

# SQL

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# Introduction

- What is a program?
- What is a language?
- What is a programming language?
- Do computers understand the language spoken by humans?
  - Need for computer programming languages

# Hierarchy of things!

- Database (modeling an entire organization)
  - Table(s) (one table, one aspect)
    - Rows (one row, one entity)
    - Columns (one column, one property)
- Flipkart Database (models entire organization)
  - Employee, Product, Order, Customer, ...
    - 1 row in Employee table = complete information about one employee
    - Every column in Employee table represents one property of an employee (Ename represents employee name)

# Terminologies

- **Row** – horizontal collection of all the column values of an entity in a table

- Record, Tuple

- **Column** – vertical collection of values for a given property of all entities in a table

- Feature, Field, Attribute

- Total number of rows in a table: **Cardinality**

- Total number of columns in a table: **Degree**

# Example

<u>Eid</u>	Ename	Salary	Age	Address	Contact
E1	ABC	1000	25	Happy C	1234
E2	DEF	1200	21	Happy S	1123
E3	DEF	1001	27	Small Town	1543
E4	ABC	1100	26	My World	1989
E5	GHI	1500	28	My World	2419
E6	XYZ	1300	23	Small Town	3761
E7	PQR	1600	23	Happy C	6651

Can we guess the terms?

# More terms!

- Key
- Candidate keys
- Primary key
- Foreign key
- Schema
- Instance

# SQL

- Language for programming databases
- Originally known as SEQUEL
  - S**tructured **E**nglish **Q**Uery **L**anguage
- Shortened to SQL
  - S**tructured **Q**uery **L**anguage
- Procedural v/s Non-procedural
- What about SQL?

# Components of SQL

- DDL (Data Definition Language)
- DML (Data Manipulation Language)
- DCL (Data Control Language)
- TCL (Transaction Control Language)



# First Example

- Create a table ElectrifyElectronics having the following details:

(Pid: data type = text, primary key, Pname: data type = text, Price: data type = integer)

– Which command is used?

– What is the type of the command being used?

# First Example (cont.)

- Insert the following 5 records into the table ElectrifyElectronics:
  - ('P1', 'Earphone', 500)
  - ('P2', 'Mobile', 12000)
  - ('P3', 'USB disk storage', 400)
  - ('P4', 'Airpods', 2500)
  - ('P5', 'Smart watch', 4500)
- Which command is used?
- What is the type of the command being used?

# First Example (cont.)

- Display the contents of the entire table
- Display the names of all the electronics goods
- Display the names of the goods and their corresponding price
- Display the product id and the product name of all the goods
  - Which command is used?
  - What is the type of the command being used?

# First Example (cont.)

- Display the names of the products having price greater than 1000
- Display the names of the products having price less than 1000
- Display the names of the products having price between 2000 and 4000
- Display the names of the products which cost at least 3000
- Display the names of the products which cost at most 5000