

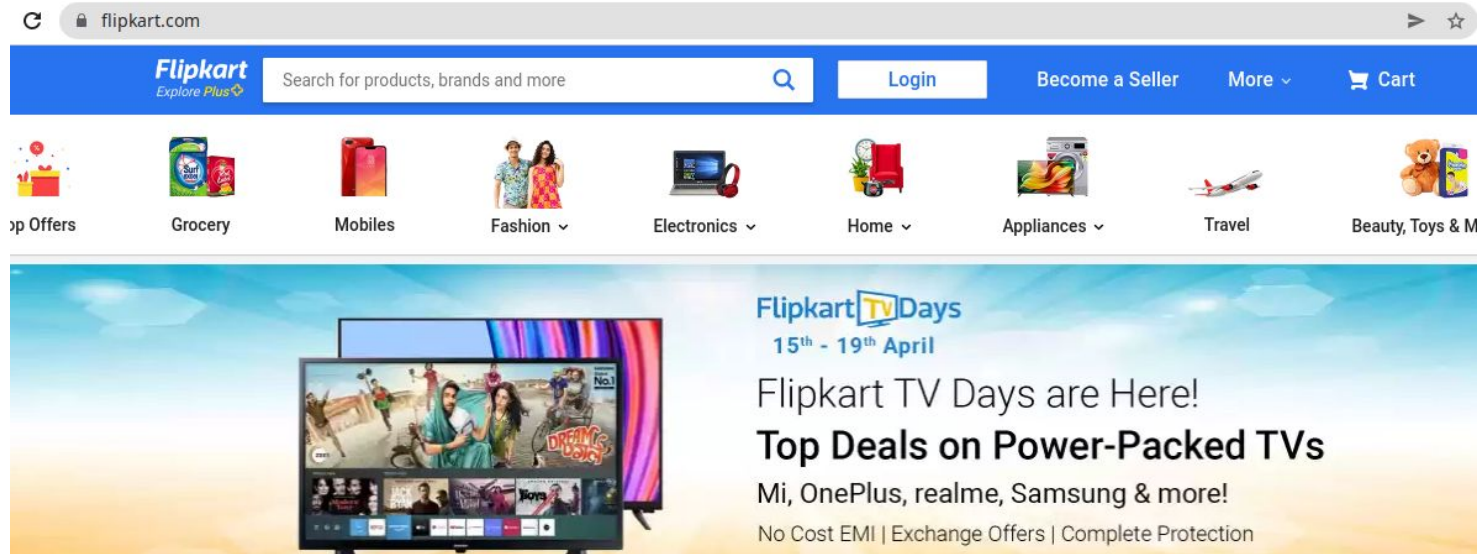
# **SQL and Relational Database Management Systems**

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By SRK

# Why Databases?

CASE: E-Commerce website



# Data

Examples of such websites are Amazon,flipkart,tatacliq,myntna,snapdeal

## **Types of data:**

- User data(login)
- List of product categories
- List of products
- List of Vendors
- Images of products
- List of Offers
- Reviews

# Data

## Smart TV list:

- Vendor name
- Size
- Specifications
- Price
- Warranty
- Reviews

Smart Plus

smart tv

Login

Become a Seller

Electronics & Appliances

Men

Women

Baby & Kids

Home & Furniture

Sports, Books & More

Home > Home Entertainment > Televisions

Showing 1 – 24 of 898 results for "smart tv"

Sort By Relevance Popularity Price -- Low to High Price -- High to Low Newest First Discount

