

PROJECT 3

Group 37

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Q1.Stored Procedure

This stored procedure is used for finding the available room between 2 certain dates (no reservation during these days). Though it doesn't change any data, it is very complex and applied the cursor. And It is also a very useful procedure that allow user to see available room, once they enter 2 dates as parameters.

```
1  --This procedure is used for finding the room that is available during 2 selected dates
2  CREATE OR REPLACE FUNCTION AVAIL_ROOM(IN startdate DATE, IN enddate DATE) RETURNS TABLE(roomid INTEGER)
3  AS $$
4
5  DECLARE
6      sdate DATE;
7      edate DATE;
8      room INT;
9      cur_room CURSOR FOR SELECT start_date,end_date,room_number FROM reservation r, belongs b WHERE r.rid=b.rid;
10
11 BEGIN
12     CREATE TEMP TABLE tmproom(roomid INTEGER);
13     INSERT INTO tmproom (SELECT room_number FROM room); --insert all the rooms into tmproom
14
15     OPEN cur_room;
16     FETCH cur_room INTO sdate,edate,room;
17     WHILE FOUND LOOP
18         IF(sdate<enddate AND edate>startdate) --ROOM IS NOT AVAILABLE delete it from tmproom
19
20             THEN DELETE FROM tmproom WHERE tmproom.roomid=room;
21         END IF;
22         FETCH cur_room INTO sdate,edate,room;
23     END LOOP;
24     CLOSE cur_room;
25
26     RETURN QUERY SELECT * FROM tmproom;
27     DROP TABLE tmproom; --drop the temp table since it is useless now
28     RETURN;
29 END
30 $$ LANGUAGE plpgsql;
```

All the reservation and related room is shown below

```
15 SELECT * FROM reservation r, belongs b WHERE r.rid=b.rid
16 ORDER BY room_number;
17
```

	rid integer	start_date date	end_date date	price_amount numeric (7,2)	rid integer	room_number integer
1	1001234	2020-03-01	2020-03-05	932.31	1001234	201
2	1001234	2020-03-01	2020-03-05	932.31	1001234	203
3	1000009	2020-03-10	2020-03-12	651.61	1000009	203
4	1001234	2020-03-01	2020-03-05	932.31	1001234	204
5	1000015	2020-03-13	2020-03-16	643.98	1000015	302
6	1000008	2020-03-11	2020-03-12	287.21	1000008	303
7	1000001	2020-03-02	2020-03-04	453.16	1000001	305
8	1000003	2020-03-09	2020-03-22	3029.52	1000003	402
9	1000005	2020-03-09	2020-03-11	532.98	1000005	403
10	1000005	2020-03-09	2020-03-11	532.98	1000005	405
11	1000008	2020-03-11	2020-03-12	287.21	1000008	407

Execution of the procedure, and the result.

```
32 SELECT AVAIL_ROOM('2020-03-01','2020-03-11');
33
```

Data Output			Explain	Messages	Notifications
	avail_room integer				
1	302				
2	303				
3	407				

```
32 SELECT AVAIL_ROOM('2020-03-10','2020-03-12');
33
```

Data Output			Explain	Messages	Notifications
	avail_room integer				
1	204				
2	302				
3	305				
4	201				

Q2 application

```
Hello, you are trying to access the cs421g37 Hotel Database.
I am your personal assistant. What would you like to do?
-----
Press 1-6 to continue:
-----
1) Check in/out a customer.
2) Make a reservation.
3) View employee ids.
4) Browse customer reviews.
5) Search available rooms
6) Quit.
-----
```

Option1 Checkin/out a customer(case1: reservation is in the system)

```
1
You have chosen to check in/out a customer.
First, I need your employee id (eid).
If you are not sure, type 'back' to return to the main menu,
and select 3) View employee ids, to find a list of eids.
Note, you must enter a Receptionist eid to check in/out a customer.
Enter your eid below:
1664
You entered a valid Receptionist eid.
Now, please enter the customer's phone number,
or type 'back' to return to the main menu.
Enter it in the format '5201234567'
5208379384
Would you like to check this customer in or out?
Type 'in', 'out', or 'back' for neither:
in
Here is a list of all possible rooms to check into:
201
203
204
Which room would you like to check-in?
Type one of the room numbers, or type 'done' to
signify that you would not like to check-in a room:
201
You still have rooms left to check-in
Which room would you like to check-in?
Type one of the room numbers, or type 'done' to
signify that you would not like to check-in a room:
done
-----
```

Option1 Checkin/out a customer(case2: reservation is not exist)

1

You have chosen to check in/out a customer.

