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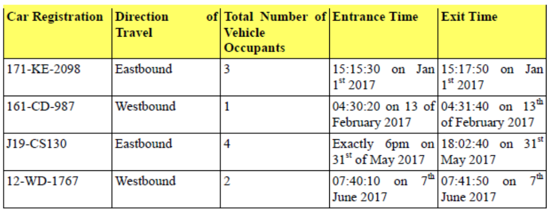
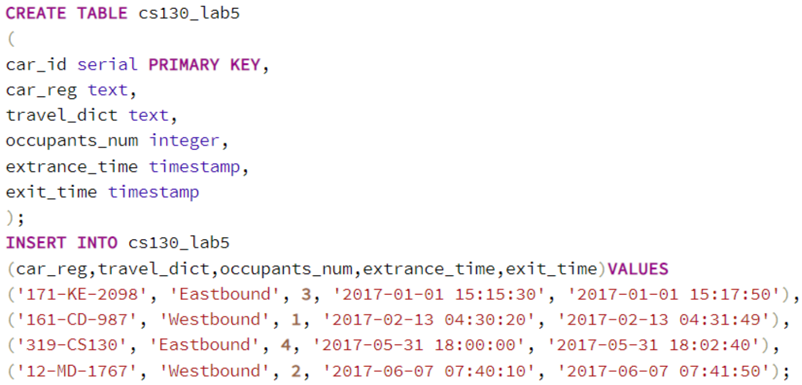
CS130 Databases

Lab5 Report

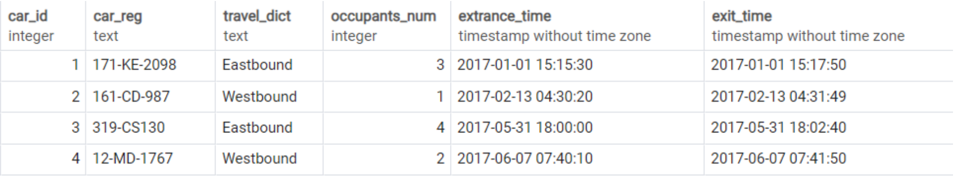
Task 1: Write a CREATE TABLE Statement to create a suitable table structure for the sample of the data collected and presented below.



Car Registration	Direction of Travel	Total Number of Vehicle Occupants	Entrance Time	Exit Time
171-KE-2098	Eastbound	3	15:15:30 on Jan 1st 2017	15:17:50 on Jan 1st 2017
161-CD-987	Westbound	1	04:30:20 on 13 of February 2017	04:31:40 on 13th of February 2017
J19-CS130	Eastbound	4	Exactly 6pm on 31st of May 2017	18:02:40 on 31st May 2017
12-WD-1767	Westbound	2	07:40:10 on 7th June 2017	07:41:50 on 7th June 2017

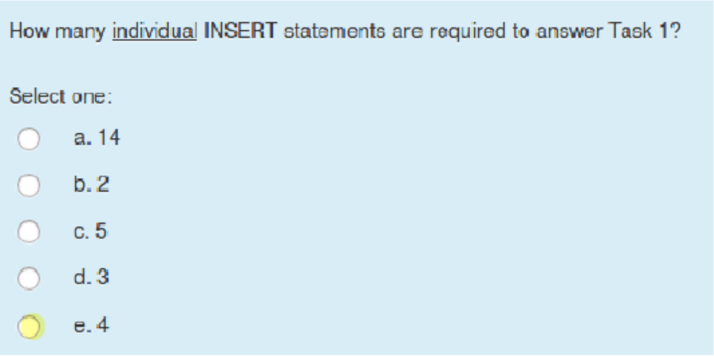


```
CREATE TABLE cs130_lab5
(
car_id serial PRIMARY KEY,
car_reg text,
travel_dict text,
occupants_num integer,
extrance_time timestamp,
exit_time timestamp
);
INSERT INTO cs130_lab5
(car_reg,travel_dict,occupants_num,extrance_time,exit_time)VALUES
('171-KE-2098', 'Eastbound', 3, '2017-01-01 15:15:30', '2017-01-01 15:17:50'),
('161-CD-987', 'Westbound', 1, '2017-02-13 04:30:20', '2017-02-13 04:31:49'),
('319-CS130', 'Eastbound', 4, '2017-05-31 18:00:00', '2017-05-31 18:02:40'),
('12-MD-1767', 'Westbound', 2, '2017-06-07 07:40:10', '2017-06-07 07:41:50');
```