OnePlus Y1 80 cm (32 inch) HD Ready LED Smart Android TV

4.3 ★ 85,340 Ratings & 7,742 Reviews

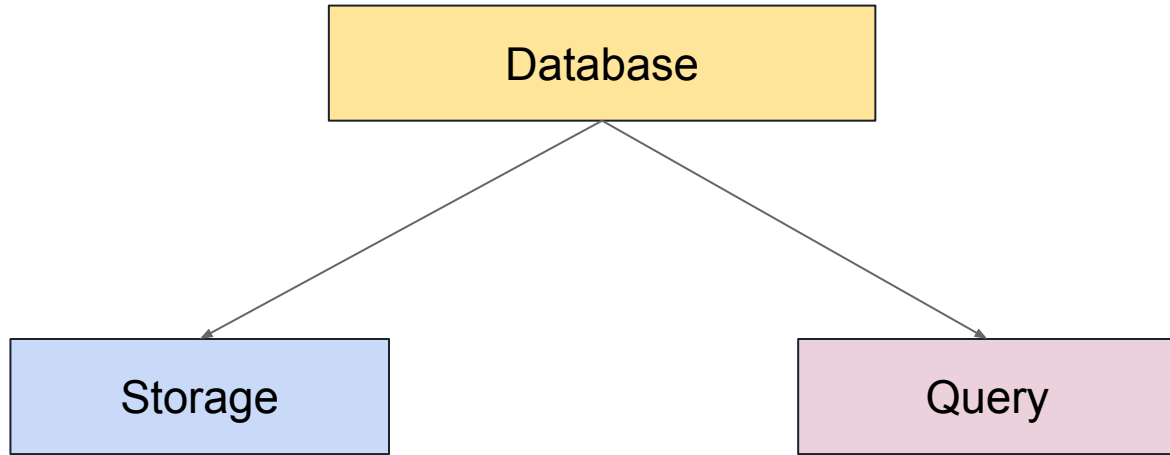
- Netflix|Prime Video|Disney+|Hotstar|Youtube
- Operating System: Android
- HD Ready 1366 x 768 Pixels
- 20 W Speaker Output
- 60 Hz Refresh Rate
- 2 x HDMI | 2 x USB
- LED
- 1 Year Comprehensive Warranty and Additional 1 Year on Panel Provided By the Manufacturer From Date of Purchase

Bestseller

realme 80 cm (32 inch) HD Ready LED Smart Android TV

4.3 ★ 1,87,481 Ratings & 21,664 Reviews

- Netflix|Prime Video|Disney+|Hotstar|Youtube
- Operating System: Android



# Data Operations

**Create :** Creating/adding/inserting new record

Ex: Add new products, vendors to e-commerce site

**Read :** retrieving the data

Ex: User to search and see the products listed in e-commerce site

**Update :** Change the existing data

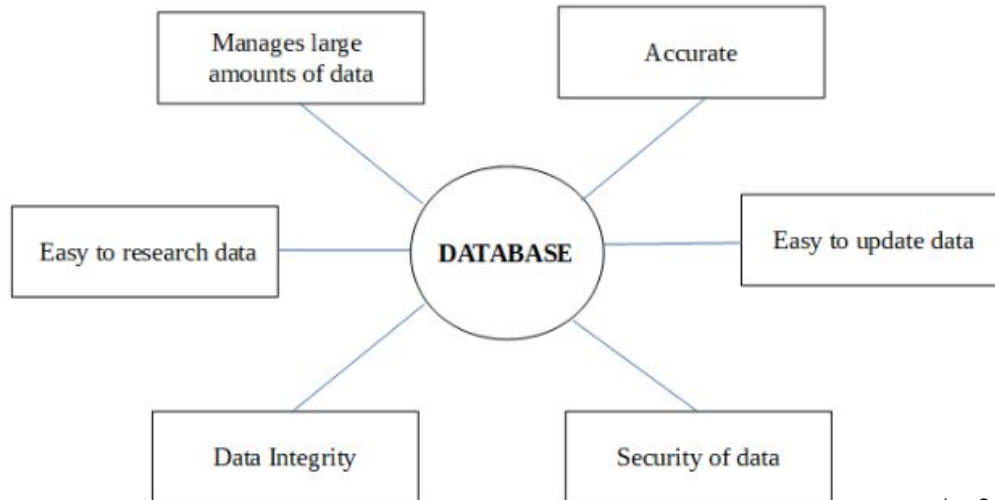
Ex: updating price, features, review

**Delete :** deleting the existing record

Ex: deleting the products and sellers

# Database

A database is a collection of data, usually stored in electronic form. A database is typically designed so that it is easy to store and access information.



## **Manages large amounts of data**

A database stores and manages a large amount of data on a daily basis. This would not be possible using any other tool such as a spreadsheet as they would simply not work.

## **Accurate**

A database is pretty accurate as it has all sorts of build in constraints, checks etc. This means that the information available in a database is guaranteed to be correct in most cases.

