***DATA ANALYSIS***

***SQL COURSE***

***In 30 Days***

***Check the dashboard for under the course duration***



Go for the links mentioned in the last page for more details about the project.

Access the github link for PowerBi dash board and Excel file.

**Introduction of SQL in data analytics**

SQL is important in data analytics because it allows analysts to efficiently retrieve, manipulate, and analyze data stored in relational databases. It provides a standardized language for tasks such as filtering, sorting, aggregating, joining tables, and managing database structures, contributing to effective data analysis, cleaning, and transformation. SQL is widely compatible, scalable, and integrates with various tools, making it a fundamental skill for professionals in the field.

**SQL:**

SQL stands for Structured Query Language. It is a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS).

SQL is the most common language for extracting and organizing data that is stored in a relational database. It facilitates retrieving specific information from databases that are further used for analysis. SQL is a critical tool for data professionals and is undoubtedly the most important language for getting a job in the field of data analysis or data sciences.

**Basic SQL commands**

* Create Database
* Create table
* Drop Database
* Drop Table
* Sql constraints
* Primary key
* Foreign key
* Not null
* Unique
* Check
* Default
* Insert
* Select
* From
* Alter
* Update
* Delete

**Intermediate SQL commands**

* Where clause
* Operator
* Functions in SQL
* Aggregate function
* Group by and having clause
* Distinct clause
* Order by
* All and any clause
* Top clause
* Union and union all clause
* Intersection clause
* Aliases

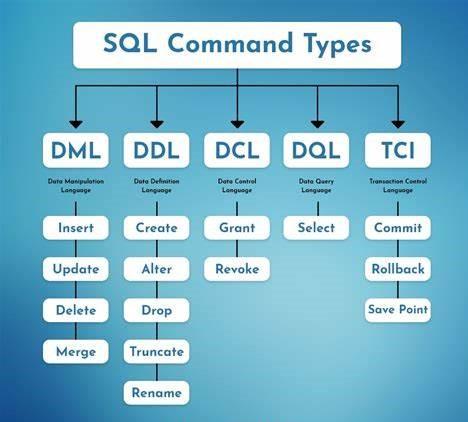
**Advanced SQL commands**

* SQL joins
* Pattern matching
* Views
* CET
* Case Expression
* Advance functions
* Stored procedure
* Trigger in SQL

**Types of SQL commands**

SQL commands mainly categories in five types

1. DDL – Data Definition Language
2. DQL – Data Query Language
3. DML – Data Manipulation Language
4. DCL – Data Control Language
5. TCL – Transaction Control Language



For more information click on [link](https://www.codingninjas.com/studio/library/dcl-commands-in-sql#:~:text=of%20the%20same.-,What%20are%20SQL%20Commands%3F,-SQL%20(Structured%20Query)

**Understanding SQL Commands**

**Create database:-** To create a new database in SQL we use the CREATE DATABASE command and then we mention the name of the database.

Syntax: CREATE DATABASE Ipsita;

**Drop database:-** Delete the database

Syntax: DROP DATABASE Ipsita;

**Create table:-**To create a new table in SQL we use the CREATE TABLE command

Syntax: CREATE TABLE Ips (

id int,

name varchar(50),

address text,

email varchar(50),

phone varchar(10));

**SQL Constraints**

*Not Null:-* column can’t have any null value

*Primary key:-* combination of not null and unique values

*Foreign key:-* Prevents actions that would destroy links between tables

*Unique :-* In a column all values are different

*Check:-* Ensures that the values in a column satisfies a specific condition

Default:- Sets a default value for a column if no value is specified

[Link](https://www.codingninjas.com/studio/library/constraints-in-sql-server) for learn more about the SQL constraints

**Insert:-** used to add new record in a table

Syntax:- INSERT INTO Ips values(value1,value2,......);

[**Select**](https://www.codingninjas.com/studio/library/select-query) **clause:-** Retrieve or fetch data from a database.

From clause:- From which table in the database do you have to select data?

**Alter:-** The ALTER TABLE statement is used to add, delete, or modify columns in an existing table.

The ALTER TABLE statement is also used to add and drop various constraints on an existing table.

Syntax:- ALTER TABLE table\_name

ADD column\_name datatype;

**Update:-** The UPDATE statement is used to modify the existing records in a table.

Syntax:- UPDATE table\_name

SET column1 = value1, column2 = value2, ...

WHERE condition;

[**Delete**](https://www.codingninjas.com/studio/library/delete-duplicate-records-in-sql)**:-** Remove records from a database table based on certain conditions.

Simple questions

1. Explain the difference between SELECT and UPDATE statements in SQL.
2. What is a primary key, and why is it important in a database table?
3. How can you delete all records from a table without deleting the table structure?
4. Explain the difference between CHAR and VARCHAR data types.
5. What is normalization in the context of relational databases?