	car_id integer	car_reg text	travel_dict text	occupants_num integer	extrance_time timestamp without time zone	exit_time timestamp without time zone
	1	171-KE-2098	Eastbound	3	2017-01-01 15:15:30	2017-01-01 15:17:50
	2	161-CD-987	Westbound	1	2017-02-13 04:30:20	2017-02-13 04:31:49
	3	319-CS130	Eastbound	4	2017-05-31 18:00:00	2017-05-31 18:02:40
	4	12-MD-1767	Westbound	2	2017-06-07 07:40:10	2017-06-07 07:41:50

Question 1



How many individual INSERT statements are required to answer Task 1?

Select one:

○ a. 14

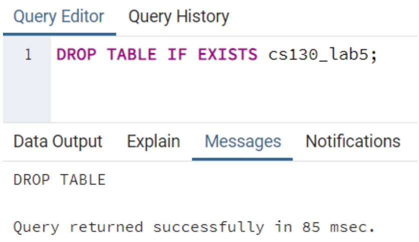
○ b. 2

○ c. 5

○ d. 3

● e. 4

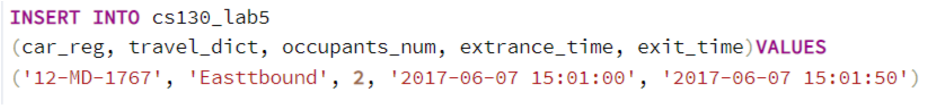
Task 2: Write DROP TABLE command at the very beginning of your SQL file.



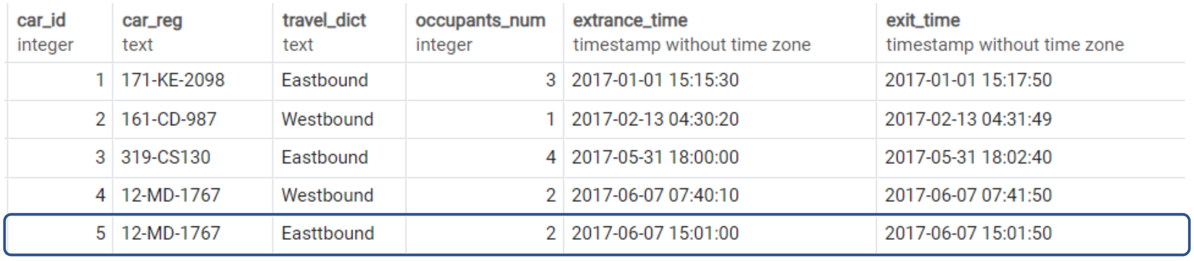
```
DROP TABLE IF EXISTS cs130_lab5;
```

```
DROP TABLE

Query returned successfully in 85 msec.
```

Task 3: The car in the final row of the table above returned on the Eastbound direction later on the returned on the Eastbound direction later on the same day. The car has an entrance time of exactly 1 minute to 3pm and an exit time of 50 seconds after 3pm. Write an INSERT statement to insert this observation into the database table you have created.

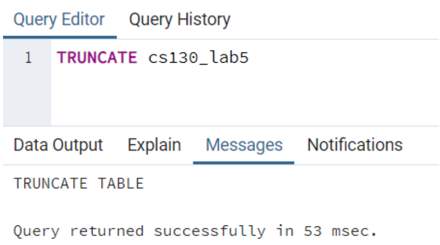


```
INSERT INTO cs130_lab5
(car_reg, travel_dict, occupants_num, extrance_time, exit_time)VALUES
('12-MD-1767', 'Easttbound', 2, '2017-06-07 15:01:00', '2017-06-07 15:01:50')
```



