DBMSL ASSIGNMENT - 2

Roll No. : 31446

Assignment No 2A (Student Schema)

Consider the following relational Schema.

- Student(s_id,Drive_id,T_id,s_name,CGPA,s_branch,S_dob)
- PlacementDrive(Drive_id,Pcompany_name,package,location)
- Training (T_id,Tcompany_name,T_Fee,T_year)

Note: Use referential integrity constraints while creating tables with on delete cascade
options.

Create view(simple), index, sequence and synonym based on above tables.

Assignment No 2B

Use the tables created in assignment no 2 and execute the following queries:

1. Insert at least 10 records in the Student table and insert other tables accordingly.
2. Display all students details with branch ‘Computer ‘and ‘It’ and student name starting with 'a' or 'd'.
3. list the number of different companies.(use of distinct)
4. Give 15% increase in fee of the Training whose joining year is 2019.
5. Delete Student details having CGPA score less than 7.
6. Find the names of companies belonging to pune or Mumbai
7. Find the student name who joined training in 1-1-2019 as well as in 1-1-2021
8. Find the student name having maximum CGPA score and names of students having CGPA score between 7 to 9 .
9. Display all Student name with T_id with decreasing order of Fees
10. Display PCompany name, S_name ,location and Package with Package 30K, 40K and 50k

A2: Guidelines

✔️ Synonyms not supported in MySQL. Required to include example from oracle in
write-up or we can use Alice name for table name in query.
✔️ Sequence should be implemented with AUTO_INCREMENT. Concept of sequence
from oracle must be included in the write-up.

✔️ Simple view, Index (simple, unique, composite and text – show index after creation)

```
CREATE TABLE PlacementDrive(
        Drive_id INT PRIMARY KEY,
        Pcompany_name VARCHAR(100) NOT NULL,
        package INT,
        location VARCHAR(50)
);

desc PlacementDrive;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| Drive_id     | int(11)     | NO   | PRI | NULL    |       |
| Pcompany_name | varchar(100) | NO   |     | NULL    |       |
| package      | int(11)     | YES  |     | NULL    |       |
| location     | varchar(50)  | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)


CREATE TABLE Training(
        T_id INT PRIMARY KEY,
        Tcompany_name VARCHAR(100) NOT NULL,
        T_Fee DECIMAL(10,2),
        T_year INT
);

desc Training;
+---------------+---------------+------+-----+---------+-------+
| Field         | Type          | Null | Key | Default | Extra |
+---------------+---------------+------+-----+---------+-------+
| T_id          | int(11)       | NO   | PRI | NULL    |       |
| Tcompany_name | varchar(100)  | NO   |     | NULL    |       |
| T_Fee         | decimal(10,2) | YES  |     | NULL    |       |
| T_year        | int(11)       | YES  |     | NULL    |       |
+---------------+---------------+------+-----+---------+-------+
4 rows in set (2.39 sec)


CREATE TABLE Student(
        s_id INT PRIMARY KEY AUTO_INCREMENT,
        Drive_id INT,
        T_id INT,
        s_name VARCHAR(100) NOT NULL,
```

```
    CGPA DECIMAL(3,2),
    s_branch VARCHAR(50),
    s_dob DATE,
    CONSTRAINT fk_drive FOREIGN KEY (Drive_id) REFERENCES
PlacementDrive(Drive_id) ON DELETE CASCADE,
    CONSTRAINT fk_training FOREIGN KEY (T_id) REFERENCES Training(T_id)
ON DELETE CASCADE
);
```

```
desc Student;
+----------+-------------+------+-----+---------+----------------+
| Field    | Type        | Null | Key | Default | Extra          |
+----------+-------------+------+-----+---------+----------------+
| s_id     | int(11)     | NO   | PRI | NULL    | auto_increment |
| Drive_id | int(11)     | YES  | MUL | NULL    |                |
| T_id     | int(11)     | YES  | MUL | NULL    |                |
| s_name   | varchar(100) | NO   |     | NULL    |                |
| CGPA     | decimal(3,2) | YES  |     | NULL    |                |
| s_branch | varchar(50)  | YES  |     | NULL    |                |
| s_dob    | date        | YES  |     | NULL    |                |
+----------+-------------+------+-----+---------+----------------+
7 rows in set (0.00 sec)
```

