CS457L- Database Technologies Lab

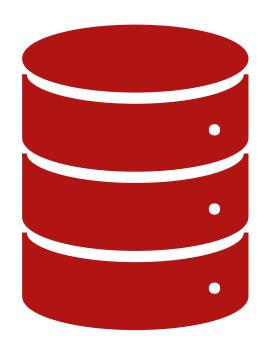# Database Design of Student Union of University

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Overview

- Overview of Database tables

- Basic SQL queries

- Intermediate queries

- Advance level queries

- Questions?

Overview of Table

Query: SELECT * FROM STUDENT_UNION;

Output:

```
MariaDB [19619pn]> SELECT * FROM STUDENT_UNION;
+-------------------+------------------------------------------+
| SUname            | SUlocation                               |
+-------------------+------------------------------------------+
| NPU STUDENT UNION | 47671 Westinghouse Dr, Fremont, CA 94539 |
+-------------------+------------------------------------------+
```

Query: SELECT * FROM OFFICER;

Output:

```
MariaDB [19619pn]> SELECT * FROM OFFICER;
+-----------+-----------+----------+--------------------------------+------------+
| SSN       | FRISTNAME | LASTNAME | POSITION                       | DATE_JOIN  |
+-----------+-----------+----------+--------------------------------+------------+
| 123456789 | JIM       | CARRY    | PRESIDENT                      | 01-01-2020 |
| 222333444 | ROBERT    | LOUIS    | VICE-PRESIDENT                 | 02-02-2020 |
| 333444555 | MATTHEW   | MATT     | DEPUTYU PRESIDENT EDUCATION    | 22-03-2019 |
| 444555666 | VINOD     | DATTA    | PRESIDENT MEDIA AND COMMUNICATION | 01-10-2018 |
+-----------+-----------+----------+--------------------------------+------------+
```

Overview of Table

Query: SELECT * FROM SPORT_CLUB;

Output:

```
MariaDB [19619pn]> SELECT * FROM SPORT_CLUB;
+---------------------------+----------------------------------+--------------+
| CLUB_NAME                 | SClocation                       | EXPERTISE    |
+---------------------------+----------------------------------+--------------+
| LEICESTER CRICKET CLUB    | 1, BELGRAVE AV, LEICESTER        | CRICKET      |
| MANCHESTER FOOT CLUB      | 23, GRAND AVENUE, MANCHESTER     | FOOTBALL     |
| FREMONT TABLE-TENNIS CLUB | 200, WESTINGHOUSE DR, FREMONT    | TABLE-TENNIS |
+---------------------------+----------------------------------+--------------+
```

Query: SELECT * FROM ADVISOR;

Output:

```
MariaDB [19619pn]> SELECT * FROM ADVISOR;
+------------+-----------+----------+-----------+------------+------------------+
| ADVISOR_ID | FIRSTNAME | LASTNAME | SSN       | DATE_JOIN  | EXPERTISE        |
+------------+-----------+----------+-----------+------------+------------------+
|      12345 | MARTIN    | SHAW     | 123456789 | 01-01-2020 | COURSE SELECTION |
|      22233 | JOHN      | JOHNSON  | 223344234 | 20-02-2018 | IMMIGRATION      |
|      33344 | RACHEAL   | SAMSUNG  | 334455345 | 18-04-2021 | FINANCE          |
|      44455 | SANDY     | FLAMINGO | 445566456 | 06-07-2018 | PRIVATE HOUSING  |
+------------+-----------+----------+-----------+------------+------------------+
```

Overview of Table

Query: SELECT * FROM STUDENT;

Output:

```
MariaDB [19619pn]> SELECT * FROM STUDENT;
+------------+-----------+----------+------------+------------------+-------+------------+
| STUDENT_ID | FIRSTNAME | LASTNAME | DOB        | ADDRESS          | MAJOR | ADVISOR_ID |
+------------+-----------+----------+------------+------------------+-------+------------+
|          1 | NISARG    | PATEL    | 25-11-1997 | 1 ADOBE DR       | MSCS  |      12345 |
|          2 | SMITH     | BROWN    | 01-12-1999 | 2, BEACON AVENUE | MSCS  |      22233 |
|          3 | PETER     | PAN      | 22-08-2002 | 003, FREMONT BLVD| BSCS  |      33344 |
|          4 | JACK      | RYAN     | 05-03-1996 | 45, WALNUT AVENUE| MSEE  |      44455 |
+------------+-----------+----------+------------+------------------+-------+------------+
```

Query: SELECT * FROM ACTIVITY;

