## 1. Create a Database

```
CREATE DATABASE company;
```

This command creates a new database called `company`.

## 2. Select Data

```
SELECT * FROM employees;
```

This command selects all columns and all rows from the `employees` table.

## 3. Where Clause

The `WHERE` clause filters records based on a condition.

```
SELECT * FROM employees WHERE age > 30;
```

This command selects employees whose age is greater than 30.

## 4. AND & OR Conditions

You can combine conditions using `AND` and `OR`.

```
SELECT * FROM employees WHERE age > 30 AND department = 'HR';
```

This command selects employees who are older than 30 and work in the 'HR' department.

```
SELECT * FROM employees WHERE age > 30 OR department = 'HR';
```

This command selects employees who are older than 30 or work in the 'HR' department.

## 5. NOT

The `NOT` keyword negates a condition.

```
SELECT * FROM employees WHERE NOT department = 'HR';
```

This command selects all employees who do **not** work in the 'HR' department.

## 6. Order By (ASC, DESC)

The `ORDER BY` clause sorts the result set.

```
SELECT * FROM employees ORDER BY age ASC;
```

This command selects all employees and sorts them by age in ascending order.

```
SELECT * FROM employees ORDER BY age DESC;
```

This command selects all employees and sorts them by age in descending order.

## 7. Update Data

The `UPDATE` statement modifies existing records in a table.

```
UPDATE employees SET salary = 50000 WHERE id = 101;
```

This command updates the salary of the employee with `id = 101` to 50,000.

## 8. Alter Table - Add Column

The `ALTER` statement is used to modify a table structure, like adding a column.

```
ALTER TABLE employees ADD phone_number VARCHAR(15);
```

This command adds a new column `phone_number` to the `employees` table.

## 9. Delete Data

The `DELETE` statement removes rows from a table.

```
DELETE FROM employees WHERE id = 101;
```

This command deletes the employee with `id = 101`.

## 10. Limit

The `LIMIT` clause is used to specify the number of records to return.

```
SELECT * FROM employees LIMIT 5;
```

This command selects the first 5 employees from the `employees` table.

## 11. MIN, MAX, SUM, COUNT, AVG

- **MIN**: Returns the minimum value.
- **MAX**: Returns the maximum value.
- **SUM**: Returns the sum of a numeric column.
- **COUNT**: Returns the number of rows.
- **AVG**: Returns the average value.

```
SELECT MIN(salary) FROM employees;
```

This command selects the lowest salary from the `employees` table.

```
SELECT MAX(salary) FROM employees;
```

This command selects the highest salary from the `employees` table.

```
SELECT SUM(salary) FROM employees;
```

This command selects the total sum of salaries from all employees.

```
SELECT COUNT(*) FROM employees;
```

This command counts the total number of employees.

```
SELECT AVG(salary) FROM employees;
```

This command calculates the average salary of employees.

## 12. BETWEEN

The `BETWEEN` operator selects values within a range.

```
SELECT * FROM employees WHERE age BETWEEN 25 AND 40;
```

This command selects employees whose age is between 25 and 40, inclusive.

## Full Example

Assume we have the following `employees` table:

| id | name | age | department | salary |
|---|---|---|---|---|
| 101 | Alice | 30 | HR | 50000 |
| 102 | Bob | 40 | IT | 60000 |
| 103 | Charlie | 25 | HR | 45000 |
| 104 | Dave | 35 | IT | 55000 |
| 105 | Eve | 28 | Sales | 48000 |

Here are some SQL queries that demonstrate the above concepts:

1. **Get all employees' names and salaries who are older than 30:**

```
SELECT name, salary FROM employees WHERE age > 30;
```

2. **Update salary for a specific employee:**

```
UPDATE employees SET salary = 70000 WHERE id = 102;
```

3. **Order employees by salary in descending order:**

```
SELECT name, salary FROM employees ORDER BY salary DESC;
```

4. **Count how many employees are in the 'HR' department:**

```
SELECT COUNT(*) FROM employees WHERE department = 'HR';
```

5. **Get the average salary of employees in 'IT' department:**

```
SELECT AVG(salary) FROM employees WHERE department = 'IT';
```

6. **Select employees with salary between 45000 and 60000:**

```
SELECT * FROM employees WHERE salary BETWEEN 45000 AND 60000;
```