- **VIEW**

```
CREATE VIEW student_training_view AS
SELECT s.s_name, s.s_branch, t.Tcompany_name
FROM Student s, Training t
WHERE s.T_id = t.T_id;

SELECT * FROM student_training_view;
+----------+------------+---------------+
| s_name   | s_branch   | Tcompany_name |
+----------+------------+---------------+
| Alice    | Computer   | TCS           |
| Diana    | IT         | TCS           |
| Amanda   | IT         | TCS           |
| Derek    | Computer   | TCS           |
| David    | IT         | Infosys       |
| Bob      | Computer   | Infosys       |
| Danielle | Computer   | Infosys       |
| Ankit    | Computer   | Wipro         |
| Charlie  | Mechanical | Wipro         |
| Andrew   | IT         | Wipro         |
+----------+------------+---------------+
```

10 rows in set (0.01 sec)

- **INDEX**

CREATE INDEX idx_student_branch ON Student(s_branch);

```
SELECT * FROM Student USE INDEX(idx_student_branch)
WHERE s_branch = 'Computer';
+------+----------+------+----------+------+----------+------------+
| s_id | Drive_id | T_id | s_name   | CGPA | s_branch | s_dob      |
+------+----------+------+----------+------+----------+------------+
|    1 |        1 |    1 | Alice    | 8.50 | Computer | 2000-05-15 |
|    3 |        3 |    3 | Ankit    | 6.50 | Computer | 2001-01-10 |
|    5 |        2 |    2 | Bob      | 7.20 | Computer | 2001-03-30 |
|    8 |        2 |    2 | Danielle | 9.20 | Computer | 1999-09-09 |
|   10 |        1 |    1 | Derek    | 6.80 | Computer | 2001-04-14 |
+------+----------+------+----------+------+----------+------------+
5 rows in set (0.00 sec)
```

CREATE UNIQUE INDEX uniq_pcompany ON PlacementDrive(Pcompany_name);

```
SELECT * FROM PlacementDrive USE INDEX(uniq_pcompany)
WHERE Pcompany_name = 'Amazon';
+----------+--------------+---------+-----------+
| Drive_id | Pcompany_name | package | location  |
+----------+--------------+---------+-----------+
|        3 | Amazon       |   30000 | Bangalore |
+----------+--------------+---------+-----------+
1 row in set (0.01 sec)
```

CREATE INDEX idx_branch_cgpa ON Student(s_branch, CGPA);

```
SELECT * FROM Student USE INDEX(idx_branch_cgpa)
WHERE s_branch = 'Computer' AND CGPA > 7.5;
+------+----------+------+----------+------+----------+------------+
| s_id | Drive_id | T_id | s_name   | CGPA | s_branch | s_dob      |
+------+----------+------+----------+------+----------+------------+
|    1 |        1 |    1 | Alice    | 8.50 | Computer | 2000-05-15 |
|    8 |        2 |    2 | Danielle | 9.20 | Computer | 1999-09-09 |
+------+----------+------+----------+------+----------+------------+
2 rows in set (0.00 sec)
```

CREATE FULLTEXT INDEX ftidx_tcompany ON Training(Tcompany_name);

```
SELECT * FROM Training USE INDEX(ftidx_tcompany)
WHERE MATCH(Tcompany_name) AGAINST('TCS');
+------+---------------+----------+--------+
| T_id | Tcompany_name | T_Fee    | T_year |
+------+---------------+----------+--------+
|    1 | TCS           | 20000.00 |   2019 |
+------+---------------+----------+--------+
1 row in set (0.01 sec)
```