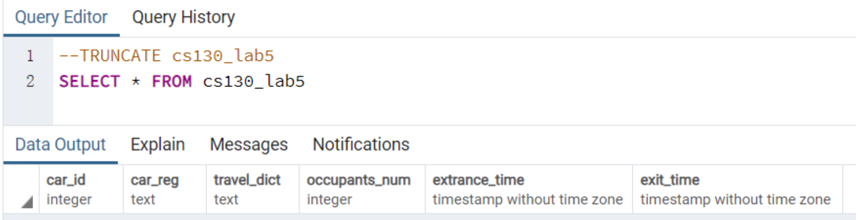
car_id integer	car_reg text	travel_dict text	occupants_num integer	extrance_time timestamp without time zone	exit_time timestamp without time zone
1	171-KE-2098	Eastbound	3	2017-01-01 15:15:30	2017-01-01 15:17:50
2	161-CD-987	Westbound	1	2017-02-13 04:30:20	2017-02-13 04:31:49
3	319-CS130	Eastbound	4	2017-05-31 18:00:00	2017-05-31 18:02:40
4	12-MD-1767	Westbound	2	2017-06-07 07:40:10	2017-06-07 07:41:50
5	12-MD-1767	Easttbound	2	2017-06-07 15:01:00	2017-06-07 15:01:50

Task 4: Test out what happens when we use the TRUNCATE statement.
When you have finished with this task you should comment out the TRUNCATE statement by placing two hyphens at the beginning of the line. Re–run your whole SQL file again.



```
TRUNCATE cs130_lab5
```

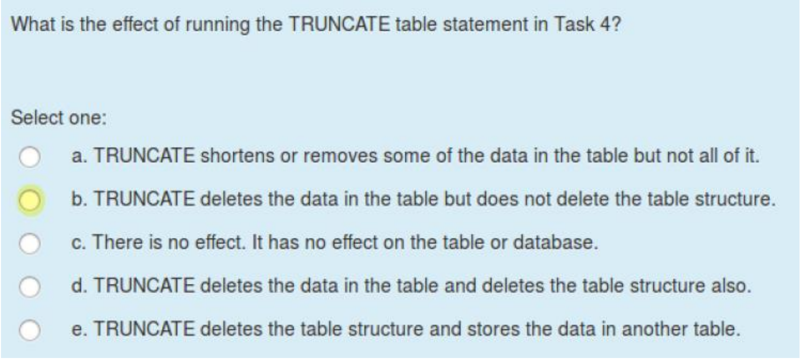
```
TRUNCATE TABLE

Query returned successfully in 53 msec.
```



```
--TRUNCATE cs130_lab5
SELECT * FROM cs130_lab5
```

car_id integer	car_reg text	travel_dict text	occupants_num integer	extrance_time timestamp without time zone	exit_time timestamp without time zone

Question 2



What is the effect of running the TRUNCATE table statement in Task 4?

Select one:

○ a. TRUNCATE shortens or removes some of the data in the table but not all of it.

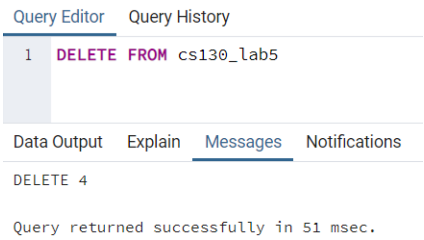
● b. TRUNCATE deletes the data in the table but does not delete the table structure.

○ c. There is no effect. It has no effect on the table or database.

○ d. TRUNCATE deletes the data in the table and deletes the table structure also.

○ e. TRUNCATE deletes the table structure and stores the data in another table.

