What is data?

- Data is raw fact or figure that doesn't have meaning on their own.
  Ex:- Student's name, address, roll number, subject or marks are all data point.

- Why store data? To answer important question like, How many students scored above 90? or who is the top performer?

- Data by itself is like puzzle piece; it's not useful until we find patterns or relationship blw the piece.

Data :- You collect student details like name, marks, and roll numbers (these are raw facts).

Information :- You analyze this data to see how many students scored above 90.

Knowledge :- Based on this, you decide to reward the top performers.

Data -> Raw Fact
Information -> Processed data with meaning
Knowledge -> Insights to make decisions.

Requirements from data?
Software applications that utilize data must meet various end user requirements.

Ex:- Facebook application,

Requirement	Description
Integrity	Data should be accurate e.g my facebook profile should contain valid country name.
Availability	I should be able to access facebook and see my data at all times.
Security	only my friends should be able to see my posts and no one else.
Independent of Application	I should be able to access the same data from my Android app as well as from web browser on my laptop.
Concurrent	All my friends should be able to see my posts at the same time.

Limitations of Flat Files

Problems with File Based Data Storage

i) Dependency of program on physical structure of data
ii) Complex process to fetch data
iii) Loss of data on simultaneous access
iv) Inability to give access based on request (Security)
v) Data redundancy

Dependency :- Program fails if file structure changes
Complexity :- Fetching data is tedious.
Data Loss :- Simultaneous access create conflicts.
Security :- No control over who sees what.
Redundancy :- Duplicate data waste storage.