SHOW INDEX FROM Student;

```
+---------+------------+-------------------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------
+--------------+
| Table   | Non_unique | Key_name          | Seq_in_index | Column_name | Collation | Cardinality | Sub_part |
Packed | Null | Index_type | Comment | Index_comment |
+---------+------------+-------------------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------
+--------------+
| Student |          0 | PRIMARY           |            1 | s_id        | A         |           0 |     NULL | NULL   |      | BTREE      |
|              |
| Student |          1 | fk_drive          |            1 | Drive_id    | A         |           0 |     NULL | NULL   | YES  | BTREE      |
|              |
| Student |          1 | fk_training       |            1 | T_id        | A         |           0 |     NULL | NULL   | YES  | BTREE      |
|              |
| Student |          1 | idx_student_branch |            1 | s_branch    | A         |           0 |     NULL | NULL   | YES  |
BTREE      |         |              |
| Student |          1 | idx_branch_cgpa   |            1 | s_branch    | A         |           0 |     NULL | NULL   | YES  |
BTREE      |         |              |
| Student |          1 | idx_branch_cgpa   |            2 | CGPA        | A         |           0 |     NULL | NULL   | YES  |
BTREE      |         |              |
+---------+------------+-------------------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------
+--------------+
6 rows in set (5.16 sec)
```

SHOW INDEX FROM PlacementDrive;

```
+----------------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------
+---------+--------------+
| Table          | Non_unique | Key_name      | Seq_in_index | Column_name   | Collation | Cardinality | Sub_part
| Packed | Null | Index_type | Comment | Index_comment |
+----------------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------
+---------+--------------+
| PlacementDrive |          0 | PRIMARY       |            1 | Drive_id      | A         |           0 |     NULL | NULL   |      |
BTREE      |         |              |
| PlacementDrive |          0 | uniq_pcompany |            1 | Pcompany_name | A         |           0 |     NULL | NULL
|      | BTREE      |         |              |
+----------------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------
+---------+--------------+
2 rows in set (0.00 sec)
```

SHOW INDEX FROM Training;

```
+----------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------+---------
+--------------+
| Table    | Non_unique | Key_name      | Seq_in_index | Column_name   | Collation | Cardinality | Sub_part |
Packed | Null | Index_type | Comment | Index_comment |
+----------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------+---------
+--------------+
| Training |          0 | PRIMARY       |            1 | T_id          | A         |           0 |     NULL | NULL   |      | BTREE      |
|              |
```

```
| Training |        1 | ftidx_tcompany |          1 | Tcompany_name | NULL     |      NULL |    NULL | NULL   |
| FULLTEXT   |       |            |
+----------+------------+---------------+--------------+---------------+-----------+-------------+----------+--------+------+------------+---------
+---------------+
2 rows in set (0.00 sec)
```

- **SEQUENCE**

Create Sequence (Oracle) / Auto_increment (MySQL)
MySQL uses AUTO_INCREMENT for sequences, as shown in s_id above.

Oracle Concept:
CREATE SEQUENCE student_seq START WITH 1 INCREMENT BY 1;

```
INSERT INTO PlacementDrive VALUES
(1, 'Google', 50000, 'Pune'),
(2, 'Microsoft', 40000, 'Mumbai'),
(3, 'Amazon', 30000, 'Bangalore');
```

```
SELECT * FROM PlacementDrive;
+----------+---------------+---------+-----------+
| Drive_id | Pcompany_name | package | location  |
+----------+---------------+---------+-----------+
|        1 | Google        |   50000 | Pune      |
|        2 | Microsoft     |   40000 | Mumbai    |
|        3 | Amazon        |   30000 | Bangalore |
+----------+---------------+---------+-----------+
3 rows in set (0.00 sec)
```

```
INSERT INTO Training VALUES
(1, 'TCS', 20000, 2019),
(2, 'Infosys', 25000, 2021),
(3, 'Wipro', 18000, 2019);
```

```
select * from Training;
+------+---------------+----------+--------+
| T_id | Tcompany_name | T_Fee    | T_year |
+------+---------------+----------+--------+
|    1 | TCS           | 20000.00 |   2019 |
|    2 | Infosys       | 25000.00 |   2021 |
|    3 | Wipro         | 18000.00 |   2019 |
+------+---------------+----------+--------+
3 rows in set (0.00 sec)
```

