# SQL Cheat Sheet

## 1. Database Basics

- **Database**: A structured collection of data.
- **Types of Databases**: Relational (SQL), NoSQL (e.g., MongoDB).

## 2. SQL

SQL (Structured Query Language) is used to communicate with a database.

## 3. Creating a Database

Syntax:

```
CREATE DATABASE database_name;
```

Example:

```
CREATE DATABASE school;
```

## 4. Creating a Table

Syntax:

```
CREATE TABLE table_name (
   column1 datatype constraint,
   column2 datatype constraint,
   ...
);
```

Example:

```
CREATE TABLE students (
   id INT PRIMARY KEY,
   name VARCHAR(50),
   age INT
);
```

## 5. SQL Data Types

- INT: Integer
- VARCHAR(size): String of variable length
- DATE: Date value (YYYY-MM-DD)
- FLOAT: Floating point number
- BOOLEAN: True/False

## 6. Types of SQL Commands

- **DDL (Data Definition Language)**: CREATE, ALTER, DROP
- **DML (Data Manipulation Language)**: SELECT, INSERT, UPDATE, DELETE
- **DCL (Data Control Language)**: GRANT, REVOKE
- **TCL (Transaction Control Language)**: COMMIT, ROLLBACK

## 7. Keys

- **Primary Key**: Uniquely identifies each record.
- **Foreign Key**: Links to a primary key in another table.

## 8. Constraints

- **NOT NULL**: Ensures a column cannot have a NULL value.
- **UNIQUE**: Ensures all values in a column are different.
- **CHECK**: Ensures a condition is met.
- **DEFAULT**: Sets a default value if no value is specified.

## 9. Insert Command

Syntax:

INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2, ...);

Example:

INSERT INTO students (id, name, age) VALUES (1, 'John', 20);

## 10. Select Command

Syntax:

SELECT column1, column2, ... FROM table_name WHERE condition;

Example:

SELECT name, age FROM students WHERE age > 18;

## 11. WHERE Clause

Syntax:

SELECT * FROM table_name WHERE condition;

Example:

SELECT * FROM students WHERE age = 20;

## 12. Operators

- **AND**: Combines multiple conditions (e.g., age > 18 AND name = 'John').
- **OR**: Satisfies at least one condition.
- **LIKE**: Pattern matching (e.g., name LIKE 'J%').

## 13. Aggregation Functions

- **COUNT()**: Counts rows.
- **SUM()**: Adds values.
- **AVG()**: Calculates average.
- **MIN()**: Finds minimum value.
- **MAX()**: Finds maximum value.

## 14. GROUP BY Clause

Syntax:

SELECT column, AGG_FUNCTION(column) FROM table_name GROUP BY column;

Example:

SELECT age, COUNT(*) FROM students GROUP BY age;

## 15. ORDER BY Clause

Syntax:

SELECT * FROM table_name ORDER BY column ASC|DESC;

Example:

SELECT * FROM students ORDER BY age DESC;