Types of Databases

① Relational Databases:-

- Based on the relational model; popular since the 1970.
- Uses SQL for operations (create, read, update, delete).
- Stores data in tables, with relationships via foreign keys.
- Optimized for structured data, ensures data normalization.
- e.g. ⇒ MySQL, etc.

② Object-oriented Databases:-

- Based on OOPS concept.
- Stores data as objects, rather than in tables.
- Advantages: Handles complex data, easy retrieval, OOP-friendly.
- Disadvantages: High complexity affects performance, less community support.
- e.g. ⇒ Object DB, Gemstone.

③ NoSQL Databases :-

- Non-tabular databases with flexible schemas.
- Types :- document, key-value, wide-column, graph.
- Ideal for handling large datasets & horizontal scaling.
- Schema-free and Open-Source.
- Eg. use ⇒ Big data.

④ Hierarchical Databases :-

- organizes data in a tree-like structure (parent-child relationships).
- Simple and fast for one-to-many relationships (eg. ⇒ file systems, drop-down menus)
- Drawback :- Inflexible for complex relationships
  e.g. ⇒ IBM IMS.

⑤ Network Databases :-

- Extension of hierarchical databases with child records linked to multiple parents.
- Organized in a graph structure, ideal for handling complex relationships.
- Maintenance is challenging, and M links can slow retrieval.
- Limited Web Community Support.
- e.g. ⇒ IDS, IDMS, etc.