1. Insert at least 10 records in the Student table and insert other tables accordingly.

```
INSERT INTO Student (Drive_id, T_id, s_name, CGPA, s_branch, S_dob) VALUES
(1, 1, 'Alice', 8.5, 'Computer', '2000-05-15'),
(2, 2, 'David', 7.8, 'IT', '1999-07-20'),
(3, 3, 'Ankit', 6.5, 'Computer', '2001-01-10'),
```

```
(1, 1, 'Diana', 9.0, 'IT', '2000-12-25'),
(2, 2, 'Bob', 7.2, 'Computer', '2001-03-30'),
(3, 3, 'Charlie', 8.0, 'Mechanical', '1998-11-11'),
(1, 1, 'Amanda', 7.5, 'IT', '2002-08-05'),
(2, 2, 'Danielle', 9.2, 'Computer', '1999-09-09'),
(3, 3, 'Andrew', 7.0, 'IT', '2000-06-17'),
(1, 1, 'Derek', 6.8, 'Computer', '2001-04-14');

select * from Student;
```

s_id	Drive_id	T_id	s_name	CGPA	s_branch	s_dob
1	1	1	Alice	8.50	Computer	2000-05-15
2	2	2	David	7.80	IT	1999-07-20
3	3	3	Ankit	6.50	Computer	2001-01-10
4	1	1	Diana	9.00	IT	2000-12-25
5	2	2	Bob	7.20	Computer	2001-03-30
6	3	3	Charlie	8.00	Mechanical	1998-11-11
7	1	1	Amanda	7.50	IT	2002-08-05
8	2	2	Danielle	9.20	Computer	1999-09-09
9	3	3	Andrew	7.00	IT	2000-06-17
10	1	1	Derek	6.80	Computer	2001-04-14

10 rows in set (0.00 sec)

2. Display all students details with branch ‘Computer ‘and ‘It’ and student name starting with 'a' or 'd'.

```
SELECT * FROM Student
WHERE (s_branch IN ('Computer', 'IT'))
AND (s_name LIKE 'a%' OR s_name LIKE 'd%');
```

s_id	Drive_id	T_id	s_name	CGPA	s_branch	s_dob
1	1	1	Alice	8.50	Computer	2000-05-15
2	2	2	David	7.80	IT	1999-07-20
3	3	3	Ankit	6.50	Computer	2001-01-10
4	1	1	Diana	9.00	IT	2000-12-25
7	1	1	Amanda	7.50	IT	2002-08-05
8	2	2	Danielle	9.20	Computer	1999-09-09
9	3	3	Andrew	7.00	IT	2000-06-17
10	1	1	Derek	6.80	Computer	2001-04-14

8 rows in set (0.00 sec)

3. List the number of different companies.(use of distinct)

```
SELECT COUNT(DISTINCT Pcompany_name) AS distinct_placement_companies
FROM PlacementDrive;
+-----------------------------+
| distinct_placement_companies |
+-----------------------------+
|                           3 |
+-----------------------------+
1 row in set (0.01 sec)

SELECT COUNT(DISTINCT Tcompany_name) AS distinct_training_companies
FROM Training;
+----------------------------+
| distinct_training_companies |
+----------------------------+
|                          3 |
+----------------------------+
1 row in set (0.00 sec)
```