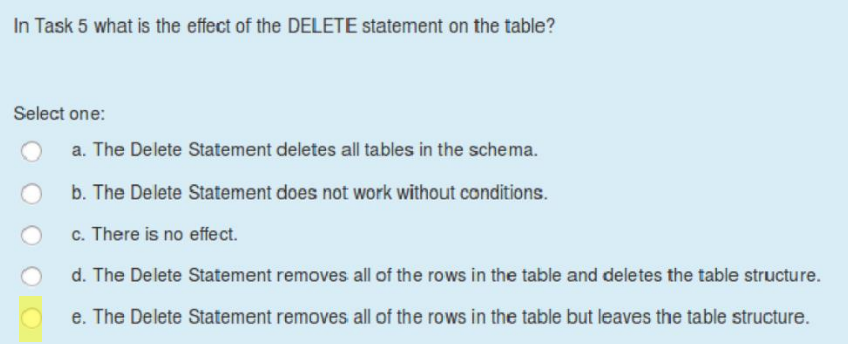
Task 5: Test out the DELETE statement WITHOUT using any conditions.



```
DELETE FROM cs130_lab5
```

```
DELETE 4

Query returned successfully in 51 msec.
```

Question 3



In Task 5 what is the effect of the DELETE statement on the table?

Select one:

○ a. The Delete Statement deletes all tables in the schema.

○ b. The Delete Statement does not work without conditions.

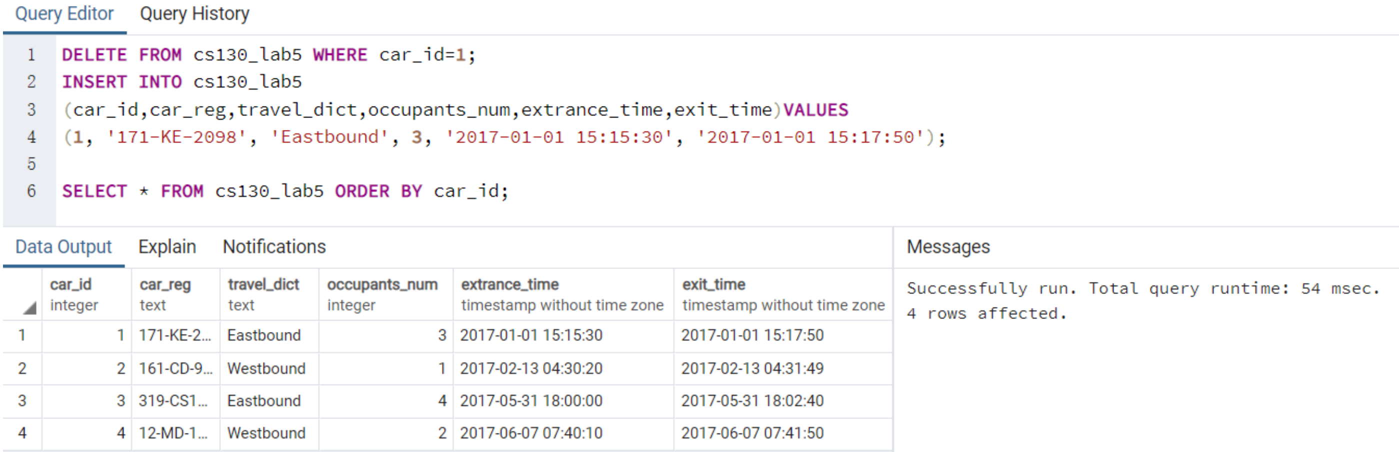
○ c. There is no effect.

○ d. The Delete Statement removes all of the rows in the table and deletes the table structure.

[✓ ○ e. The Delete Statement removes all of the rows in the table but leaves the table structure.]

Task 6: Suppose that the REGISTRATION NUMBER for the car in the first row of the table is incorrect. All other details are correct. Use your SQL file to fix this problem and update the registration plate to the correct number 171–KE–2980.

You should NOT use an UPDATE statement.



```
DELETE FROM cs130_lab5 WHERE car_id=1;
INSERT INTO cs130_lab5
(car_id,car_reg,travel_dict,occupants_num,extrance_time,exit_time)VALUES
(1, '171-KE-2098', 'Eastbound', 3, '2017-01-01 15:15:30', '2017-01-01 15:17:50');

SELECT * FROM cs130_lab5 ORDER BY car_id;
```

