

PS C:\Users\User\Desktop\dbms_lab\dbms_assignment> psql courier_db user01
Password for user user01:
psql (12.8)
WARNING: Console code page (437) differs from Windows code page (1252)
          8-bit characters might not work correctly. See psql reference
          page "Notes for Windows users" for details.
Type "help" for help.

courier_db=> select * from courier;

```

```

courier_db=> select * from courier;
courierid | couriername           | courierdecription          | customer_id
-----+-----+-----+-----+
  21 | Zepo Courier           | Courier contains the electronic goods | Helen2448
  22 | Flora courier          | The courier contains the best picked flowers and plants | Jake2386
  23 | Chocolate courier      | Courier has exquisite variety of chocolates | alice7912
  24 | Fruits Courier         | Courier consists of fruits | tom7281
  25 | Vegetables Courier     | Courier contains vegetables | taylor1892
  26 | Clothes courier        | Courier that contains cloths | robin8733
  27 | Chocolate courier      | Courier has exquisite variety of chocolates | holly9238
  28 | Fruits Courier         | Courier consists of fruits | chris9932
(8 rows)

```

```

courier_db=> select courierid from courier;
courierid
-----
  21
  22
  23
  24
  25
  26
  27
  28
(8 rows)

```

```

courier_db=> select * from c_login;
loginid | loginusername | userpassword | userid | roleid
-----+-----+-----+-----+
alexervol | Alexcalvert | AlexCalv02a | 258 | 3
swayjhon | JohnWeston | Westjohn923 | 268 | 2
macymary | MaryWhite | marym@#112 | 225 | 1
lulisa | LisaParker | lisalisa2821 | 864 | 6
joshyjoshua | Joseph Joshua | joshuaX1878 | 888 | 4
awawa | Ava Winters | vani@ava | 937 | 5
bossbeth | Beth Summers | beth&lie | 762 | 7
pbjulie | Juliette Hannigan | Juli'ette | 546 | 8
(8 rows)

```

```

courier_db=> select * from delivery;
ERROR: permission denied for table delivery

```

Activate Windows
Go to Settings to activate Windows.

➤ USER 02 ACCESS

```

PS C:\Users\User\Desktop\dbms_lab\dbms_assignment> psql courier_db user02
Password for user user02:
psql (12.8)
WARNING: Console code page (437) differs from Windows code page (1252)
          8-bit characters might not work correctly. See psql reference
          page "Notes for Windows users" for details.
Type "help" for help.

courier_db=> 
```

```
courier_db=> select userID from c_user;
userid
-----
258
268
235
864
888
937
762
546
(8 rows)
```

```
courier_db=> select RoleID from C_ROLE;
roleid
-----
1
2
3
4
5
6
7
8
(8 rows)
```

Activate Windows
Go to Settings > Activation

```
courier_db=> select LoginID from C_LOGIN;
loginid
-----
alexerrol
swajohn
macmary
lulisa
joshyjoshua
aweava
bossbeth
pb&julie
(8 rows)
```

```
courier_db=> select username from C_USER;
ERROR: permission denied for table c_user
courier_db=>
```

➤ USER 03 ACCESS

```
PS C:\Users\User\Desktop\dbms_lab\dbms_assignment> psql courier_db user03
Password for user user03:
psql (12.8)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

courier_db=> 
```

```
courier_db=> select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
 11 | Payment module | Paytz
 12 | SMS Notification module | Chatbotz
 13 | Email Notification module | Mailzzz
 14 | Delivery module | delizap
 15 | Billing module | killbill
 16 | Rate Monitor Module | Starzzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
(8 rows)
```

```
courier_db=> select PermissionID from PERMISSION;
permissionid
-----
 11
 12
 13
 14
 15
 16
 17
 18
(8 rows)
```

```
courier_db=> DELETE FROM PERMISSION WHERE PermissionID=15;
DELETE 1
courier_db=> DELETE FROM PERMISSION WHERE PermissionID=13;
DELETE 1
courier_db=> SELECT * FROM PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
 11 | Payment module | Paytz
 12 | SMS Notification module | Chatbotz
 14 | Delivery module | delizap
 16 | Rate Monitor Module | Starzzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
(6 rows)
```

```
courier_db=> UPDATE PERMISSION
courier_db-> SET Permissionname='PayTzz'
courier_db-> WHERE PermissionID=11;
UPDATE 1
courier_db=> SELECT * FROM PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
 12 | SMS Notification module | Chatbotz
 14 | Delivery module | delizap
 16 | Rate Monitor Module | Starzzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
 11 | Payment module | PayTzz
(6 rows)
```

