Basic Definitions :

Database : A collection related data

Data : known facts that can be recorded
and having an implicit meaning

Mini-World : some part of real-world about which
data is stored in a database.

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Database Management System (DBMS)

→ A software package / system to facilitate its creation and maintenance of a computerized database.

Database System:

→ The DBMS software together with its data itself.

→ applications.

Simplified database system environment

Users/Programmers

Database System

| Application Programs/Queries |

DBMS Software

| Software to Process Queries/Programs |

| Software to Access Stored Data |

Stored Database Definition (Meta-Data)

Stored Database
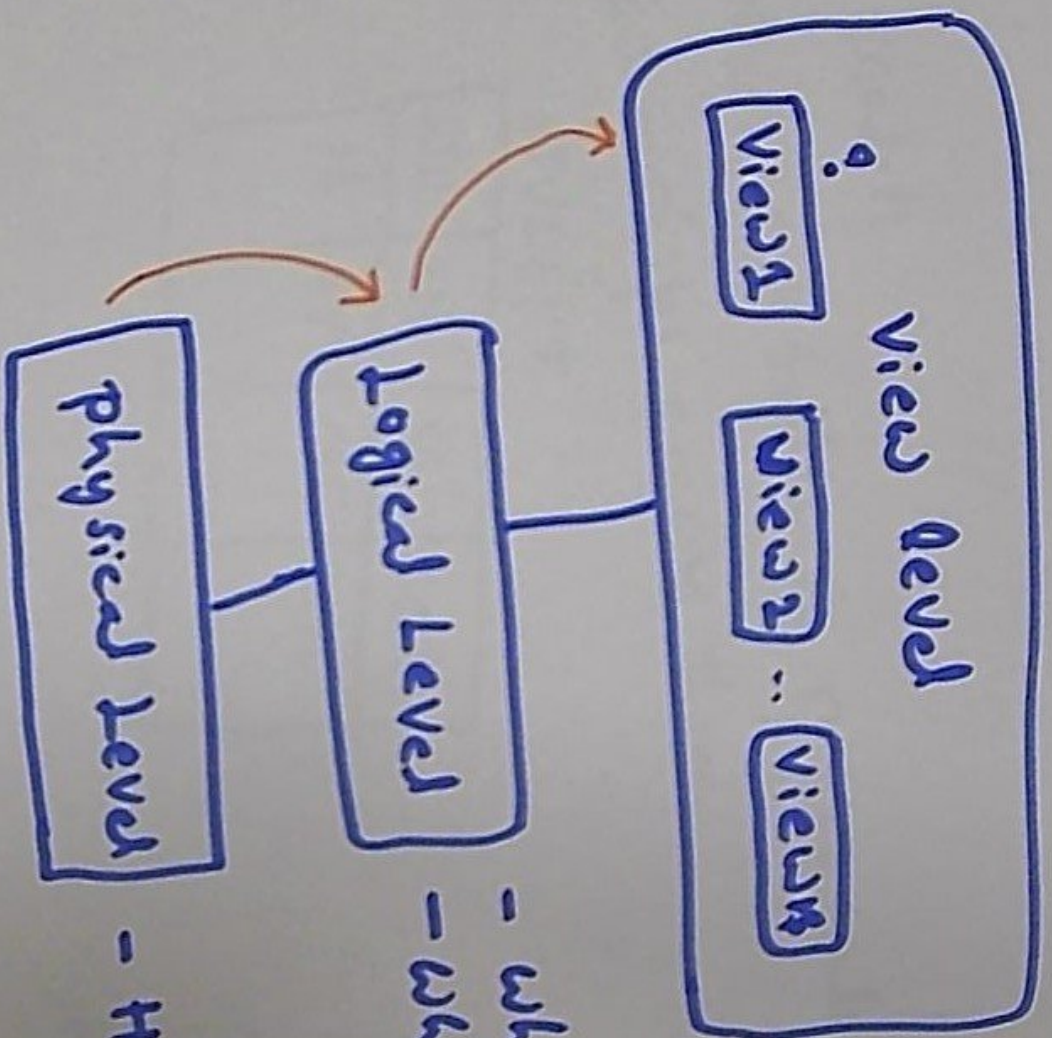
External level

Conceptual level

Internal

The database definition or descriptive information is stored by the DBMS in the form of a database catalog or dictionary; it is called meta-data

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Data Abstraction

View level

```
┌─────────────────────────────┐
│  [View1]  [View2] .. [View3] │
└─────────────────────────────┘
```

[Logical Level]
- what data stored in database
- What relationships exists

[Physical Level]
- How data stored
  in the database

→ Data independence.
  * physical data independence
  * Logical data independence.

Data models :

* Relational models
  → A collection of tables & represent both data and relationships among them.

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Relation

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Relation

Advisor

PID	SID	IID

project advisor.

Entity - Relationship model (ER-model).

→ Collection of basic object, called entities,
and relations among those objects.

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Relationship

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attribute.

entity