**Practice** [**questio**](https://github.com/arpijain28/Arpita_dataAnalyticsintern_Assignment/blob/main/basic%20sql%20query.pdf)**ns for basic SQL commands :** [**link**](https://github.com/Ipsita-Das-13/IpsitaDas_DataAnalytics_Intern_Assignment/blob/main/basic%20sql%20query.pdf)

**Intermediate SQL commands**

**Where clause:-** It the used for filter the data with a specific condition

Syntax:- *SELECT* ***column1,column2*** *FROM table\_name WHERE column\_name operator value;*

[Operator used with where clause](https://docs.google.com/spreadsheets/u/1/d/14M2RKeTtA_mdtKOF_4ZEwSAAVu-QEmg7uMXDqNTlvZo/edit)

**Functions in SQL:-**

**Aggregate function:-** These functions are used to do operations from the values of the column and a single value is returned.

* AVG()
* COUNT()
* MIN()
* MAX()
* SUM()

***Scalar functions:-***these functions are based on user input, these too return a single value.

* UCASE()
* LCASE()
* MID()
* LEN()
* ROUND()
* NOW()
* FORMAT()

**Group by:-** The GROUP BY clause is often used with aggregate functions (MAX, SUM, AVG) to group the results by one or more columns.

Syntax:- **select count(salary) from Ipsita**

**Group by salary;**

**Having clause:-** Having Clause is basically like the aggregate function with the GROUP BY clause.

Syntax:- SELECT COUNT (SALARIES) AS COUNT\_SALARIES, EMPLOYEES

FROM EMPLOYEES

GROUP BY SALARIES

HAVING COUNT(SALARIES) > 1;

**Distinct clause:-** distinct used for select only different data

Syntax:- select distinct column\_name from table\_name;

**Order by:-** set the data in ascending and descending format

Syntax:- select \* from table\_name

Order by column\_name;

**All and any clause:-** they are logical operators in SQL and return boolean values as a result

Syntax:- SELECT ALL column\_name

FROM table\_name

WHERE TRUE;

**Top clause:-** used for fetching the top records in large dataset

Syntax:- select top 2 \* from table\_name;

**Union and union all clause:-**The Union Clause is used to combine two separate select statements and produce the result set as a union of both select statements.

Syntax:- select column\_name from table1

UNION

select column\_name from table2;

**Union all:-** The resultant set consists of distinct values.

Syntax:- select column\_name from table1

UNION ALL

select column\_name from table2;

**Intersection clause:-** provide the common values.

Syntax:- select column\_name from table1

INTERSECT

select column\_name from table2;

**Aliases:-** Aliases are the temporary names given to tables or columns for the purpose of a particular [SQL](https://www.geeksforgeeks.org/sql-tutorial/) query.

Syntax:- select \* from as Ip;

Practice Question for intermediate sql commands [link](https://github.com/Ipsita-Das-13/IpsitaDas_DataAnalytics_Intern_Assignment/blob/main/Intermediate%20SQL%20query.pdf)

**Advanced SQL commands**

**SQL joins:-** **SQL Join** statement is used to combine data or rows from two or more tables based on a common field between them. Different types of Joins are as follows:

* *INNER JOIN*
* *LEFT JOIN*
* *RIGHT JOIN*
* *FULL JOIN*
* *NATURAL JOIN*

For complete details of [join](https://learnsql.com/blog/sql-join-examples-with-explanations/)

[CTE](https://learnsql.com/blog/what-is-common-table-expression/)(common table expression)

[Views](https://learnsql.com/blog/sql-view/)

[Case Expression](https://learnsql.com/blog/case-sql/)

[Stored procedure](https://learn.microsoft.com/en-us/sql/relational-databases/stored-procedures/create-a-stored-procedure?view=sql-server-ver16)

[Trigger in SQL](https://www.sqltutorial.org/sql-triggers/)

Practice question for advance SQL[link](https://github.com/Ipsita-Das-13/IpsitaDas_DataAnalytics_Intern_Assignment/blob/main/advance%20sql%20query.pdf)

After completing the course:-

***Solve codingNinjas SQL problems:*** [Click Here](https://www.bing.com/ck/a?!&&p=2866a985303e5a6eJmltdHM9MTcwNTEwNDAwMCZpZ3VpZD0yYTU5NmY0OC01YTBjLTY1MDQtMDQ1ZC03YzFlNWJmZTY0OWMmaW5zaWQ9NTI3NQ&ptn=3&ver=2&hsh=3&fclid=2a596f48-5a0c-6504-045d-7c1e5bfe649c&psq=code+ninja+sql+tutorial&u=a1aHR0cHM6Ly93d3cuY29kaW5nbmluamFzLmNvbS9zdHVkaW8vcHJvYmxlbS1saXN0cy90b3AtMTAwLXNxbC1wcm9ibGVtcw&ntb=1)

***Solve all interview questions:***[Top SQL interview Questions and Answers | Most Asked SQL Questions for Job interview](https://youtu.be/AZzTHWF7tEc?si=k5CdWdlkqcWc0ZP3)

***Group by interview question (learnsql.com website):*** [Click Here](https://learnsql.com/)

***Go to HackerRank & solve SQL, use filter Skills= SQL (Basic)-*** [Click Here](https://www.hackerrank.com/domains/sql?filters%5Bstatus%5D%5B%5D=unsolved&badge_type=sql)

***Go to LeetCode & solve SQL:***[Click Here](https://leetcode.com/studyplan/top-sql-50/)