Output:

```
MariaDB [19619pn]> SELECT * FROM ACTIVITY;
+----------------+------------+----------------------------+-----------------+------------+
| ACTIVITY_NAME  | DATE       | VENUE                      | PERSON_INCHARGE | STUDENT_ID |
+----------------+------------+----------------------------+-----------------+------------+
| WORKSHOP       | 01-11-2021 | LECTURE ROOM 3.3           | JUDY WENG       |          1 |
| VOLUNTEER WORK | 22-05-2021 | CATHOLIC CHURCH, FREMONT   | JASON JAIS      |          2 |
| HOLLY EVENT    | 30-06-2021 | MISSION FALLS PARK, FREMONT| MARIAM GAZVINI  |          3 |
| GAME NIGHT     | 10-12-2021 | ONLINE ZOOM                | JACK SHAW       |          4 |
+----------------+------------+----------------------------+-----------------+------------+
```

Overview of Table

Query: SELECT * FROM SOCIETY;

Output:


```
MariaDB [19619pn]> SELECT * FROM SOCIETY;
+-------------------+------+
| SOCIETY_NAME      | R_ID |
+-------------------+------+
| BOLLYWOOD DANCE   |    2 |
| APP DEVELOPMENT   |    3 |
| YOGA SOCIETY      |    1 |
| CATHOLIC SOCIETY  |    2 |
| GAME SOCIETY      |    3 |
+-------------------+------+
```

Note: R_ID: (Representative_ID)

Basic SQL query

Q: Retrieve the list of students who doing major in MSCS.

Query: SELECT * FROM STUDENT

   -> WHERE MAJOR = "MSCS";

Output:

```
MariaDB [19619pn]> SELECT * FROM STUDENT
    -> WHERE MAJOR = "MSCS";
+------------+-----------+----------+------------+-----------------+-------+------------+
| STUDENT_ID | FIRSTNAME | LASTNAME | DOB        | ADDRESS         | MAJOR | ADVISOR_ID |
+------------+-----------+----------+------------+-----------------+-------+------------+
|          1 | NISARG    | PATEL    | 25-11-1997 | 1 ADOBE DR      | MSCS  |      12345 |
|          2 | SMITH     | BROWN    | 01-12-1999 | 2, BEACON AVENUE | MSCS |      22233 |
+------------+-----------+----------+------------+-----------------+-------+------------+
```

Basic SQL query

Q: Retrieve the society names in ascending order who represented by representative_ID = 2.

Query: SELECT SOCIETY_NAME

    -> FROM SOCIETY

    -> WHERE R_ID = 2

    -> ORDER BY SOCIETY_NAME;

Output:

```
+------------------------+
|  SOCIETY_NAME          |
+------------------------+
|  BOLLYWOOD DANCE       |
|  CATHOLIC SOCIETY      |
+------------------------+
```

Basic SQL query

Q: How many advisor's working in the student union?

Query: SELECT COUNT(ADVISOR_ID) AS TOTAL_ADVISOR

   -> FROM ADVISOR;

Output:

```
MariaDB [19619pn]> SELECT COUNT(ADVISOR_ID) AS TOTAL_ADVISOR
    -> FROM ADVISOR;
+---------------+
| TOTAL_ADVISOR |
+---------------+
|             4 |
+---------------+
```

Intermediate SQL query

Q: Retrieve student list who attended in "WORKSHOP" activity?

    Query: SELECT * FROM STUDENT

       -> WHERE STUDENT_ID IN

       -> (SELECT STUDENT_ID

       -> FROM ACTIVITY

       -> WHERE ACTIVITY_NAME = "WORKSHOP");

Output:

```
+------------+-----------+----------+------------+------------+--------+------------+
| STUDENT_ID | FIRSTNAME | LASTNAME | DOB        | ADDRESS    | MAJOR  | ADVISOR_ID |
+------------+-----------+----------+------------+------------+--------+------------+
|          1 | NISARG    | PATEL    | 25-11-1997 | 1 ADOBE DR | MSCS   |      12345 |
+------------+-----------+----------+------------+------------+--------+------------+
```

Intermediate SQL query

Q: Retrieve list of advisor who already advised students in any category?

