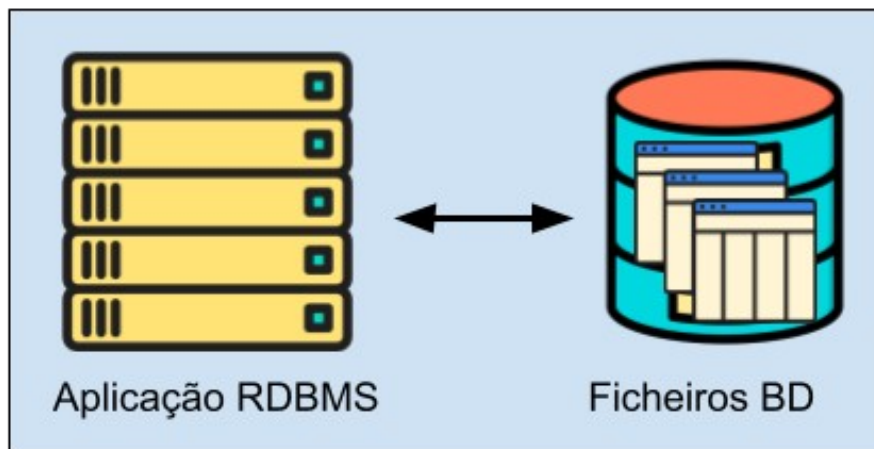# Introduction to SQL

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What is SQL?

- Stands for **Structured Query Language**

- It's a Declarative Language

- Follows a standard → Interoperability

- Responsible for the CRUD operations in many relational database
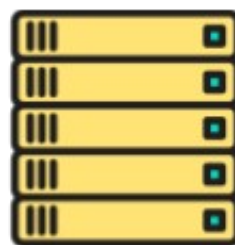
Servidor

Aplicação RDBMS   Ficheiros BD

Rede local ou Internet

DATA

SQL

Máquinas cliente
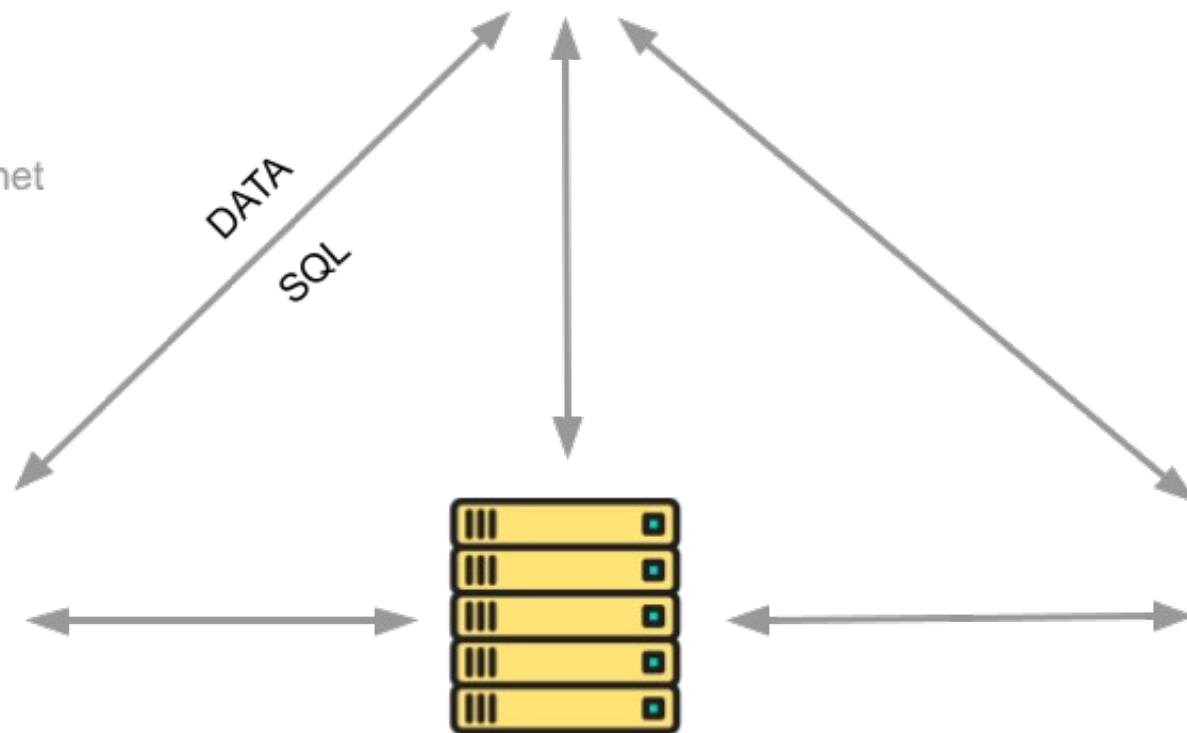
Desktop   Web server   Mobile app

Creating a new database

```sql
CREATE DATABASE classic_model;
```

SQL commands

```sql
CREATE DATABASE classic_model;
```

```sql
CREATE TABLE public.orders (
    ordernumber BIGINT PRIMARY KEY,
    orderdate date NOT NULL,
    requireddate date NOT NULL,
    shippeddate date,
    status VARCHAR(15) NOT NULL,
    comments text,
    customernumber BIGINT NOT NULL
        REFERENCES public.customers(customernumber)
        ON DELETE CASCADE
);
```

SQL commands

```sql
-- Add new column
ALTER TABLE orders
ADD COLUMN deliver_status varchar(50);

-- Delete existing column
ALTER TABLE orders
DROP COLUMN deliver_status;

-- Delete existing table
DROP TABLE orders;

-- Create an index
CREATE INDEX ON payments (amount);
```

What is CRUD?

- **C** – Create (INSERT)

- **R** – Read (SELECT)

- **U** – Update (UPDATE)

- **D** – Delete (DELETE)

  Basically, the mechanisms to manipulate data in a database.

Create (INSERT)

```sql
INSERT INTO orders
    (ordernumber, orderdate, status, comments,
    customernumber)
VALUES
    (10100, '2003-01-06', 'Shipped', NULL, 363),
    (10101, '2003-01-09', 'Shipped', 'Check on
    availability.', 128),
    (10102, '2003-01-10', 'Shipped', NULL, 181);
```

Read (SELECT)

```sql
SELECT
»    officecode,
»    country as "Country",
»    state AS "State",
»    city AS "City"
FROM offices AS o
WHERE country like 'USA';
```

Update (UPDATE)

```sql
UPDATE orders SET
    status = 'Returned',
    comments = 'Wrong address, unable to deliver'
WHERE ordernumber = 10102;

-- Raise all prodcut prices 5%
UPDATE products SET
    buyprice = buyprice * 1.05;
```

Delete (DELETE)

```sql
-- Delete order number 10102
DELETE FROM orders
WHERE ordernumber = 10102;

-- Delete ALL ROWS!!!
DELETE FROM orders;
```