4. Give 15% increase in fee of the Training whose joining year is 2019.

```
SELECT * FROM Training WHERE T_year = 2019;
+------+---------------+----------+--------+
| T_id | Tcompany_name | T_Fee    | T_year |
+------+---------------+----------+--------+
|    1 | TCS           | 20000.00 |   2019 |
|    3 | Wipro         | 18000.00 |   2019 |
+------+---------------+----------+--------+
2 rows in set (0.00 sec)


UPDATE Training
SET T_Fee = T_Fee * 1.15
WHERE T_year = 2019;
Query OK, 2 rows affected (28.74 sec)
Rows matched: 2  Changed: 2  Warnings: 0

SELECT * FROM Training WHERE T_year = 2019;
+------+---------------+----------+--------+
| T_id | Tcompany_name | T_Fee    | T_year |
+------+---------------+----------+--------+
|    1 | TCS           | 23000.00 |   2019 |
|    3 | Wipro         | 20700.00 |   2019 |
+------+---------------+----------+--------+
2 rows in set (0.00 sec)
```

6. Find the names of companies belonging to pune or Mumbai

```
SELECT Pcompany_name FROM PlacementDrive
WHERE location IN ('Pune', 'Mumbai');
```

```
+---------------+
| Pcompany_name |
+---------------+
| Google        |
| Microsoft     |
+---------------+
2 rows in set (0.01 sec)
```

7. Find the student name who joined training in 1-1-2019 as well as in 1-1-2021

```
SELECT s_name
FROM Student
WHERE T_id IN (
   SELECT T_id FROM Training
   WHERE T_year IN (2019, 2021)
);
```

```
+----------+
| s_name   |
+----------+
| Alice    |
| Diana    |
| Amanda   |
| Derek    |
| David    |
| Bob      |
| Danielle |
| Ankit    |
| Charlie  |
| Andrew   |
+----------+
10 rows in set (6.18 sec)
```

8. Find the student name having maximum CGPA score and names of students having CGPA score between 7 to 9 .

```
SELECT s_name, CGPA FROM Student
WHERE CGPA = (SELECT MAX(CGPA) FROM Student);
```

```
+----------+------+
| s_name   | CGPA |
+----------+------+
| Danielle | 9.20 |
+----------+------+
1 row in set (0.00 sec)
```

```
SELECT s_name, CGPA FROM Student
WHERE CGPA BETWEEN 7 AND 9;
+---------+------+
| s_name  | CGPA |
+---------+------+
| Alice   | 8.50 |
| David   | 7.80 |
| Diana   | 9.00 |
| Bob     | 7.20 |
| Charlie | 8.00 |
| Amanda  | 7.50 |
| Andrew  | 7.00 |
+---------+------+
7 rows in set (5.12 sec)
```

9. Display all Student name with T_id with decreasing order of Fees

```
SELECT s.T_id, s.s_name,t.T_Fee
FROM Student s, Training t
WHERE s.T_id = t.T_id
ORDER BY t.T_Fee DESC;
```

```
+------+----------+----------+
| T_id | s_name   | T_Fee    |
+------+----------+----------+
|    2 | David    | 25000.00 |
|    2 | Bob      | 25000.00 |
|    2 | Danielle | 25000.00 |
|    1 | Alice    | 20000.00 |
|    1 | Diana    | 20000.00 |
|    1 | Amanda   | 20000.00 |
|    1 | Derek    | 20000.00 |
|    3 | Ankit    | 18000.00 |
|    3 | Charlie  | 18000.00 |
|    3 | Andrew   | 18000.00 |
+------+----------+----------+
10 rows in set (0.00 sec)
```

10. Display PCompany name, S_name ,location and Package with Package 30K, 40K and 50k

```
SELECT s.s_name, p.Pcompany_name, p.location, p.package
FROM Student s, PlacementDrive p
WHERE p.Drive_id = s.Drive_id
AND p.package IN (30000, 40000, 50000);
```

```
+----------+---------------+-----------+---------+
| s_name   | Pcompany_name | location  | package |
+----------+---------------+-----------+---------+
| Alice    | Google        | Pune      |   50000 |
| Diana    | Google        | Pune      |   50000 |
| Amanda   | Google        | Pune      |   50000 |
| Derek    | Google        | Pune      |   50000 |
| David    | Microsoft     | Mumbai    |   40000 |
| Bob      | Microsoft     | Mumbai    |   40000 |
| Danielle | Microsoft     | Mumbai    |   40000 |
| Ankit    | Amazon        | Bangalore |   30000 |
| Charlie  | Amazon        | Bangalore |   30000 |
| Andrew   | Amazon        | Bangalore |   30000 |
+----------+---------------+-----------+---------+
10 rows in set (0.00 sec)
```