```
courier_db=> SELECT * FROM MANAGER;
ERROR: permission denied for table manager
courier_db=> DELETE FROM CUSTOMER WHERE customer_id='Helen2448';
ERROR: permission denied for table customer
courier_db=> UPDATE MANAGER
courier_db-> SET ManagerID=12
courier_db-> WHERE ManagerID=11;
ERROR: permission denied for table manager
```

➤ USER 04 ACCESS

```
PS C:\Users\user\Desktop\dbms_lab\dbms_assignment> psql courier_db user04
Password for user user04:
psql (12.8)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

courier_db=>
```

```

courier_db=> select * from MANAGER
courier_db-> ;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 31 | Alex Calvert | 40/44,corporation Shopping Complex, 1st Floor, R A Puram Chennai Tamil Nadu 600028 | 6127977399 | alexcalvert263@gmail.com
(1 row)

courier_db=> INSERT INTO MANAGER VALUES(32,'John Weston','Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east),Mumbai, Maharashtra, 400066 ','7471491095','johnweston2298@yahoo.com');
INSERT 0 1
courier_db-> select * from MANAGER;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 31 | Alex Calvert | 40/44,corporation Shopping Complex, 1st Floor, R A Puram Chennai Tamil Nadu 600028 | 6127977399 | alexcalvert263@gmail.com
 32 | John Weston | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east),Mumbai, Maharashtra, 400066 | 7471491095 | johnweston2298@yahoo.com
(2 rows)

```

> USER 05 ACCESS

```

PS C:\Users\User\Desktop\dbms_lab\dbms_assignment> psql courier_db user05
Password for user user05:
psql (12.8)
WARNING: Console code page (437) differs from Windows code page (1252)
          8-bit characters might not work correctly. See psql reference
          page "Notes for Windows users" for details.
Type "help" for help.

courier_db=> 

```

```

courier_db=> select * from Customer;
rname | fname | lname | customer_id | customer_mobile | customer_email | customer_address | customer_password
-----+-----+-----+-----+-----+-----+-----+-----+
Hannah | Malen | Dawson | Helen2448 | 9672918831 | hannahdawson972@gmail.com | 46/44, corporation Shopping Kasturba, 1st Floor, Lonavala Pune Maharashtra 629928 | Hannah988
Jake | Melling | Rainford | jake2386 | 9053016935 | jakesmelling1237@gmail.com | 66-1-581, Nallakunta,Hyderabad, Telangana,198101 | Jakeold24
Alice | Green | Autumn | alice7912 | 8978232287 | alicesautumn2156@gmail.com | 0Composite Blue Lotus Restaurant, Near Peeling, Darjeling, West Bengal-738279 | Aliceo26
Tom | Sawyer | Sayer | tom281 | 9828393490 | tomsawyer3872@yahoo.com | Kundadah Rd, Tiruvanthapuram, Kerala,283822 | TomSawyer
Taylor | Cuss | Longfield | taylor1892 | 9837284039 | taylorcuss939@yahoo.com | D 13/6, Purjahi Basti, Chandigarh,Punjab 238746 | taylor4
Robin | Green | Hood | robin8733 | 7825384673 | greenhood932@yahoo.com | 176/3 , Srinagar, Jammu and Kashmir, 232891 | robin^
Helen | Bright | Wright | helly9238 | 9727938364 | helenbright9839@yahoo.com | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east),Mumbai, Maharashtra, 400066 | HelenBright
Chris | Evan | Hemsworth | chris9932 | 7489323743 | chrismiss3290@yahoo.com | #634/28, Bhopal ,Madhya Pradesh,783110 | *83chris
(8 rows)

courier_db=> select * from Manager;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 31 | Alex Calvert | 40/44,corporation Shopping Complex, 1st Floor, R A Puram Chennai Tamil Nadu 600028 | 6127977399 | alexcalvert263@gmail.com
 32 | John Weston | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east),Mumbai, Maharashtra, 400066 | 7471491095 | johnweston2298@yahoo.com
(2 rows)

```

Activate Windows

```

courier_db=> SELECT * FROM PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
 11 | Payment module | Paytz
 12 | SMS Notification module | Chatbotz
 14 | Delivery module | delizap
 16 | Rate Monitor Module | Starzzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
(6 rows)

```

```

courier_db=> INSERT INTO PERMISSION VALUES(13,'Email Notification module','Mailzzz');
INSERT 0 1
courier_db=> SELECT * FROM PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
 12 | SMS Notification module | Chatbotz
 14 | Delivery module | delizap
 16 | Rate Monitor Module | Starzzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
 11 | Payment module | PayTzzz
 13 | Email Notification module | Mailzzz
(7 rows)

```