First, I need your employee id (eid).

If you are not sure, type 'back' to return to the main menu,
and select 3) View employee ids, to find a list of eids.

Note, you must enter a Receptionist eid to check in/out a customer.

Enter your eid below:

1984

You entered a valid Receptionist eid.

Now, please enter the customer's phone number,
or type 'back' to return to the main menu.

Enter it in the format '5201234567'

5301234567

Please enter either a valid phone number, or 'back'.

Enter it in the format '5201234567'

Option2 Make a reservation(case1: customer is already in database)

```
You have chosen to make a reservation.
First, I need your employee id (eid).
If you are not sure, type 'back' to return to the main menu,
and select 3) View employee ids, to find a list of eids.
Note, you must enter a Receptionist eid to check in/out a customer.
Enter your eid below:
1984
You entered a valid Receptionist eid.
Now, please enter the customer's phone number,
or type 'back' to return to the main menu.
Enter it in the format '5201234567'
5149988371
What day would you like to arrive?
Enter the date in the format 'YYYY-MM-DD',
or enter 'back' to exit this reservation.
The date must be on '2020-05-01' or later:
2020-06-02
What day would you like to leave?
Enter the date in the format 'YYYY-MM-DD',
or enter 'back' to exit this reservation.
The date must be after 2020-06-02:
2020-06-04
Room number 203 is available for the dates you requested.
This room is a King type room, all rooms have 2 beds.
Would you like to reserve this room?
Enter 'yes' to reserve this room, enter 'no',
to not reserve this room, or enter 'done' to stop reserving rooms:
no
Room number 204 is available for the dates you requested.
This room is a Queen type room, all rooms have 2 beds.
Would you like to reserve this room?
Enter 'yes' to reserve this room, enter 'no',
to not reserve this room, or enter 'done' to stop reserving rooms:
yes
Room number 302 is available for the dates you requested.
This room is a Queen type room, all rooms have 2 beds.
Would you like to reserve this room?
Enter 'yes' to reserve this room, enter 'no',
to not reserve this room, or enter 'done' to stop reserving rooms:
done
Your reservation is complete, the total cost is: $200.0
Payment is completed at check-in,
or by an email which is automatically sent to your email.
```


Option2 Make a reservation(casew: customer is not in our database

```
You have chosen to make a reservation.
First, I need your employee id (eid).
If you are not sure, type 'back' to return to the main menu,
and select 3) View employee ids, to find a list of eids.
Note, you must enter a Receptionist eid to check in/out a customer.
Enter your eid below:
1984
You entered a valid Receptionist eid.
Now, please enter the customer's phone number,
or type 'back' to return to the main menu.
Enter it in the format '5201234567'
5209988370
This phone number does not appear in the database.
I would like to register this customer.
The name and email of the customer are required.
First, what is the customer's name.
Please enter your response:
General Tao
Finally, what is the customer's email.
Please enter your response similar to 'abc@address.ext.com':
generaltao@gmail.com
What day would you like to arrive?
Enter the date in the format 'YYYY-MM-DD',
or enter 'back' to exit this reservation.
The date must be on '2020-05-01' or later:
2020-06-11
What day would you like to leave?
Enter the date in the format 'YYYY-MM-DD',
or enter 'back' to exit this reservation.
The date must be after 2020-06-11:
2020-06-18
Room number 203 is available for the dates you requested.
This room is a King type room, all rooms have 2 beds.
Would you like to reserve this room?
Enter 'yes' to reserve this room, enter 'no',
to not reserve this room, or enter 'done' to stop reserving rooms:
yes
Room number 204 is available for the dates you requested.
This room is a Queen type room, all rooms have 2 beds.
Would you like to reserve this room?
Enter 'yes' to reserve this room, enter 'no',
to not reserve this room, or enter 'done' to stop reserving rooms:
done)
```