## **Easy to update data**

In a database, it is easy to update data using various Data Manipulation languages (DML) available. One of these languages is SQL.

## **Security of data**

Databases have various methods to ensure security of data. There are user logins required before accessing a database and various access specifiers. These allow only authorised users to access the database.

## **Data integrity**

This is ensured in databases by using various constraints for data. Data integrity in databases makes sure that the data is accurate and consistent in a database.

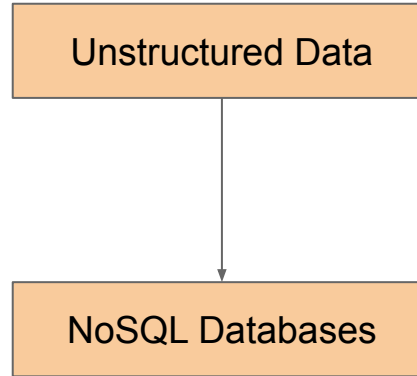
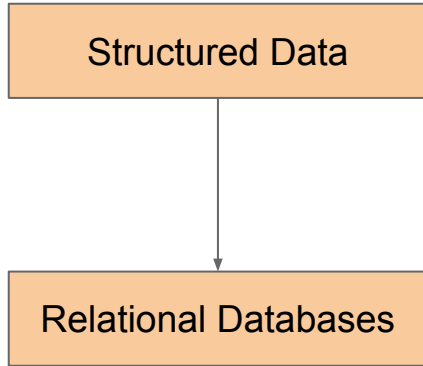
## **Easy to research data**

It is very easy to access and research data in a database. This is done using Data Query Languages (DQL) which allow searching of any data in the database and performing computations on it.



# Types of Databases

Structured data	Unstructured data
Organised data in tables, rows, columns and relationships	Cannot be organised in rows, columns, tables, and relationships
Dates, Customer details, Employee details, Order details	Images, audio files, videos files, JSON files, emails
About 18% of enterprise data	More than 80% of enterprise data
Less storage required	Requires more storage
Easier to process information	Difficult to manage and process



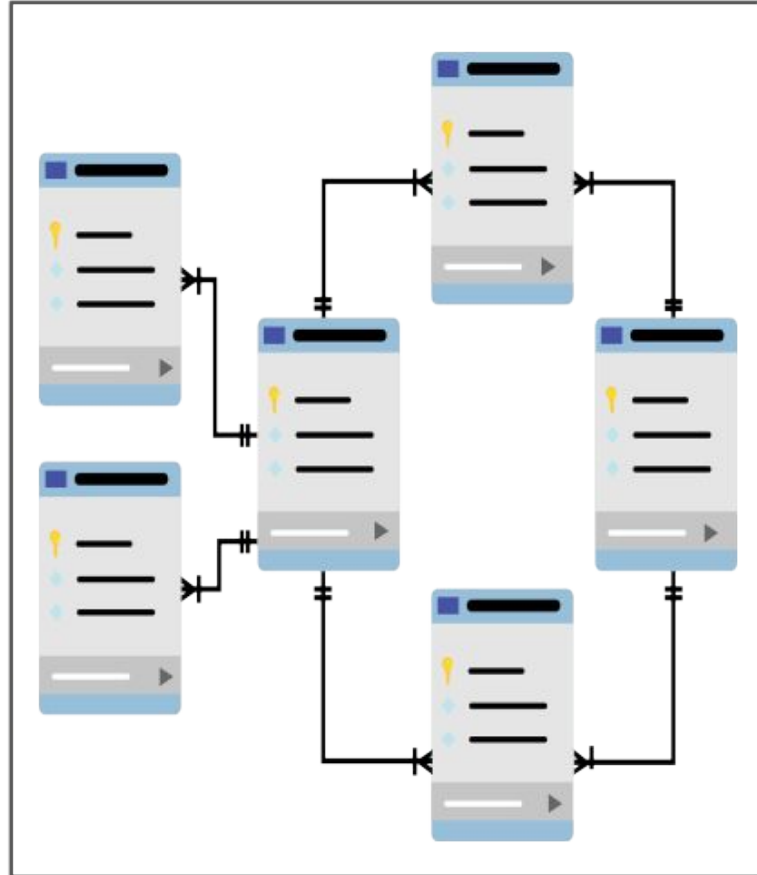
<b>Relational Databases</b>	<b>NoSQL Databases</b>
1. Data items have pre-defined relationships between them	1. Uses a storage model optimised for specific requirements of the type of data being stored.
2. Information is stored in structured tables with rows and columns	2. Document, key-value, Graph database
Examples: MySQL, MS SQL, Oracle, IBM DB2	Examples: MongoDB, Apache cassandra, redis couchbase