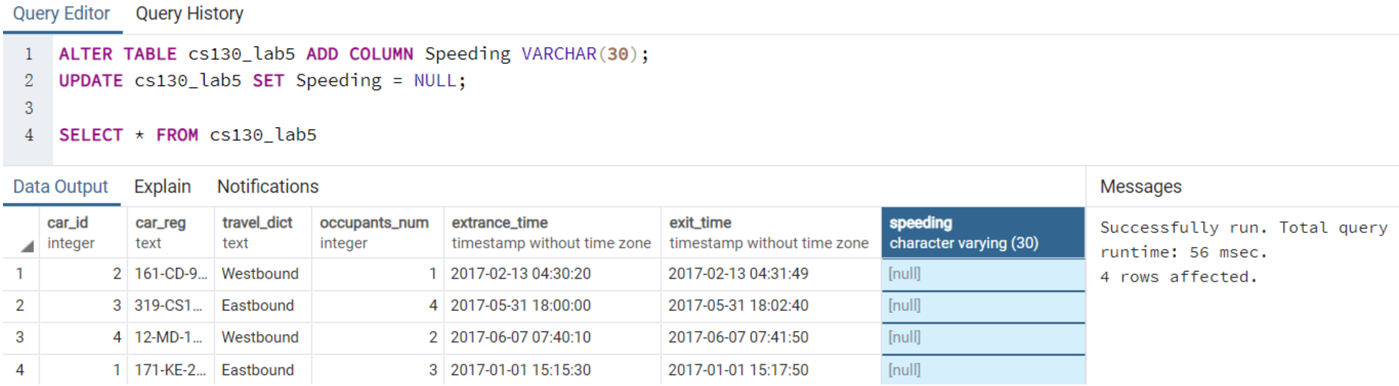
	car_id	car_reg	travel_dict	occupants_num	extrance_time	exit_time
	integer	text	text	integer	timestamp without time zone	timestamp without time zone
1	1	171-KE-2...	Eastbound	3	2017-01-01 15:15:30	2017-01-01 15:17:50
2	2	161-CD-9...	Westbound	1	2017-02-13 04:30:20	2017-02-13 04:31:49
3	3	319-CS1...	Eastbound	4	2017-05-31 18:00:00	2017-05-31 18:02:40
4	4	12-MD-1...	Westbound	2	2017-06-07 07:40:10	2017-06-07 07:41:50

```
Successfully run. Total query runtime: 54 msec.
4 rows affected.
```

Task 7: Issue the following two SQL Statements to your table.

ALTER TABLE TABLE NAME ADD COLUMN Speeding VARCHAR(30);

UPDATE TABLE NAME SET Speeding = NULL;

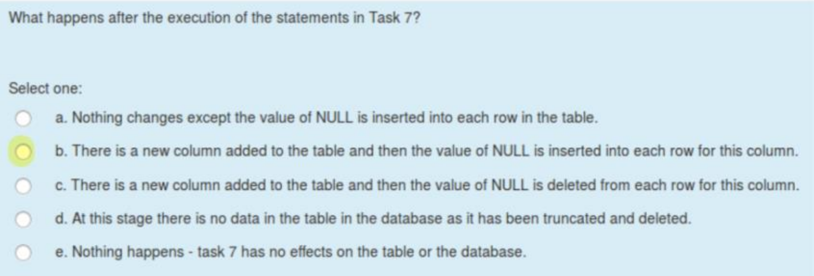


```
ALTER TABLE cs130_lab5 ADD COLUMN Speeding VARCHAR(30);
UPDATE cs130_lab5 SET Speeding = NULL;

SELECT * FROM cs130_lab5
```

	car_id	car_reg	travel_dict	occupants_num	extrance_time	exit_time	speeding
	integer	text	text	integer	timestamp without time zone	timestamp without time zone	character varying (30)
1	2	161-CD-9...	Westbound	1	2017-02-13 04:30:20	2017-02-13 04:31:49	[null]
2	3	319-CS1...	Eastbound	4	2017-05-31 18:00:00	2017-05-31 18:02:40	[null]
3	4	12-MD-1...	Westbound	2	2017-06-07 07:40:10	2017-06-07 07:41:50	[null]
4	1	171-KE-2...	Eastbound	3	2017-01-01 15:15:30	2017-01-01 15:17:50	[null]

```
Successfully run. Total query
runtime: 56 msec.
4 rows affected.
```

Question 4



What happens after the execution of the statements in Task 7?

