
CS246: Database Management Systems Lab

Lab # 10 (1 Questions, 142 Points)

Held on 27-Mar-2023

Lab Timings: 14:00 to 18:00 Hours Pages: 4

Submission: 18:00 Hrs, 27-Mar-2023

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- a. This lab assignment is based on the concepts covered in chapter 5 **Advanced SQL** in the CS245 theory class.
- b. You can refer to the text book for SQL syntax.

Question 1: (142 points)

triggers Using MySQL perform the following tasks:

Task 01 (1 mark) Create a database named *week10*

Task 02 (8 marks) **Create tables**

- a. (1 mark) A table **student18** containing the following

1 st column	name	string of characters of fixed size 100
2 nd column	roll_number	string of characters of fixed size 10
3 rd column	cpi	float

with **roll_number** as primary key. Default value of **cpi** to be 0.0.

- b. (1 mark) A table **course18** containing the following

1 st column	semester	integer
2 nd column	cid	string of characters of fixed size 7
3 rd column	name	string of characters of fixed size 100
4 th column	l	integer
5 th column	t	integer
6 th column	p	integer
7 th column	c	integer

with **cid** as primary key.

- c. (1 mark) A table **grade18** containing the following

1 st column	roll_number	string of characters of fixed size 10
2 nd column	cid	string of characters of fixed size 7
3 rd column	letter_grade	string of characters of fixed size 2

with **roll_number** and **cid** together form primary key

- d. (1 mark) A table **curriculum** containing the following

1 st column	dept	string of characters of fixed size 4
2 nd column	number	integer
3 rd column	cid	string of characters of fixed size 7

- e. (1 mark) A table **grade_point** containing the following

1 st column	letter_grade	string of characters of fixed size 2
2 nd column	value	integer

With the constraint that **letter_grade** to be primary key.

- f. (1 mark) A table **trigger_log** containing the following

1 st column	my_action	string of characters of fixed size 10
2 nd column	roll_number	string of characters of fixed size 10
3 rd column	semester	integer
4 th column	SPI	decimal with precision 2
5 th column	CPI	decimal with precision 2

- my_action** must take values from the set {'INSERT', 'UPDATE', 'DELETE'}.
- semester** a foreign key pointing to **course18(semester)**.

- g. (1 mark) A table **transcript** containing the following

1 st column	roll_number	string of characters of fixed size 10
2 nd column	semester	integer
3 rd column	SPI	decimal with precision 2
4 th column	CPI	decimal with precision 2

- h. (1 mark) A table **u_grade18** whose description is identical to **grade18** table.

Task 03 (6 marks) **populate data**

- (1 mark) Populate data from file **student18.csv** into table **student18**
- (1 mark) Populate data from file **course18.csv** into table **course18**
- (1 mark) populate data from the file **curriculum.csv** into table **curriculum**
- (1 mark) populate data from the file **u_grade18.csv** into table **u_grade18** table.
- (1 mark) populate **grade_point** table with the following values:

letter_grade	AS	AA	AB	BB	BC	CC	CD	DD	FP	FA	I	X	PP	NP
value	10	10	9	8	7	6	5	4	0	0	0	0	0	0

- f. (1 mark) populate data from the file **transcript.csv** into table **transcript** table.

Task 04 (120 marks) Develop the following **triggers** on table **grade18** with the following specifications:

- (40 marks) **Insert triggers**
 - (5 marks) **before insert** Before a new row is inserted into **grade18** table, perform the following: If the **letter_grade** is not in the set of allowable grades {AS, AA, AB, BB, BC, CC, CD, DD, FP, FA, PP, NP, I, X} then, the new insertion should not take place. That is generate **SIGNAL STATE** with number 50001 with appropriate message.
 - (35 marks) **after insert** After the new row is inserted into **grade18** table, perform the following:
 - (30 marks) Perform **update** in the transcript table for INSERT action on **grade18** table.

- ii. (5 marks) Perform **insertion** in the **trigger_log** table with **my_action** as 'INSERT' and rest of the columns as appropriate. **Example**

A. After insertion into **grade18** table

insertion into grade18		
180101002	MA101	AA

B. Output in **trigger_log** table

trigger_log entry on insertion into grade18				
my_action	roll_number	semester	SPI	CPI
INSERT	180101002	1	10.00	10.00

C. Output in **transcript** table

transcript update on insertion into grade18			
roll_number	semester	SPI	CPI
180101002	1	10.00	10.00

b. (40 marks) **Update triggers**

- i. (5 marks) **before update** Before a row is updated in the **grade18** table, perform the following: If the updated **letter_grade** is not in the set of allowable grades {AS, AA, AB, BB, BC, CC, CD, DD, FP, FA, PP, NP, I, X} then, the new updation should not take place. That is generate **SIGNAL STATE** with number 50001 with appropriate message.
- ii. (35 marks) **after update**: After updating the **grade18** table, perform the following:
 - i. (30 marks) Perform **update** in the transcript table for the UPDATE action on **grade18** table.
 - ii. (5 marks) Perform **insertion** in the **trigger_log** table with **my_action** as 'UPDATE' and rest of the columns as appropriate.

c. (40 marks) **Delete trigger**

- i. (40 marks) **after deletion** After a row is deleted from the **grade18** table, perform the following
 - i. (35 marks) Perform **update** in the transcript table for the DELETE action on **grade18** table.
 - ii. (5 marks) Perform **insertion** in the **trigger_log** table with **my_action** as 'DELETE' and rest of the columns as appropriate.

Task 05 (1 mark) Only after installing the above three triggers, populate data from file **grade18.csv** into table **grade18**

Task 06 (5 marks) update **grade18** records table as per **u_grade18** records.

Task 07 (1 mark) delete all the records from **grade18** table.

Instructions Adhere to the following

SQL statements Write the SQL statements corresponding to each task in a text.

File naming text file name should be [Your roll number].sql

Independent efforts You should make an honest and independent effort in obtaining the solution to the above problem.

Mobile phones are not allowed inside the lab

Submission Procedure You should upload all the SQL files and python script files in MS assignments site.

Marking Scheme Mentioned against each task/sub task