ON DELETE CASCADE

```
SELECT * FROM Student;
```

```
+------+----------+------+----------+------+------------+------------+
| s_id | Drive_id | T_id | s_name   | CGPA | s_branch   | s_dob      |
+------+----------+------+----------+------+------------+------------+
|    1 |        1 |    1 | Alice    | 8.50 | Computer   | 2000-05-15 |
|    2 |        2 |    2 | David    | 7.80 | IT         | 1999-07-20 |
|    3 |        3 |    3 | Ankit    | 6.50 | Computer   | 2001-01-10 |
|    4 |        1 |    1 | Diana    | 9.00 | IT         | 2000-12-25 |
|    5 |        2 |    2 | Bob      | 7.20 | Computer   | 2001-03-30 |
|    6 |        3 |    3 | Charlie  | 8.00 | Mechanical | 1998-11-11 |
|    7 |        1 |    1 | Amanda   | 7.50 | IT         | 2002-08-05 |
|    8 |        2 |    2 | Danielle | 9.20 | Computer   | 1999-09-09 |
|    9 |        3 |    3 | Andrew   | 7.00 | IT         | 2000-06-17 |
|   10 |        1 |    1 | Derek    | 6.80 | Computer   | 2001-04-14 |
+------+----------+------+----------+------+------------+------------+
10 rows in set (0.00 sec)
```

PlacementDrive Table:

```
DELETE FROM PlacementDrive where Drive_id = 3;
```

Query OK, 1 row affected (0.17 sec)

SELECT * FROM PlacementDrive;

Drive_id	Pcompany_name	package	location
1	Google	50000	Pune
2	Microsoft	40000	Mumbai

2 rows in set (0.00 sec)

SELECT * FROM Student;

s_id	Drive_id	T_id	s_name	CGPA	s_branch	s_dob
1	1	1	Alice	8.50	Computer	2000-05-15
2	2	2	David	7.80	IT	1999-07-20
4	1	1	Diana	9.00	IT	2000-12-25
5	2	2	Bob	7.20	Computer	2001-03-30
7	1	1	Amanda	7.50	IT	2002-08-05
8	2	2	Danielle	9.20	Computer	1999-09-09
10	1	1	Derek	6.80	Computer	2001-04-14

7 rows in set (0.00 sec)

Training Table:

select * from Training;

T_id	Tcompany_name	T_Fee	T_year
1	TCS	20000.00	2019
2	Infosys	25000.00	2021
3	Wipro	18000.00	2019

3 rows in set (0.00 sec)

mysql> DELETE FROM Training where T_id = 2;
Query OK, 1 row affected (0.54 sec)

T_id	Tcompany_name	T_Fee	T_year
1	TCS	20000.00	2019
3	Wipro	18000.00	2019

2 rows in set (0.00 sec)

SELECT * FROM Student;

```
+------+----------+------+--------+------+----------+------------+
| s_id | Drive_id | T_id | s_name | CGPA | s_branch | s_dob      |
+------+----------+------+--------+------+----------+------------+
|    1 |        1 |    1 | Alice  | 8.50 | Computer | 2000-05-15 |
|    4 |        1 |    1 | Diana  | 9.00 | IT       | 2000-12-25 |
|    7 |        1 |    1 | Amanda | 7.50 | IT       | 2002-08-05 |
|   10 |        1 |    1 | Derek  | 6.80 | Computer | 2001-04-14 |
+------+----------+------+--------+------+----------+------------+
```

4 rows in set (0.00 sec)