

CSE302

Lab 0: Introducing Oracle Database

What is a Database?

- A database is a collection of interrelated data and a set of programs and tools to access and process the existing data.
- A Database is a collection of Tables.

What is a table?

- A **table** is a collection of **rows** and **columns**. Each **column** in a table has a column header that represents an **attribute**. Each **row** represents an object of a specific type.

Example: Student table

Student_id	Student_name	Student_gender	Student_credits	Student_cgpa	Student_dob	Student_phone
2022-1-60-001	Alice	F	100	3.5	04-03-2002	01711908876
2022-1-60-002	Bob	M	80	3.25	12-21-2003	01832907876
2022-1-60-003	Carol	F	35	3.90	01-01-2004	01911908876
2022-1-60-004	Danny	M	40	3.65	10-30-2004	01540908876

Column header/attribute

Row
/ a
stud
ent

```
class Student{  
    private String id;  
    private String name;  
    private double cgpa;  
    .....  
    .....  
}; // Student Class
```

```
Student s1 = new Student ( ..... );
```

SQL commands to learn today

- How to create a table?
- How to drop a table (deleting both data and schema/design)?
- How to insert records in a table?
- How to update existing value in a table?
- How to delete existing records from a table?
- How to find some specific records based on queries?

Create a table

```
CREATE TABLE Student (  
    student_id      VARCHAR2(13),  
    student_name    VARCHAR2(20),  
    student_gender   CHAR(1),  
    student_credits  NUMBER,  
    student_cgpa     NUMBER,  
    student_dob      DATE,  
    student_phone    CHAR(11)  
);
```

Insert records in a table

```
INSERT INTO Student VALUES ('2022-1-60-001', 'Alice' , 'F' , 100, 3.5, '04-03-2002', '01711908876' );
```

```
INSERT INTO Student VALUES ('2022-1-60-002', 'Bob' , 'M' , 90, 3.25, '10-02-2003', '01899908876' );
```

```
INSERT INTO Student VALUES ('2022-1-60-003', 'Carol' , 'F' , 45, 3.95, '01-03-2004', '01543908876' );
```

```
INSERT INTO Student VALUES ('2022-1-60-004', 'Danny' , 'M' , 48, 3.15, '07-30-2004', '01845908876' );
```

Displaying all records in a table

```
SELECT *  
FROM Student;
```


Update and Delete records

-- deleting rows from a table

DELETE FROM Student

WHERE student_id = '2022-1-60-001';

-- updating a value in a table

UPDATE Student

SET student_credits = 100

WHERE student_id = '2022-1-60-002';

Select Queries

-- Find information of all female students

```
SELECT *
```

```
FROM Student
```

```
WHERE student_gender = 'F';
```

-- Find student id, name and cgpa of all female students

```
SELECT student_id, student_name, student_cgpa
```

```
FROM Student
```

```
WHERE student_gender = 'F';
```

-- Find student id, name and cgpa of female students who have cgpa more than 3.9

```
SELECT student_id, student_name, student_cgpa
```

```
FROM Student
```

```
WHERE student_gender = 'F' AND student_cgpa > 3.9;
```

Select Queries

-- Find students information who have CGPA not more than 3.5

```
SELECT *
```

```
FROM Student
```

```
WHERE student_cgpa <= 3.5;
```

```
SELECT *
```

```
FROM Student
```

```
WHERE NOT(student_cgpa > 3.5);
```

Sort the result of a query

-- displaying all records in a table in a sorted order based on their student id

```
SELECT *
```

```
FROM Student
```

```
ORDER BY student_id;
```

-- displaying all records in a table in a sorted order (descending) based on their cgpa

```
SELECT *
```

```
FROM Student
```

```
ORDER BY student_cgpa DESC;
```