Select one:

○ a. Nothing changes except the value of NULL is inserted into each row in the table.

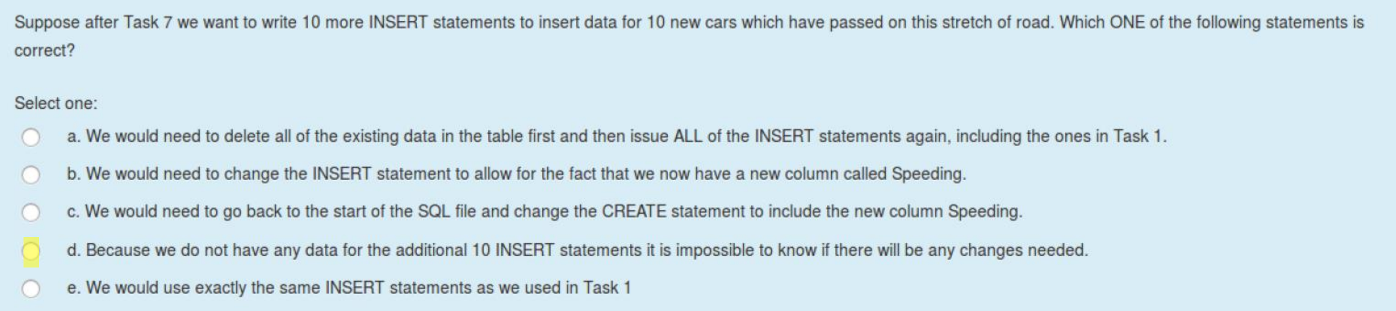
[✓ ○ b. There is a new column added to the table and then the value of NULL is inserted into each row for this column.]

○ c. There is a new column added to the table and then the value of NULL is deleted from each row for this column.

○ d. At this stage there is no data in the table in the database as it has been truncated and deleted.

○ e. Nothing happens - task 7 has no effects on the table or the database.

Question 5



Suppose after Task 7 we want to write 10 more INSERT statements to insert data for 10 new cars which have passed on this stretch of road. Which ONE of the following statements is correct?

Select one:

○ a. We would need to delete all of the existing data in the table first and then issue ALL of the INSERT statements again, including the ones in Task 1.

○ b. We would need to change the INSERT statement to allow for the fact that we now have a new column called Speeding.

○ c. We would need to go back to the start of the SQL file and change the CREATE statement to include the new column Speeding.

[✓ ○ d. Because we do not have any data for the additional 10 INSERT statements it is impossible to know if there will be any changes needed.]