Option3 view employees id

```
3
You are trying to view employee ids.
Select one of the following options.
-----
Press 1-5 to continue:
-----
1) View all Employees.
2) View all Receptionist ids.
3) View all Restaurant Manager ids.
4) View all Housekeeper ids.
5) Back to main menu.
-----
```

```
1
Here is a list of Employee ids:
-----
eid
-----
1663
1983
1357
1316
1738
1664
1984
1358
1317
1739
1665
1985
1359
1318
1740
1666
1986
1360
1319
1741
```

```
3
You are trying to view employee ids.
Select one of the following options.
-----
Press 1-5 to continue:
-----
1) View all Employees.
2) View all Receptionist ids.
3) View all Restaurant Manager ids.
4) View all Housekeeper ids.
5) Back to main menu.
-----
3
Here is a list of Restaurant Manager ids:
-----
eid
-----
1663
1983
1357
1316
1738
```



```

3
You are trying to view employee ids.
Select one of the following options.
-----
Press 1-5 to continue:
-----
1) View all Employees.
2) View all Receptionist ids.
3) View all Restaurant Manager ids.
4) View all Housekeeper ids.
5) Back to main menu.
-----

2
Here is a list of Receptionist ids:
-----
eid
-----
1664
1984
1358
1317
1739

4
Here is a list of Housekeeper ids:
-----
eid
-----
1665
1985
1359
1318
1740
1666
1986
1360
1319
1741

```

Option4 Browse Customers reivew

```

4
You are trying to browse customer Reviews.
Select one of the following options.
-----
Press 1-3 to continue:
-----
1) View the average rating.
2) View all the reviews.
3) Back to main menu.
-----

1
Here is the avrage rating:3.0

```

4

You are trying to browse customer Reviews.
Select one of the following options.

Press 1-3 to continue:

- 1) View the average rating.
- 2) View all the reviews.
- 3) Back to main menu.

2

Here are all the reviews:

Great Stay. Very comfortable bed.

Staff has been very nice

it was a decent experience

they kicked me out at 5 am, who does that?

the room was nice but the food was meh

was a good experience

Option 5 view current available room

5

You are trying to browse all the available rooms.

305

402

403

Q3 Index

CREATE INDEX indsalary ON employee(salary);

--We create an index on salary, it is useful, because when we do the range search and equality search on salary,

--it will execute much faster than when we don't have index on salary. In application, we use the query to find

--employee whose salary are below a certain number, and employee whose salary are between 2 certain numbers

--These two query can execute much faster than when we don't have index on salary.

CREATE INDEX inddate ON review(date);

--This index will be helpful when we do range and equality search on date of review.

--In application, we want to manage the reviews and select all the reviews between 2 specific dates,

--then query will execute quicker with index on date.

```
7 CREATE INDEX indsalary ON employee(salary);
8 --We create an index on salary, it is useful, because when we do the range search and equality search on salary,
9 --it will execute much faster than when we don't have index on salary. In application, we use the query to find
10 --employee whose salary are below a certain number, and employee whose salary are between 2 certain numbers
11 --These two query can execute much faster than when we don't have index on salary.
12
13 CREATE INDEX inddate ON review(date);
14 --This index will be helpful when we do range and equality search on date of review.
15 --In application, we want to manage the reviews and select all the reviews between 2 specific dates,
16 --then query will execute quicker with index on date.
17
```

Data Output Explain Messages Notifications

CREATE INDEX

Query returned successfully in 97 msec.

Q4.

