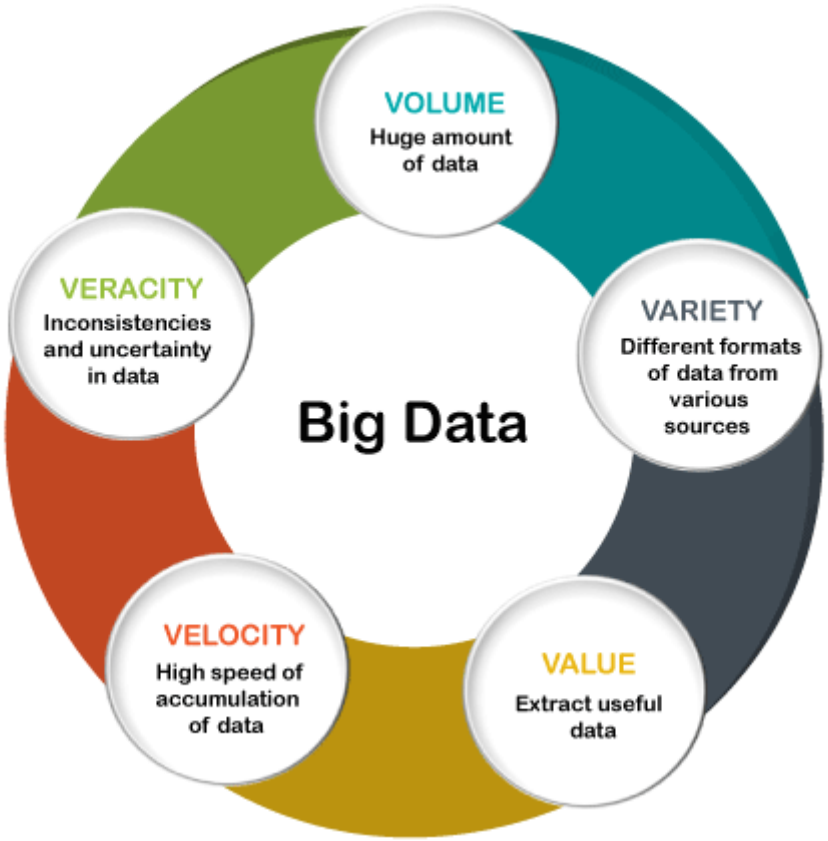
Sql database



1.What is database and its need?

If we use basic excel sheets to store the data, we will need to update every single time every single information and it might make storing complex (refer fig.1.1), so to avoid this sort of complexities we use database in which we separate the data into different entities and attributes (refer fig1.2). Entities are nothing but the excel sheets with specific data of user and this specific data is called as attributes.

Name	Product	Qty.	Date	Address
Mary Johnson	Cat Leash	1	03/19	15 W Elm Street
Mark Smith	Collar	2	03/21	252 Oak Avenue
Kim Jones	Cat Treats	7	03/22	8550 6th Street
David Williams	Toy	1	03/24	724 W Aspen Circle
Mary Johnson	Cat Leash	3	03/26	24 E Main Street

Figure 1.1 Problems with single excel sheet like repeating data

Figure 1.2 In this image we separates the data into different entities like customer, products and orders.

A

Relational database management system (RDBMS) is a system where data is organized in two-dimensional tables using rows and columns.

***What?**

SQL stands for structured Query Language, i.e., language use by databases. SQL lets you access and manipulate databases.

***What Sql can do?**

- **SQL can execute *queries* against a database # A "query" refers to the action of retrieving data from your database. If a Pavan wants to check the project update he will ask for query from Trello.**
- **SQL can retrieve data from a database**
- **SQL can insert records in a database**
- **SQL can update records in a database**
- **SQL can delete records from a database**
- **SQL can create new databases**
- **SQL can create new tables in a database**
- **SQL can create stored procedures in a database**
- **SQL can create views in a database**
- **SQL can set permissions on tables, procedures, and views**

*How does it work?

When an SQL query is written & run (or parsed), it is processed by a query optimiser. (**Called simply the optimizer is built-in database software that determines the most efficient method for a SQL statement to access requested data**.) The query reaches SQL server, where it compiles in three phases; Parsing, Binding and Optimisation.

1. Parsing – A process to check the syntax
2. Binding – A process to check the query semantics
3. Optimisation – A process to generate the query execution plan

In the third step, all possible permutations and combinations are generated to find the most effective query execution plan in a reasonable time. The shorter the query takes, the better it is.

1. Cost based Optimization (Physical) This is based on the cost of the query. The query can use different paths based on indexes, constraints, sorting methods etc. ...
2. Heuristic Optimization (Logical) This method is also known as rule-based optimization.

*When to use sql?

If your data is primarily structured, a SQL database is likely the right choice. A SQL database is a great fit for transaction-oriented systems such as customer relationship management tools, accounting software, and e-commerce platforms.