

Welcome you all Database



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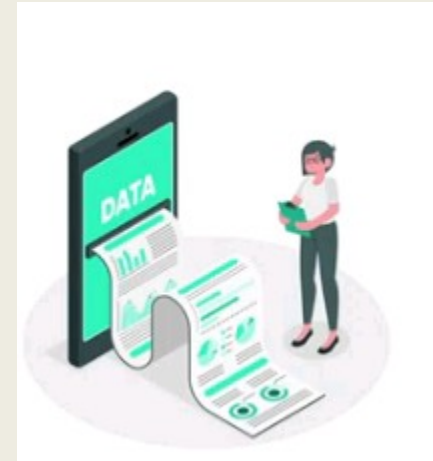
Day 1

- What is Data?
- Stalk holders
- Database
- DBMS
- Advantages
- Types of Database

Meaning

What is Data?

Any sort of information
that is stored



Data Variety

- Contact details in telephone directory
- Messages & multimedia on WhatsApp
- Emails & attachments on Gmail
- Products & Orders on Amazon
- Location data on Google Maps
- Tweets/Posts on social media



... and many more

Data Variety

Not only this, web applications store **activity** of its users in the application.

For example

- ✓ Clicks on videos, ads, link, buttons
- ✓ IP Addresses



Data Velocity

Data generated for every minute in 2020

- ✓ > 41 million message on Whatsapp
- ✓ > 1.3 million voice/video calls
- ✓ > 470k people engage with reddit content and more...



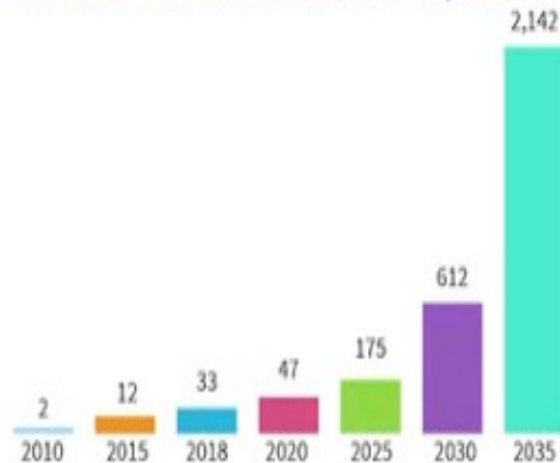
Data Volume

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Over 2.5 quintillion(10^{18}) bytes
of data is created every day.

It is estimated 175 zettabytes of
data will be created by 2025

Global Data Creation is about to explode



*Note: 1 zettabyte = 1 billion terabytes



Data

Stakeholders

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Data is used by almost everyone

- ✓ Companies
- ✓ Application Developers
- ✓ AI/ML Engineers
- ✓ Data Scientists, etc.



Stakeholders

Companies

Companies mine this data,
i.e., turn this data into useful information

205d45



Stakeholders

Companies

To build powerful **recommendation systems** to retain customers for a long-term



Flipkart



amazon

You Tube

Stakeholders
Companies

For targeted advertisements



Stakeholders

Application Developers

Data is at the heart of the applications

Example

Platforms like Facebook, Twitter, tiktok, instagram etc. are about the posts/content created by the users



Stakeholders

Application Developers

To bring vital healthcare and technological information, and entertainment, etc. to people



Stakeholders

Application Developers

To bring services to the
fingertips of people

Uber **zomato**

NUNZO 99acres



Stakeholders

Application Developers

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To help digitize nations



PhonePe



IRCTC

Stakeholders

AI/ML Engineers

AI/ML Engineers use data to
build intelligent softwares



Stakeholders

AI/ML Engineers

- ✓ Personal Assistants
- ✓ ChatBots
- ✓ Virtual Health Assistants, etc.



Stakeholders

AI/ML Engineers

Autonomous vehicles are trained
with existing images and traffic records



TESLA

Uber



WAYMO

Stakeholders

Data Scientists

Data scientists **collect data** and
generate **deeper insights**
helping organizations make
data-driven decisions





Data

Used by Everyone

From startups to tech giants



Data

Using data

To perform any operation
on the data,
it should be stored in an
organized way



Introduction Database

An Organised Collection of Data

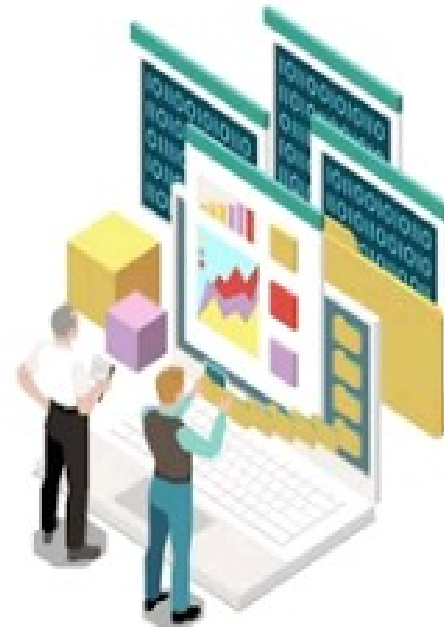


Introduction

Database Management System

A software that is used
to easily **store** and **access**
data from the **database** in a
secure way