SQL statements used in this question:

```
-- generate a few more new ratings to fill up the graph --
insert into review (phone_number,date,time,rating,text) values(5207778883, '2019-12-3', '11:33:42', 5, 'Staff has been very nice');
insert into review (phone_number,date,time,rating,text) values(5204206969, '2019-12-6', '7:42:13', 4, 'it was a decent experience');
insert into review (phone_number,date,time,rating,text) values(5208379384, '2019-12-3', '9:24:51', 5, 'i enjoyed the stay a lot');
insert into review (phone_number,date,time,rating,text) values(3139812321, '2019-12-3', '4:52:59', 1, 'they kicked me out at 5 am, who does that?');
insert into review (phone_number,date,time,rating,text) values(5085488991, '2019-12-3', '20:19:25', 3, 'the room was nice but the food was meh');
insert into review (phone_number,date,time,rating,text) values(5203428469, '2019-12-3', '12:24:27', 5, 'was a good experience');
```

```
-- average amount of money spent in each restaurant --
```

```
SELECT rname,AVG(price)
FROM dine
GROUP BY rname;
```

```
-- number of people giving each rating --
SELECT rating, COUNT(phone_number)
FROM review
GROUP BY rating
ORDER BY rating;
```

CHART 1:

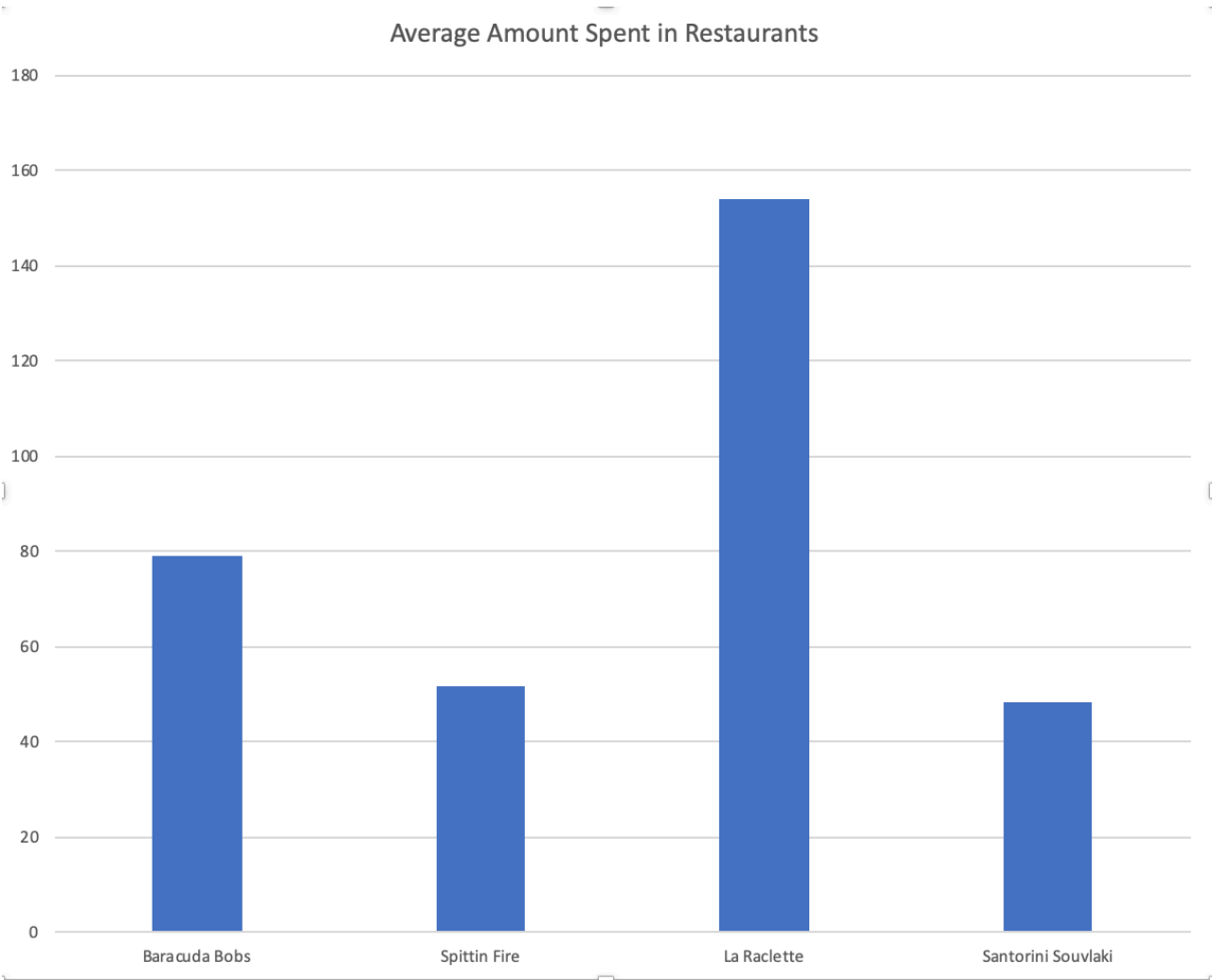


CHART 2:



Q5. Extra procedure:

Find all the rooms that needs to be cleaned on a given date. A room needs to be cleaned if a customer is checking out from it today or is checking in to it today. The function takes as input a date to operate on.

```
5 CREATE OR REPLACE FUNCTION TO_CLEAN(IN today_date DATE)
6 RETURNS TABLE(roomid INTEGER) AS $$
7
8 DECLARE
9     startd DATE;
10    endd DATE;
11    roomNum INT;
12    cur CURSOR FOR SELECT start_date,end_date,room_number FROM
13                        reservation r,belongs b WHERE r.rid=b.rid;