```

courier_db=> SELECT * FROM MANAGER;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 31 | Alex Calvert | 40/44,corporation Shopping Complex, 1st Floor, R A Puram Chennai Tamil Nadu 600028 | 6127977399 | alexcalvert2635@gmail.com
 32 | John Weston | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east), Mumbai, Maharashtra, 400066 | 7471491095 | johnweston2298@yahoo.com
(2 rows)

courier_db=> UPDATE MANAGER
courier_db-> SET manager_name='Alexis Calvert'
courier_db-> WHERE managerid=31;
UPDATE 1
courier_db=> SELECT * FROM MANAGER;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 32 | John Weston | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east), Mumbai, Maharashtra, 400066 | 7471491095 | johnweston2298@yahoo.com
 31 | Alexis Calvert | 40/44,corporation Shopping Complex, 1st Floor, R A Puram Chennai Tamil Nadu 600028 | 6127977399 | alexcalvert2635@gmail.com
(2 rows)

```

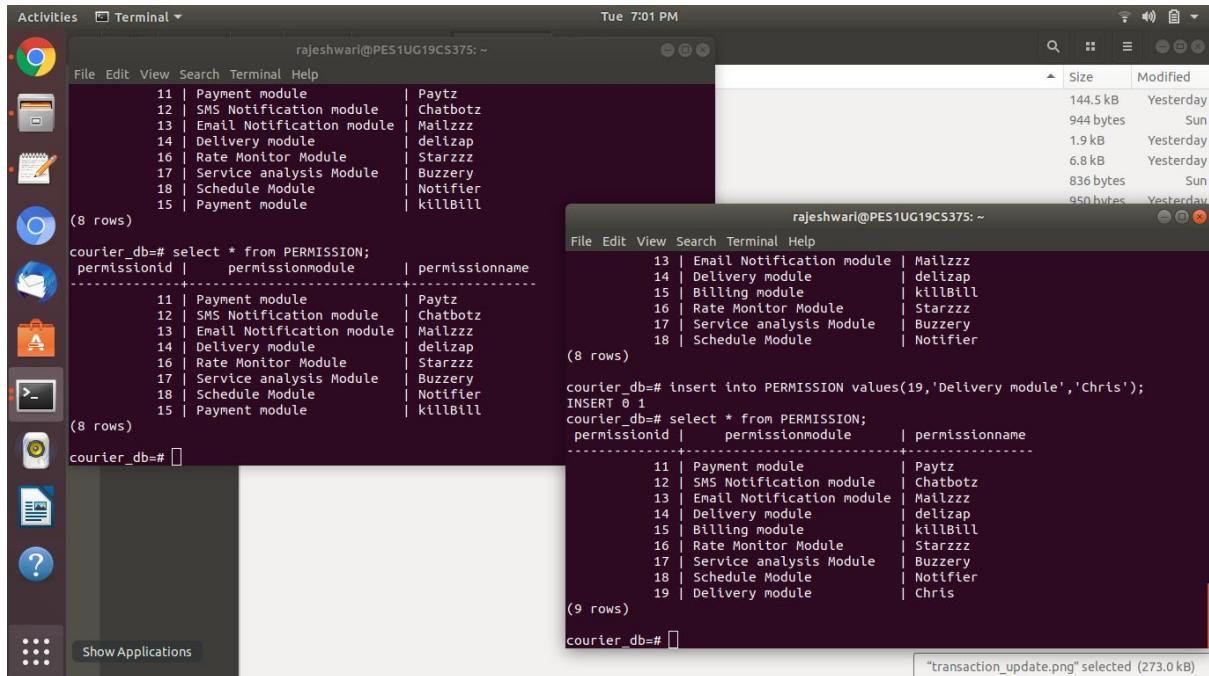
```

