**Lab 10 -- Views and Triggers**

You are required to attempt all questions…

Answers need to be succinct and in your own words…

Verbosity is undesirable…

Total points : 80

Question 1: 10 \* 5 = 50

Question 2: 10+5=15

Question 3: 5 \* 3=15

Your submission will be a singular pdf file <Naming convention Roll\_No.\_FirstName\_Lab6.pdf> - containing assumptions, observations, theoretical answers/expectations/predictions, and code with outputs and observations

Deadline for submission: Nov 9, 2022.

1. Create a database comprising the following partial tables of an ordered library catalogue:

Book\_Details:

| **Author\_ID** | **Book\_ID** | **Book** |
| --- | --- | --- |
| Da\_001 | Da001\_Sel | Self Comes to Mind |
| Mi\_009 | Mi009\_Emo | Emotion Machine |
| Mi\_009 | Mi009\_Soc | Society of Mind |
| Ra\_001 | Ra001\_Pha | Phantoms in the Brain |
| Ro\_015 | Ro015\_Fan | Fantastic Beasts and Where to Find Them |
| Ro\_015 | Ro015\_Gob | Goblet of Fire\_Harry Potter |
| Ro\_015 | Ro015\_Phi | Philosopher’s Stone\_Harry Potter |
| Ro\_015 | Ro015\_Pri | Prisoner of Azkaban\_Harry Potter |
| Sa\_001 | Sa001\_Voy | Voyage of the Turtle |
| Sa\_001 | Sa001\_Wha | What Animals Think |
| To\_015 | To015\_Fel | Fellowship of the Rings\_Lord of the Rings |
| Wo\_015 | Wo015\_Wod | Wodehouse at the Wicket |

Author\_Details:

| **Author\_ID** | **Author\_Name** |
| --- | --- |
| Da\_001 | Damasio |
| Mi\_009 | Minsky |
| Ra\_001 | Ramachandran |
| Ro\_015 | Rowling |
| Ru\_021 | Russel |
| Sa\_001 | Safina |
| Ta\_001 | Tagore |
| To\_015 | Tolkien |
| Wo\_015 | Wodehouse |

Book\_Purchase\_Details:

| **Book\_ID** | **Purchase\_Dt** | **Copies** | **Price** | **Purchase\_Price** | **Book\_Value** |
| --- | --- | --- | --- | --- | --- |
| Da001\_Sel | Sep 1, 2021 | 1 | $50 |  |  |
| Da001\_Sel | Sep 7, 2021 | 5 | $50 |  |  |
| Mi009\_Emo | Sep 2, 2021 | 2 | $50 |  |  |
| Mi009\_Soc | Sep 1, 2021 | 2 | $50 |  |  |
| Ra001\_Pha | Sep 2, 2021 | 2 | $50 |  |  |
| Ro015\_Fan | Sep 1, 2021 | 3 | $50 |  |  |
| Ro015\_Fan | Sep 9, 2021 | 12 | $35 |  |  |
| Ro015\_Gob | Sep 1, 2021 | 3 | $50 |  |  |
| Ro015\_Phi | Sep 1, 2021 | 3 | $50 |  |  |
| Ro015\_Phi | Sep 10, 2021 | 20 | $75 |  |  |
| Ro015\_Pri | Sep 1, 2021 | 3 | $50 |  |  |
| Sa001\_Voy | Sep 2, 2021 | 2 | $50 |  |  |
| Sa001\_Wha | Sep 2, 2021 | 2 | $50 |  |  |
| To015\_Fel | Sep 1, 2021 | 3 | $50 |  |  |
| To015\_Fel | Sep 12, 2021 | 9 | $55 |  |  |
| Wo015\_Wod | Sep 5, 2021 | 1 | $50 |  |  |

1. Create a view comprising Author\_name, Book\_Name, and Copies; Group by Book\_Name
2. Test the difference in retrieval time of the data in (a) post execution of the SQL and that from the created view. Note any observations made.
3. What happens to the view if you insert or delete tuples from the main database?
4. Can you update the view?
5. Create a trigger to calculate the Purchase\_Price of the books on the date of purchase
6. Can we create triggers on views? If yes, frame an example using the given scenario, if not justify your answer
7. Can you think of examples of DDL triggers for the given scenario?
8. Create a view/trigger comprising Author\_name, Book\_Name, and Book\_Value, where Book\_Value derives from the Purchase\_Price as on Purchase\_Dt and Copies purchased
9. Calculate the total money the library has spent for purchasing each book using triggers. What type of trigger are you going to use for this ?
10. Can you use both ‘After’ and ‘Before’ triggers together? Show with the help of an example derived from the given scenario.

2. Consider the schema that an institute follows for the scholarship allotment to students.

APPLICATION (SID, Date, State)

COURSE (CID, Title, Credits)

RANK (SID, Avg, Credits, Rank)

EXAM (CID, SID, Date, Grade)

The institute manages the scholarship through a system of triggers.

1. Design a rigger considering the following assumptions and scenarios. Among those who have applied, the scholarship is awarded to those students who have given exams for 45 credits and have an average score of 25 out of 30. If the requirements are met, then the state column of APPLICATION is changed to “accepted” otherwise it is changed to “rejected”. When the student is accepted for scholarship he or she automatically gets a ranking on the basis of average grades. On the re-announcement of scholarships for the students, the ranking gets updated automatically.
2. Update the columns of table RANK and APPLICATION after multiple insertions and deletions.

3. Consider a high school scenario:

Student(ID int, name text, class int);

Friendship(ID1 int, ID2 int);

1. Write a trigger that maintains a symmetry in friendship relations. That means if (X,Y) is deleted from the Friends table (Y,X) should also be deleted and vice versa.
2. Write a trigger whose function is to delete students that have graduated (their class increased by more than 12)
3. Write a trigger that increases the grade of all the friends of a student, whose class is increased by one.

**Resource:**

https://drive.google.com/file/d/1Lc8vMsZH7FwRmawdsi3hgiU1skWwnC3G/view?usp=share\_link

### Assessment Rubric for Submitted Work - Evaluation per answer (Viva & Analyses):

| Proper understanding of question and work done accordingly: | 80 - 95% |
| --- | --- |
| Attempt to work beyond what has been asked, with in-depth understanding: (Definite contender for full score for question) | 95 - 100% |
| Vague understanding, bursts of in-depth answers: | 70 - 80% |
| Vague understanding, bursts of broad conceptual answers: | 50 - 70% |
| Weird hash of work submitted, some understanding: | 40 - 50% |
| No understanding, just work submitted:  (Probable plagiarism) | 0 |

### Submission Rubric:

| Within 2 days of Deadline: | No penalty |
| --- | --- |
| Within 5 days of Deadline: | 30% penalty |
| Within 7 days of Deadline: | 50% penalty |
| After 7 days of Deadline: | Will not be evaluated |