Query: SELECT * FROM ADVISOR AS A

-> WHERE EXISTS

-> (SELECT * FROM STUDENT AS S

-> WHERE S.ADVISOR_ID = A.ADVISOR_ID);

Output:

```
+------------+----------+----------+-----------+------------+-----------------+
| ADVISOR_ID | FIRSTNAME | LASTNAME | SSN       | DATE_JOIN  | EXPERTISE       |
+------------+----------+----------+-----------+------------+-----------------+
|      12345 | MARTIN   | SHAW     | 123456789 | 01-01-2020 | COURSE SELECTION |
|      22233 | JOHN     | JOHNSON  | 223344234 | 20-02-2018 | IMMIGRATION     |
|      33344 | RACHEAL  | SAMSUNG  | 334455345 | 18-04-2021 | FINANCE         |
|      44455 | SANDY    | FLAMINGO | 445566456 | 06-07-2018 | PRIVATE HOUSING |
+------------+----------+----------+-----------+------------+-----------------+
```

Intermediate SQL query

Q: Retrieve student list who takes part in activity but not enrolled in any society?

    Query: SELECT * FROM STUDENT S

        -> WHERE EXISTS

        -> (SELECT STUDENT_ID

        -> FROM ACTIVITY A

        -> WHERE S.STUDENT_ID=A.STUDENT_ID

        -> AND A.STUDENT_ID NOT IN

        -> (SELECT R_ID FROM SOCIETY

        -> WHERE A.STUDENT_ID = SOCIETY.R_ID));

    Output:

```
+------------+-----------+----------+------------+-------------------+-------+------------+
| STUDENT_ID | FIRSTNAME | LASTNAME | DOB        | ADDRESS           | MAJOR | ADVISOR_ID |
+------------+-----------+----------+------------+-------------------+-------+------------+
|          4 | JACK      | RYAN     | 05-03-1996 | 45, WALNUT AVENUE | MSEE  |      44455 |
+------------+-----------+----------+------------+-------------------+-------+------------+
```

Advance SQL query

Q: Retrieve list of student who enrolled in society and participate in activities

Query: SELECT S.FIRSTNAME, S.LASTNAME, S.MAJOR, SOC.SOCIETY_NAME

> -> FROM STUDENT S INNER JOIN ACTIVITY A

> -> ON S.STUDENT_ID = A.STUDENT_ID

> -> INNER JOIN SOCIETY SOC

> -> ON A.STUDENT_ID = SOC.R_ID;

Output:

```
+-----------+-----------+--------+------------------+
| FIRSTNAME | LASTNAME  | MAJOR  | SOCIETY_NAME     |
+-----------+-----------+--------+------------------+
| SMITH     | BROWN     | MSCS   | BOLLYWOOD DANCE  |
| PETER     | PAN       | BSCS   | APP DEVELOPMENT  |
| NISARG    | PATEL     | MSCS   | YOGA SOCIETY     |
| SMITH     | BROWN     | MSCS   | CATHOLIC SOCIETY |
| PETER     | PAN       | BSCS   | GAME SOCIETY     |
+-----------+-----------+--------+------------------+
```

Advance SQL query

Q: Retrieve activity and society name list where activity organized by belonging society?

Query: SELECT A.ACTIVITY_NAME, S.SOCIETY_NAME

-> FROM ACTIVITY A LEFT JOIN SOCIETY S

-> ON A.STUDENT_ID = S.R_ID;

Output:

```
+------------------+---------------------+
| ACTIVITY_NAME    | SOCIETY_NAME        |
+------------------+---------------------+
| VOLUNTEER WORK   | BOLLYWOOD DANCE     |
| HOLLY EVENT      | APP DEVELOPMENT     |
| WORKSHOP         | YOGA SOCIETY        |
| VOLUNTEER WORK   | CATHOLIC SOCIETY    |
| HOLLY EVENT      | GAME SOCIETY        |
| GAME NIGHT       | NULL                |
+------------------+---------------------+
```

Advance SQL query

Q: Retrieve list of advisor who already advised students in any category

Query: SELECT A.FIRSTNAME, A.LASTNAME, A.DATE_JOIN, A.EXPERTISE

-> FROM ADVISOR A RIGHT JOIN STUDENT S

-> USING(ADVISOR_ID);

Output:

```
+-----------+-----------+------------+------------------+
| FIRSTNAME | LASTNAME  | DATE_JOIN  | EXPERTISE        |
+-----------+-----------+------------+------------------+
| MARTIN    | SHAW      | 01-01-2020 | COURSE SELECTION |
| JOHN      | JOHNSON   | 20-02-2018 | IMMIGRATION      |
| RACHEAL   | SAMSUNG   | 18-04-2021 | FINANCE          |
| SANDY     | FLAMINGO  | 06-07-2018 | PRIVATE HOUSING  |
+-----------+-----------+------------+------------------+
```