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DBMS Usage

Every organisation
currently uses DBMS
to store and maintain their data



DBMS

Advantages

Security

Data is stored & maintained securely



DBMS

Advantages

Ease of Use

Provides simpler ways to
create & update data at the rate
it is generated and updated respectively



DBMS

Advantages

Ease of Use

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DBMS

Advantages

Durability and Availability

Durable and
provides access to all the clients at
any point in time



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DBMS

Advantages

Performance

Quickly accessible

to all the clients
(applications and stakeholders)

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DBMS Overview

Every interaction with the database happens through the DBMS

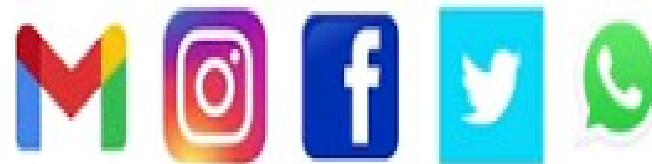


Database

In day to day life

A database is accessed
to process each request
on the Web applications

amazon



Database Usage

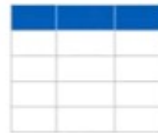
Companies and open source communities are
massively investing in Database Tech



There are different types of databases based on how we organize the data



Databases Types of Databases



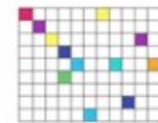
Relational



Analytical



Key Value



Column Family



Graph



Document



Types of Databases

Choosing a Database

Choice of database depends on our requirements

Relational Database is the most commonly used database

name	age	score
Virat	32	50
Dhoni	39	35
Sachin	47	35



Types of Database

Relational Database

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In relational databases, the **data** is **organised** in the form of **tables**

Table

player

name	age	score
Virat	32	50
Dhoni	39	35
Sachin	47	35

← Column Names

← Row

↑
Column

Relational Database

Frequently Used Data Types

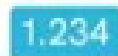
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Integers



Date



Float



Time



VarChar



DateTime



Text



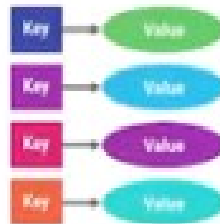
Boolean

Non-Relational Databases

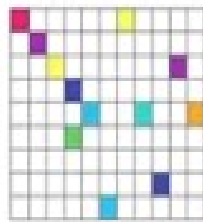
Types of Databases



Graph



Key Value



Column Family



Document

These four types are commonly referred as non-relational databases

DBMS

Non-Relational DBMS



Elasticsearch



CouchDB



DynamoDB



205d4f MongoDB



Cassandra



Redis

many more . . .

DBMS

Relational DBMS



Oracle



PostgreSQL



MySQL



SQLite

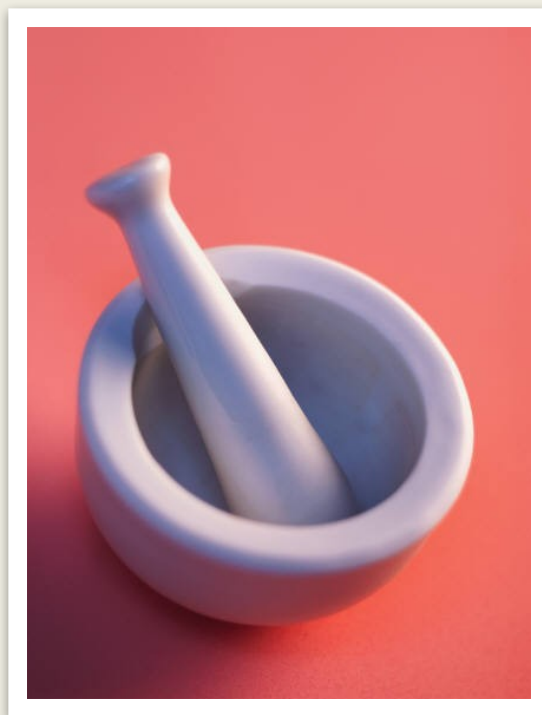


SQL Server



IBM DB2

many more . . .



**Thank
You**