# Introduction to RDBMS

Data	Database	Database Management System	Relational Data	Relational Database	Relational Database Management System
Information	Storage of information	Software that helps in performing CRUD operations to data in the database.	Data has relationship	Database that stores structured and relational data -Based on Relational Data Model	Software that helps in performing CRUD operations to structured data in relational database.

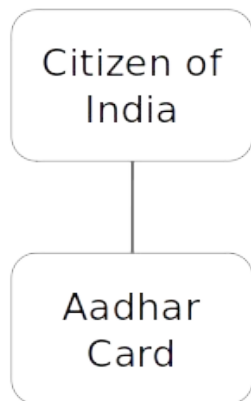
# RELATIONAL DATA MODEL

- Proposed by EF Codd in 1969
- Model data in the form of relations
- Based on two concepts:
  - Tables
  - Relations
- Relationships (1:1, 1;n, N:N)



# RELATIONSHIPS IN DATABASES

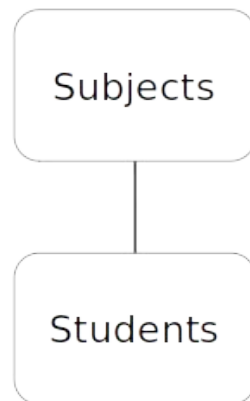
## One-to-One



## One-to-Many



## Many-to-Many



# SCENARIOS FOR RDBMS

- Strict schema
- Relational data
- Transactional requirements
- When data can be stored on a single server

# INDUSTRIAL USE CASES OF RDBMS

- Banking - Money transaction system
- Money Wallet - Google Pay, PhonePe
- E-commerce - Payments, users, etc.
- Restaurant Listing - Zomato
- Employee Management Software
- Twitter uses MySQL heavily for primary storage of Tweets and Users
- YouTube uses MySQL



# MySQL

1. Introduction to MySQL
2. SQL Installation
3. Types of SQL Commands - DDL, DML, DQL,
4. SQL Basic Statements and Operators
5. Aggregate and InBuilt functions
6. String and Date-Time Functions
7. Joins

# INTRODUCTION TO MYSQL

- A 25-year-old language
- Free and open-source
- Relational Database Management System
- Interact directly with a MySQL database using SQL
- Wikipedia, Twitter, Flipkart - few of many who use MySQL
- Structured Query Language (SQL)



# MySQL Installation

Please refer git repository for installation procedure MySQL community edition on CentOS 7

<https://github.com/javafullstackcodes/htd-april-2022/blob/master/SQL/MySQL-Installation.md>

# TYPES OF SQL COMMANDS

- Data Definition Language -DDL
  - CREATE – Used to create the database or its objects (e.g. table, index, function, views, store procedure and triggers).
  - DROP – Used to delete objects from the database.
  - ALTER- Used to alter the structure of the database.
  - TRUNCATE- Used to remove all records from a table, including all spaces allocated for the records.
  - RENAME – Used to rename an object existing in the database.
- Data Manipulation Language - DML
  - INSERT – Used to insert data into a table.
  - UPDATE – Used to update existing data within a table.
  - DELETE – Used to delete records from a database table.
- Data Query Language - DQL
  - SELECT – Used to retrieve data from a database.

# SQL BASIC STATEMENTS AND OPERATORS

- SELECT: Used to read the data
- WHERE: Used as a conditional statement to filter out data
- Some examples of operators that can be used along with the WHERE clause are OR, AND, IN, BETWEEN, and LIKE

## AGGREGATE AND INBUILT FUNCTIONS

- COUNT(): Counts the total number of records specified by the given condition
- SUM(): Returns the sum of all the non-NULL values
- AVG(): Returns the average of all the non-NULL values
- MIN(): Returns the minimum of the specified values (NULL is not included)
- MAX(): Returns the maximum of the specified values (NULL is not included)

# Thank YOU

Happy Learning!!



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