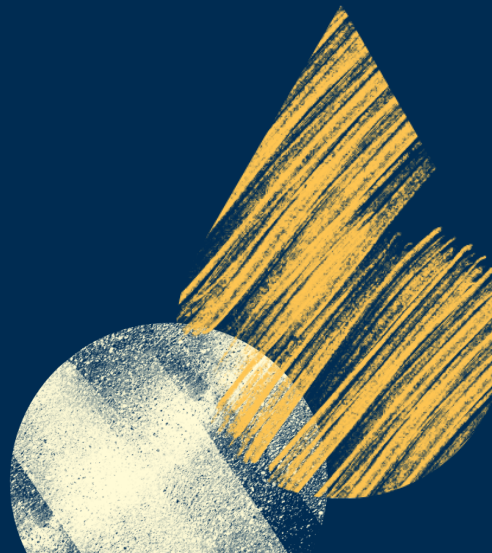
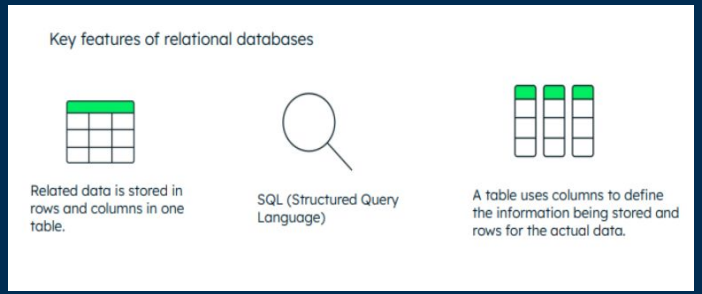
Intro to SQL

ISS Lab 4



Types of Databases

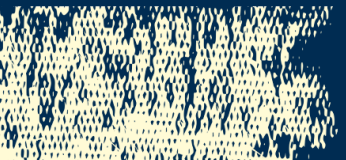
Relational Database



Non-Relational Database

What is SQL?

- Structured Query Language
- Relational database queries
- Tool for organizing, managing, and retrieving archived data from a computer database.
- 2 categories of SQL commands:
  - Data Definition Language (DDL)
  - Data Manipulation Language (DML)



SQL Categories

DDL

Commands used to create the database structure

Command
1. CREATE Creates a new table, a view of a table, or other object in the database.
2. ALTER Modifies an existing database object, such as a table
DROP Deletes an entire table, a view of a table, or other objects in the database.

DML

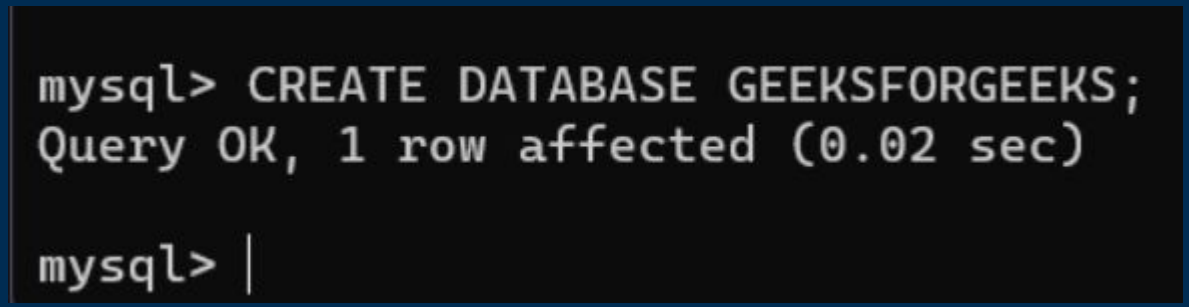
A relational database can be updated with new data using data manipulation language

Command
1. SELECT Retrieves certain records from one or more tables.
2. INSERT Creates a record.
3. UPDATE Modifies records.
4. DELETE Deletes records.