courier_db=> DELETE
courier_db-> FROM MANAGER
courier_db-> WHERE managerid=31;
DELETE 1
courier_db=> SELECT * FROM MANAGER;
managerid | manager_name | manager_addr | manager_phoneno | manager_email
-----+-----+-----+-----+-----+
 32 | John Weston | Jagatram Tiwari Chwl, Main Kasturba Rd, Borivali (east), Mumbai, Maharashtra, 400066 | 7471491095 | johnweston2298@yahoo.com
(1 row)

```

INITIATE CONCURRENT TRANSACTIONS AND DEMONSTRATE THE CONCURRENCY CONTROL FOR THE CONFLICTING ACTIONS.

➤ TRANSACTION INSERT



➤ TRANSACTION UPDATE

Tue 6:52 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# update PERMISSION set permissionmodule = 'Payment module' where permissionid = 15;
UPDATE 1
courier_db=# update PERMISSION set permissionmodule = 'Payment module' where permissionid = 15;
UPDATE 1
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
    15 | Payment module | killBill
(8 rows)

courier_db=# 
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# 
courier_db=# insert into COURIER values(26,'Clothes courier','courier that can
INSERT INTO COURIER VALUES(27,'Chocolate courier','Courier has e
INSERT INTO COURIER VALUES(28,'Fruits Courier','Courier consists
INSERT INTO MANAGER VALUES(31,'Alex Calvert','40/44,corporation
', '6127977399','alexcalvert2635@gmail.com');
INSERT INTO DELIVERY VALUES('Hannah2448',41,'Zepo delivery to MS
INSERT INTO DELIVERY VALUES('Jake2386',42,'Flora delivery to MR
INSERT INTO DELIVERY VALUES('alice7912',43,'Chocolate delivery t
INSERT INTO DELIVERY VALUES('tom7281',44,'Fruits delivery to MR
INSERT INTO DELIVERY VALUES('taylor1892',45,'Vegetables delivery
courier_db=# 

```

Save File Edit View Search Terminal Help

insert.sql

Tue 6:52 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# 
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# 
courier_db=# insert into table PERMISSION values(19,'Delivery module','Chris');
ERROR: syntax error at or near "table"
LINE 1: insert into table PERMISSION values(19,'Delivery module','Ch...
^
courier_db=# insert into PERMISSION values(19,'Delivery module','Chris');
ERROR: current transaction is aborted, commands ignored until end of transaction block
courier_db=# end;
ROLLBACK
courier_db=#

```

➤ TRANSACTION ATOMICITY

Tue 7:00 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# update PERMISSION set permissionmodule = 'Payment module' where permissionid = 15;
UPDATE 1
courier_db=# update PERMISSION set permissionmodule = 'Payment module' where permissionid = 15;
UPDATE 1
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
    15 | Payment module | killBill
(8 rows)

courier_db=# 
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----+
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# 
courier_db=# insert into COURIER values(26,'Clothes courier','courier that can
INSERT INTO COURIER VALUES(27,'Chocolate courier','Courier has e
INSERT INTO COURIER VALUES(28,'Fruits Courier','Courier consists
INSERT INTO MANAGER VALUES(31,'Alex Calvert','40/44,corporation
', '6127977399','alexcalvert2635@gmail.com');
INSERT INTO DELIVERY VALUES('Hannah2448',41,'Zepo delivery to MS
INSERT INTO DELIVERY VALUES('Jake2386',42,'Flora delivery to MR
INSERT INTO DELIVERY VALUES('alice7912',43,'Chocolate delivery t
INSERT INTO DELIVERY VALUES('tom7281',44,'Fruits delivery to MR
INSERT INTO DELIVERY VALUES('taylor1892',45,'Vegetables delivery
courier_db=# 

```

Size Modified

144.5 kB	Yesterday
944 bytes	Sun
1.9 kB	Yesterday
6.8 kB	Yesterday
836 bytes	Sun
950 bytes	Yesterday
1000 bytes	Yesterday
1000 bytes	6 PM
1000 bytes	4 PM

Tue 7:00 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
    11 | Payment module | Paytz
    12 | SMS Notification module | Chatbotz
    13 | Email Notification module | Mailzzz
    14 | Delivery module | delizap
    15 | Billing module | killBill
    16 | Rate Monitor Module | Starzzz
    17 | Service analysis Module | Buzzery
    18 | Schedule Module | Notifier
(8 rows)

courier_db=# 
courier_db=# insert into table PERMISSION values(19,'Delivery module','Chris');
ERROR: syntax error at or near "table"
LINE 1: insert into table PERMISSION values(19,'Delivery module','Ch...
^
courier_db=# insert into PERMISSION values(19,'Delivery module','Chris');
ERROR: current transaction is aborted, commands ignored until end of transaction block
courier_db=# end;
ROLLBACK
courier_db=#

```

➤ LOCK IN TRANSACTION

Activities Terminal Tue 7:18 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
14 | Delivery module | delizap
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
15 | Payment module | killBill
(8 rows)

courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
11 | Payment module | Paytz
12 | SMS Notification module | Chatbotz
13 | Email Notification module | Mailzzz
14 | Delivery module | delizap
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
15 | Payment module | killBill
(8 rows)

courier_db=# update PERMISSION set permissionmodule = 'P-missionid = 15';
UPDATE 1
courier_db=#