14
15 BEGIN
16     CREATE TEMP TABLE rooms_clean(roomid INTEGER);
17     OPEN cur;
18     FETCH cur INTO startd,endd,roomNum;
19     WHILE FOUND LOOP
20         IF(today_date=startd OR today_date=endd)
21             THEN INSERT INTO rooms_clean (roomid) VALUES(roomNum);
22         END IF;
23         FETCH cur INTO startd,endd,roomNum;
24     END LOOP;
25     CLOSE cur;
26
27     RETURN QUERY SELECT * FROM rooms_clean;
28     DROP TABLE rooms_clean;
29     RETURN;
30 END
31 $$ LANGUAGE plpgsql;
```

Data Output Explain Messages Notifications

CREATE FUNCTION

Query returned successfully in 148 msec.

Testing:

Showing all the reservations

(there are repeated rids for testing purposes in other areas)

```
37 | SELECT * FROM reservation r, belongs b WHERE r.rid=b.rid
```

	rid integer	start_date date	end_date date	price_amount numeric (7,2)	rid integer	room_number integer
1	1001234	2020-03-01	2020-03-05	932.31	1001234	201
2	1001234	2020-03-01	2020-03-05	932.31	1001234	203
3	1001234	2020-03-01	2020-03-05	932.31	1001234	204
4	1000015	2020-03-13	2020-03-16	643.98	1000015	302
5	1000001	2020-03-02	2020-03-04	453.16	1000001	305
6	1000003	2020-03-09	2020-03-22	3029.52	1000003	402
7	1000005	2020-03-09	2020-03-11	532.98	1000005	403
8	1000005	2020-03-09	2020-03-11	532.98	1000005	405
9	1000008	2020-03-11	2020-03-12	287.21	1000008	407
10	1000008	2020-03-11	2020-03-12	287.21	1000008	303
11	1000009	2020-03-10	2020-03-12	651.61	1000009	203
12	5867390	2020-05-01	2020-05-04	900.00	5867390	203
13	5867390	2020-05-01	2020-05-04	900.00	5867390	204
14	5042947	2020-06-02	2020-06-04	200.00	5042947	204

Result output of the procedure:

```
33 | -- testing --
34 | SELECT TO_CLEAN('2020-03-11');
```

	to_clean integer
1	403
2	405
3	407
4	303