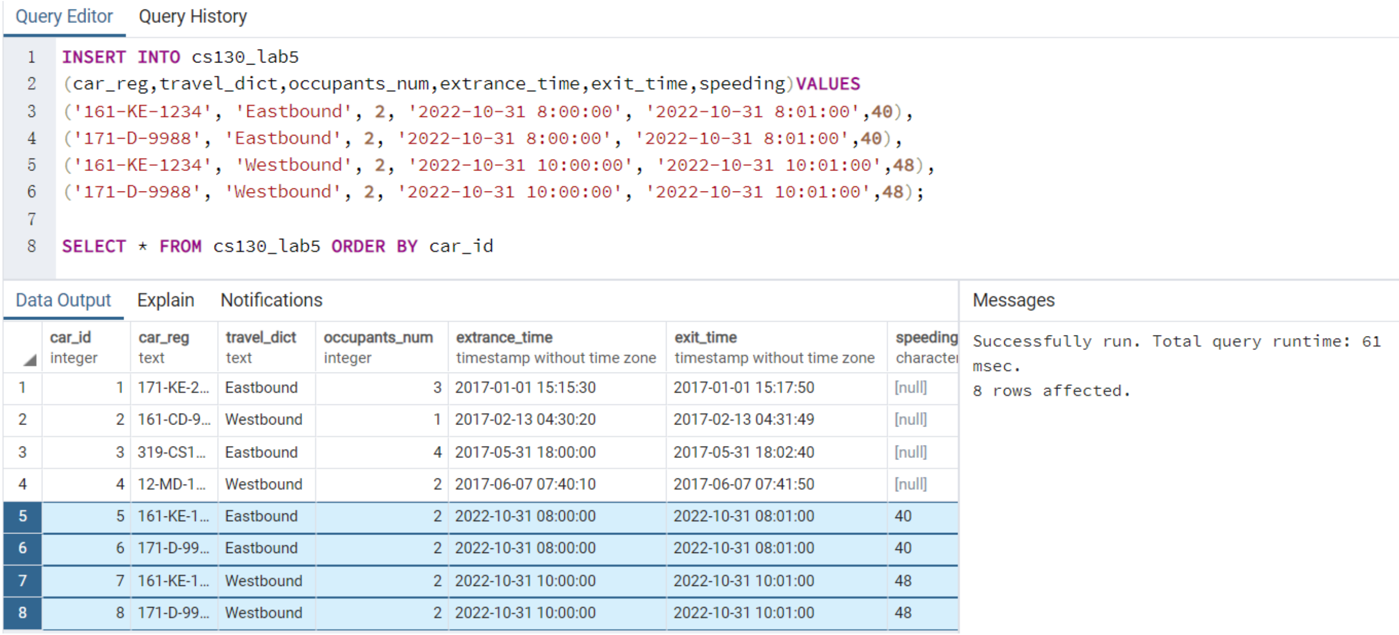
○ e. We would use exactly the same INSERT statements as we used in Task 1

Task 8: Two cars (161–KE–1234 and 171–D–9988) both travel Eastbound on this stretch of road TODAY during your CS130 Lab. They are travelling together but are one minute apart. It takes them 3 minutes to drive the 2KM stretch.

Exactly two hours later, they BOTH return travelling Westbound. As before they are both one minute apart. On the return journey they take 2 minutes 30 seconds to drive the 2KM stretch.

You can choose the journey times as appropriate.
In all journeys there are two people in each car.

Write an appropriate number of INSERT statements to insert all of these trips into the database.

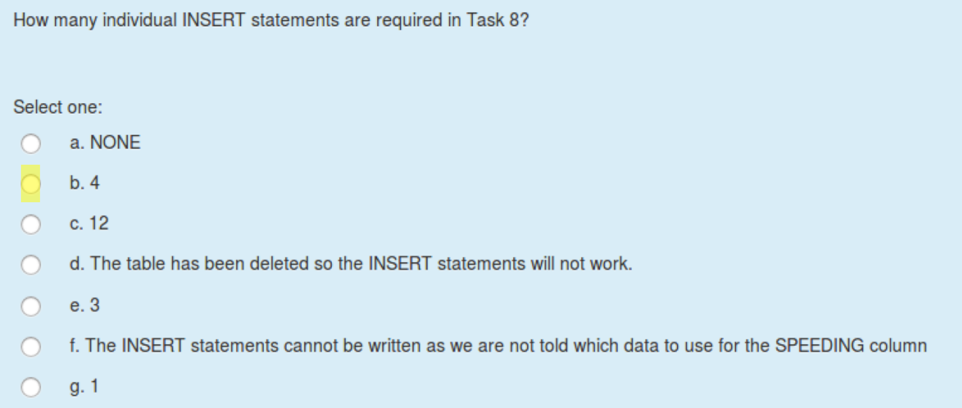


```
INSERT INTO cs130_lab5
(car_reg,travel_dict,occupants_num,extrance_time,exit_time,speeding)VALUES
('161-KE-1234', 'Eastbound', 2, '2022-10-31 8:00:00', '2022-10-31 8:01:00',40),
('171-D-9988', 'Eastbound', 2, '2022-10-31 8:00:00', '2022-10-31 8:01:00',40),
('161-KE-1234', 'Westbound', 2, '2022-10-31 10:00:00', '2022-10-31 10:01:00',48),
('171-D-9988', 'Westbound', 2, '2022-10-31 10:00:00', '2022-10-31 10:01:00',48);

SELECT * FROM cs130_lab5 ORDER BY car_id
```