```

File Edit View Search Terminal Help

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
15 | Billing module | killBill
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
(8 rows)

courier_db=# insert into PERMISSION values(19,'Delivery module','Chris');
INSERT 0 1
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
11 | Payment module | Paytz
12 | SMS Notification module | Chatbotz
13 | Email Notification module | Mailzzz
14 | Delivery module | delizap
15 | Billing module | killBill
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
19 | Delivery module | Chris
(9 rows)

courier_db=# update PERMISSION set permissionmodule = 'Billing module' where per-
missionid = 15;

```

"transaction_t2.sql" selected (174 bytes)

Activities Terminal Tue 7:18 PM

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
15 | Payment module | killBill
(8 rows)

courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
11 | Payment module | Paytz
12 | SMS Notification module | Chatbotz
13 | Email Notification module | Mailzzz
14 | Delivery module | delizap
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
15 | Payment module | killBill
(8 rows)

courier_db=# insert into PERMISSION values(19,'Delivery module','Chris');
INSERT 0 1
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
11 | Payment module | Paytz
12 | SMS Notification module | Chatbotz
13 | Email Notification module | Mailzzz
14 | Delivery module | delizap
15 | Billing module | killBill
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
19 | Delivery module | Chris
(9 rows)

courier_db=# update PERMISSION set permissionmodule = 'Billing module' where per-
missionid = 15;
UPDATE 1
courier_db=# end transaction;
COMMIT
courier_db=#

```

File Edit View Search Terminal Help

```

rajeshwari@PES1UG19CS375: ~
File Edit View Search Terminal Help
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
(8 rows)

courier_db=# insert into PERMISSION values(19,'Delivery module','Chris');
INSERT 0 1
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
11 | Payment module | Paytz
12 | SMS Notification module | Chatbotz
13 | Email Notification module | Mailzzz
14 | Delivery module | delizap
15 | Billing module | killBill
16 | Rate Monitor Module | Starzz
17 | Service analysis Module | Buzzery
18 | Schedule Module | Notifier
19 | Delivery module | Chris
(9 rows)

courier_db=# update PERMISSION set permissionmodule = 'Billing module' where per-
missionid = 15;
UPDATE 1
courier_db=#

```

"transaction_t2.sql" selected (174 bytes)

➤ DEADLOCK IN TRANSACTION

```

rajeshwari@PES1UG19CS375: ~
File Edit View Terminal Help
COMMIT
courier_db=# start transaction;
START TRANSACTION
courier_db=# select * from PERMISSION;
permissionid | permissionmodule | permissionname
-----+-----+-----
 11 | Payment module | Paytz
 12 | SMS Notification module | Chatbotz
 13 | Email Notification module | Mailzzz
 14 | Delivery module | delizap
 16 | Rate Monitor Module | Starzz
 17 | Service analysis Module | Buzzery
 18 | Schedule Module | Notifier
 15 | Billing module | killBill
(8 rows)
courier_db=# update PERMISSION set permissionmodule = 'H
onid = 17;
UPDATE 1
courier_db=# update PERMISSION set permissionmodule = 'R
isstonid = 12;
UPDATE 1
courier_db=#
courier_db=# update PERMISSION set permissionmodule = 'Manage courier module' wh
ere permissionid = 12;
UPDATE 1
courier_db=# update PERMISSION set permissionmodule = 'customer management modul
e' where permissionid = 17;
ERROR: deadlock detected
DETAIL: Process 5313 waits for ShareLock on transaction 1859; blocked by proces
s 5257.
Process 5257 waits for ShareLock on transaction 1858; blocked by process 5313.
HINT: See server log for query details.
CONTEXT: while updating tuple (0,7) in relation "permission"
courier_db=#

```

CONTRIBUTION OF INDIVIDUAL MEMBERS OF THE TEAM

NAME	CONTRIBUTION	NO OF HOURS
RAMYA C	→ COMPLEX QUERIES → MULTIPLE USERS WITH DIFFERENT ACCESS PRIVILEGES. → REPORT	2
RAJESHWARI R	→ SIMPLE QUERIES → INITIATE CONCURRENT TRANSACTIONS AND DEMONSTRATE THE CONCURRENCY CONTROL FOR THE CONFLICTING ACTIONS.	2
RUCHITHA V R	→ NESTED QUERIES → PERFORMANCE ANALYSIS	2