**SQL Basics for Business Analysts**

Structured Query Language (SQL) is an essential tool for Business Analysts to retrieve, manipulate, and analyze data from databases. This document provides an introduction to SQL, covering fundamental concepts and queries.

**1. Introduction to SQL**

* SQL is used to communicate with relational databases.
* It allows users to retrieve, update, insert, and delete data.
* Common SQL databases include MySQL, PostgreSQL, SQL Server, and SQLite.

**2. Basic SQL Commands**

**a) SELECT Statement**

* Used to retrieve data from one or more tables.
* Example:
* SELECT first\_name, last\_name FROM employees;

**b) WHERE Clause**

* Filters records based on a condition.
* Example:
* SELECT \* FROM employees WHERE department = 'Sales';

**c) ORDER BY Clause**

* Sorts the result set in ascending or descending order.
* Example:
* SELECT \* FROM employees ORDER BY last\_name ASC;

**d) LIMIT Clause**

* Restricts the number of records returned.
* Example:
* SELECT \* FROM employees LIMIT 10;

**3. Working with Multiple Tables**

**a) JOINs**

* Used to combine rows from two or more tables.
* Types of JOINs:
  + INNER JOIN: Returns matching records from both tables.
  + LEFT JOIN: Returns all records from the left table and matching records from the right table.
  + RIGHT JOIN: Returns all records from the right table and matching records from the left table.
* Example (INNER JOIN):
* SELECT employees.first\_name, departments.department\_name
* FROM employees
* INNER JOIN departments ON employees.department\_id = departments.department\_id;

**4. Aggregations and Grouping**

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

* Used to perform calculations on a column.
* Example:
* SELECT department, COUNT(\*) AS employee\_count FROM employees GROUP BY department;

**b) HAVING Clause**

* Filters grouped results.
* Example:
* SELECT department, COUNT(\*) AS employee\_count FROM employees GROUP BY department HAVING COUNT(\*) > 5;

**5. Modifying Data**

**a) INSERT Statement**

* Adds new records to a table.
* Example:
* INSERT INTO employees (first\_name, last\_name, department) VALUES ('John', 'Doe', 'IT');

**b) UPDATE Statement**

* Modifies existing records.
* Example:
* UPDATE employees SET department = 'HR' WHERE last\_name = 'Doe';

**c) DELETE Statement**

* Removes records from a table.
* Example:
* DELETE FROM employees WHERE last\_name = 'Doe';

**6. Best Practices for SQL**

* Always use LIMIT when retrieving large datasets.
* Use WHERE conditions to filter data efficiently.
* Index frequently queried columns to improve performance.
* Use meaningful aliases for better readability.
* Avoid using SELECT \* unless necessary.

This document provides a foundation in SQL for Business Analysts. Mastering these concepts will help in efficiently querying and analyzing data for business decision-making.