	car_id integer	car_reg text	travel_dict text	occupants_num integer	extrance_time timestamp without time zone	exit_time timestamp without time zone	speeding characte
1	1	171-KE-2...	Eastbound	3	2017-01-01 15:15:30	2017-01-01 15:17:50	[null]
2	2	161-CD-9...	Westbound	1	2017-02-13 04:30:20	2017-02-13 04:31:49	[null]
3	3	319-CS1...	Eastbound	4	2017-05-31 18:00:00	2017-05-31 18:02:40	[null]
4	4	12-MD-1...	Westbound	2	2017-06-07 07:40:10	2017-06-07 07:41:50	[null]
5	5	161-KE-1...	Eastbound	2	2022-10-31 08:00:00	2022-10-31 08:01:00	40
6	6	171-D-99...	Eastbound	2	2022-10-31 08:00:00	2022-10-31 08:01:00	40
7	7	161-KE-1...	Westbound	2	2022-10-31 10:00:00	2022-10-31 10:01:00	48
8	8	171-D-99...	Westbound	2	2022-10-31 10:00:00	2022-10-31 10:01:00	48

```
Successfully run. Total query runtime: 61
msec.
8 rows affected.
```

Question 6



How many individual INSERT statements are required in Task 8?

Select one:

○ a. NONE

○ [✓ b. 4]

○ c. 12

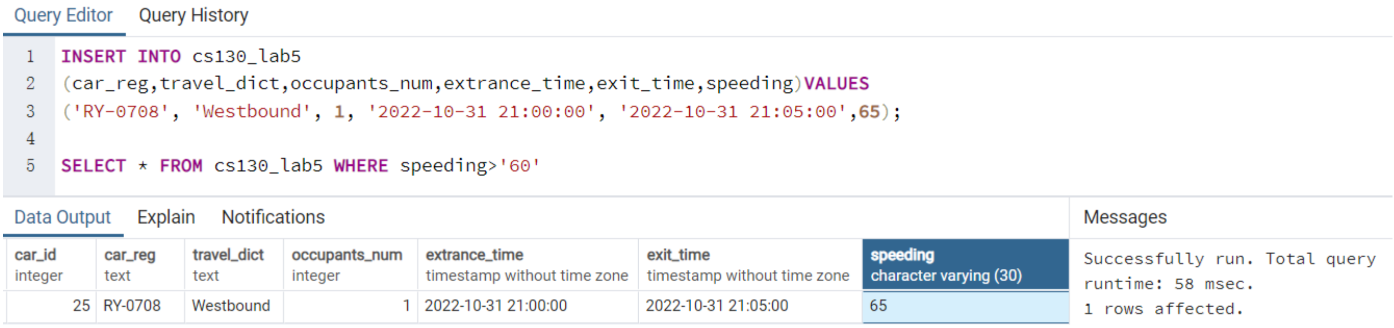
○ d. The table has been deleted so the INSERT statements will not work.

○ e. 3

○ f. The INSERT statements cannot be written as we are not told which data to use for the SPEEDING column

○ g. 1

Task 9: Write an SQL query which indicates the journeys in the database above where the cars are detected as speeding within this zone – that is they have travelled at ANY speed of greater than 60 Km/h on this stretch of road. To test if your query works you should INSERT another new car journey into the database where this journey corresponds to a car which is obviously speeding in this stretch of road.



```
INSERT INTO cs130_lab5
(car_reg,travel_dict,occupants_num,extrance_time,exit_time,speeding)VALUES
('RY-0708', 'Westbound', 1, '2022-10-31 21:00:00', '2022-10-31 21:05:00',65);

SELECT * FROM cs130_lab5 WHERE speeding>'60'
```

car_id integer	car_reg text	travel_dict text	occupants_num integer	extrance_time timestamp without time zone	exit_time timestamp without time zone	speeding character varying (30)
25	RY-0708	Westbound	1	2022-10-31 21:00:00	2022-10-31 21:05:00	65

```
Successfully run. Total query
runtime: 58 msec.
1 rows affected.
```