Creating the database

- Query:
  - `CREATE DATABASE GeeksForGeeks;`

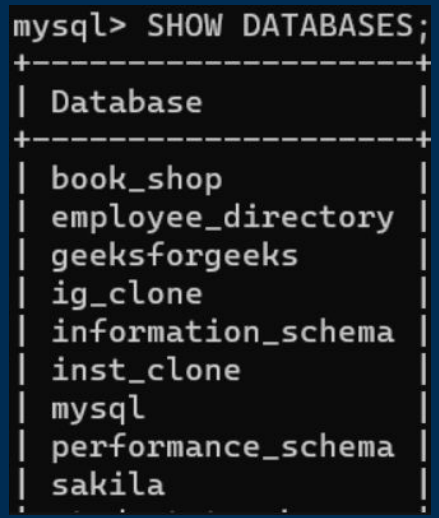
- Output:



Verifying the database

- Query:
  - `SHOW DATABASES;`

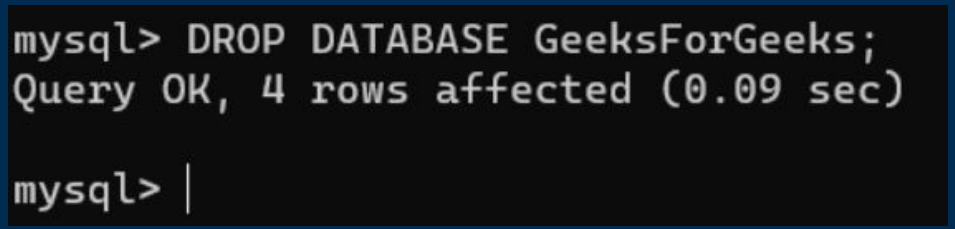
- Output:



Deleting the database

- Query:
  - `DROP DATABASE GeeksForGeeks;`

- Output:



Using the database

- Query:
  - `USE GEEKSFORGEEKS;`

- Output:

```
mysql> USE GEEKSFORGEEKS;
Database changed
mysql>
```

Creating a Table

- Query:
  - ```
    CREATE TABLE EMPLOYEE(
        EMP_ID INT,
        NAME VARCHAR(20),
        DOB DATE,
        AGE INT,
        SALARY DECIMAL(7,2));
    ```

- Output:

```
mysql> CREATE TABLE EMPLOYEE(
    -> EMP_ID INT,
    -> NAME VARCHAR(20),
    -> DOB DATE,
    -> AGE INT,
    -> SALARY DECIMAL(7,2));
Query OK, 0 rows affected (0.02 sec)

mysql>
```
```

Adding Data into a Table

- Query:

```
INSERT INTO categories
(
    CategoryID, CategoryName
)
VALUES
(
    1, 'Beverages'
),
(
    2, 'Condiments', 'Sweet and
Savoury sauces'
);
```

- Output:

```
mysql> CREATE TABLE EMPLOYEE(
    -> EMP_ID INT,
    -> NAME VARCHAR(20),
    -> DOB DATE,
    -> AGE INT,
    -> SALARY DECIMAL(7,2));
Query OK, 0 rows affected (0.02 sec)

mysql>
```

View the Final Table

- Query:

```
SELECT * FROM  categories; (asterisks represent all attributes of the table)
```

- Output:

	CategoryID	CategoryName	ItemDescription
1	1	Beverages	SoftDrink
2	2	Condiments	Sweet and Savoury sauces

SELECT Query

CustomerID	CustomerName	LastName	Country	Age	Phone
1	Shubham	Thakur	India	23	xxxxxxxxxx
2	Aman	Chopra	Australia	21	xxxxxxxxxx
3	Naveen	Tulasi	Sri lanka	24	xxxxxxxxxx
4	Aditya	Arpan	Austria	21	xxxxxxxxxx
5	Nishant. Salchichas S.A.	Jain	Spain	22	xxxxxxxxxx

- Query:

```
SELECT CustomerName, LastName FROM Customer;
```

- Output:

CustomerName	LastName
Shubham	Thakur
Aman	Chopra
Naveen	Tulasi
Aditya	Arpan
Nishant. Salchichas S.A.	Jain

SELECT Query with WHERE Clause

CustomerID	CustomerName	LastName	Country	Age	Phone
1	Shubham	Thakur	India	23	xxxxxxxxxx
2	Aman	Chopra	Australia	21	xxxxxxxxxx
3	Naveen	Tulasi	Sri lanka	24	xxxxxxxxxx
4	Aditya	Arpan	Austria	21	xxxxxxxxxx
5	Nishant. Salchichas S.A.	Jain	Spain	22	xxxxxxxxxx

- Query:

```
SELECT CustomerName

FROM Customer

WHERE Age = '21';
```

- Output:

CustomerName
Aman
Aditya

SELECT Query with GROUP BY Clause

CustomerID	CustomerName	LastName	Country	Age	Phone
1	Shubham	Thakur	India	23	xxxxxxxxxx
2	Aman	Chopra	Australia	21	xxxxxxxxxx
3	Naveen	Tulasi	Sri lanka	24	xxxxxxxxxx
4	Aditya	Arpan	Austria	21	xxxxxxxxxx
5	Nishant. Salchichas S.A.	Jain	Spain	22	xxxxxxxxxx

- Query:

```
SELECT COUNT (item),
Customer_id FROM Orders
GROUP BY customer_id;
```

- Output:

COUNT (item)	customer_id
1	4
1	4
1	3
1	1
1	2

SELECT Query with HAVING Clause

	EmployeeId	Name	Gender	Salary	Department	Experience
1	1	Rachit	M	50000	Engineering	6 year
2	2	Shobit	M	37000	HR	3 year
3	3	Isha	F	56000	Sales	7 year
4	4	Devi	F	43000	Management	4 year
5	5	Akhil	M	90000	Engineering	15 year

- Query:

```
SELECT Department, sum(Salary) as Salary

FROM employee

GROUP BY department

HAVING SUM(Salary) >= 50000;
```

- Output:

	Department	Salary
1	Engineering	140000
2	Sales	56000

SELECT Query with ORDER BY Clause

- Query:

```
SELECT * FROM Customer

ORDER BY Age DESC;
```

- Output:

CustomerID	CustomerName	LastName	Country	Age	Phone
3	Naveen	Tulasi	Sri lanka	24	xxxxxxxxxx
1	Shubham	Thakur	India	23	xxxxxxxxxx
5	Nishant. Salchichas S.A.	Jain	Spain	22	xxxxxxxxxx
2	Aman	Chopra	Australia	21	xxxxxxxxxx
4	Aditya	Arpan	Austria	21	xxxxxxxxxx

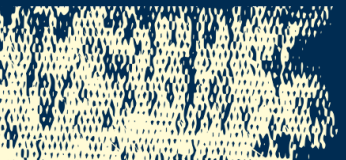
SQL Operators

- AND
- OR
- LIKE
- IN
- NOT
- NOT EQUAL
- IS NULL
- UNION
- EXCEPT
- INTERSECT

Example:

```
SELECT * FROM table_name
WHERE column_name IS NULL;
```

```
SELECT SupplierID, Name, Address
FROM Suppliers
WHERE Name LIKE 'Ca%';
```



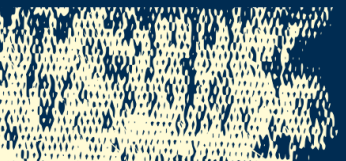
SQL Aggregate Functions

- COUNT()
- SUM()
- MIN()
- MAX()
- AVG()

Example:

```
SELECT SUM(Salary)
FROM GeeksTab;
```

```
SELECT AVG(Salary)
FROM GeeksTab;
```



Lab Assignment

(Last one yay)

Submission Format: <RollNo>.pdf on Moodle.
The pdf should contain queries and solutions as mentioned in the assignment sheet.

Deadline: Today 11:59 PM.