Data Models In Database Design

End User View — External Level — **Conceptual Model** — Database
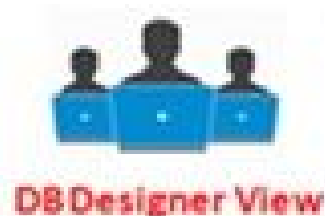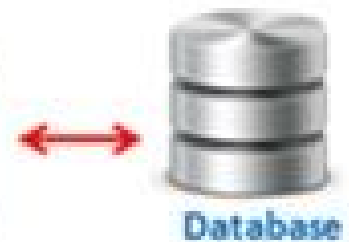
DB Designer View — Logical View — **Logical Model** — Database

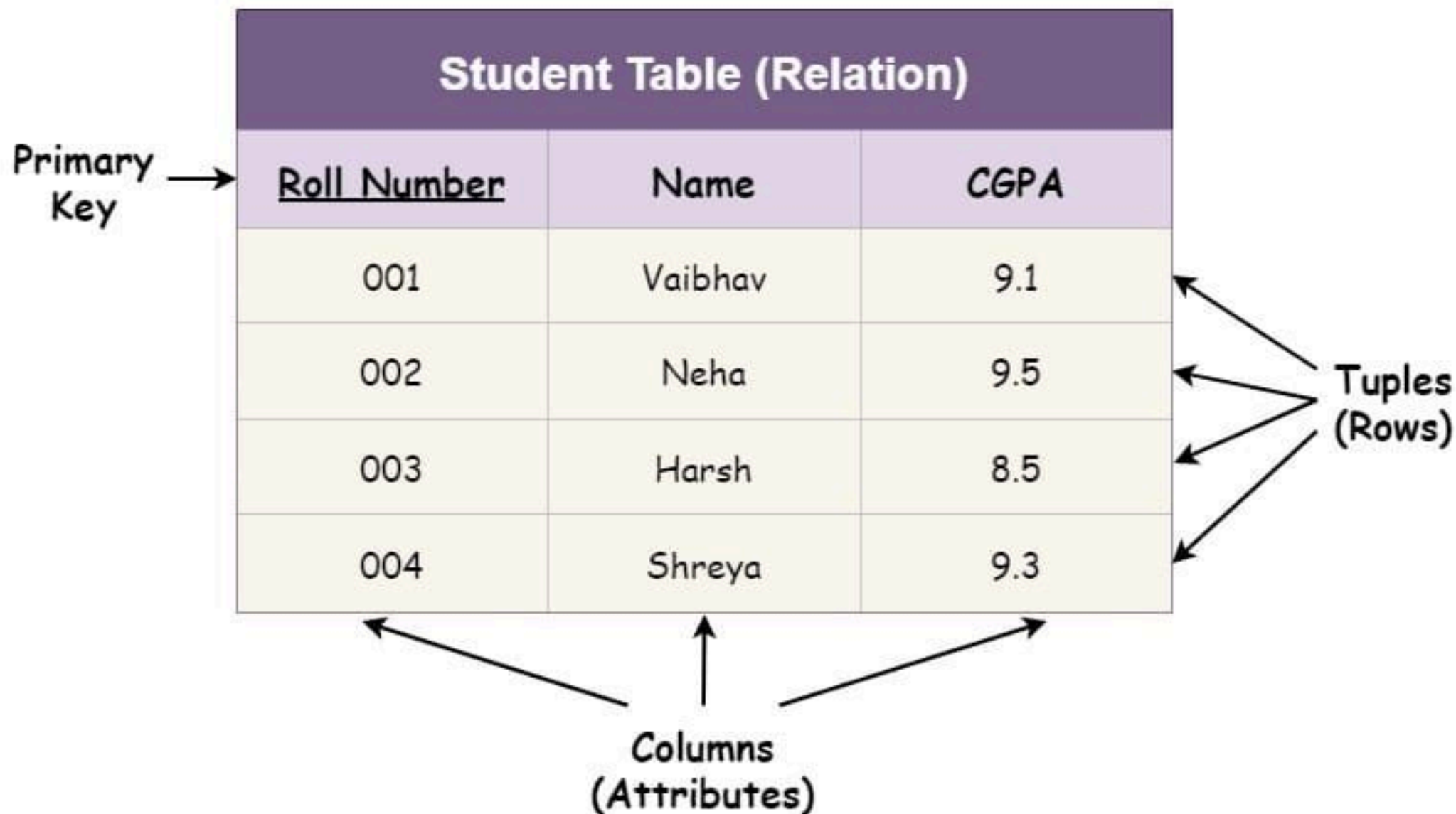**DB Designer View** — Internal Level — **Physical Model** — Database

End User - Actual Database System User

DB Designer - Designs DB model And Actual Database

DB Programmer - Designs DB Software Application

Relational Model in DBMS

Student Table (Relation)		
Roll Number	Name	CGPA
001	Vaibhav	9.1
002	Neha	9.5
003	Harsh	8.5
004	Shreya	9.3

Primary Key → (Roll Number)

Tuples (Rows)

Columns (Attributes)

Relationships among Access <u>Database Objects</u>

Database Application

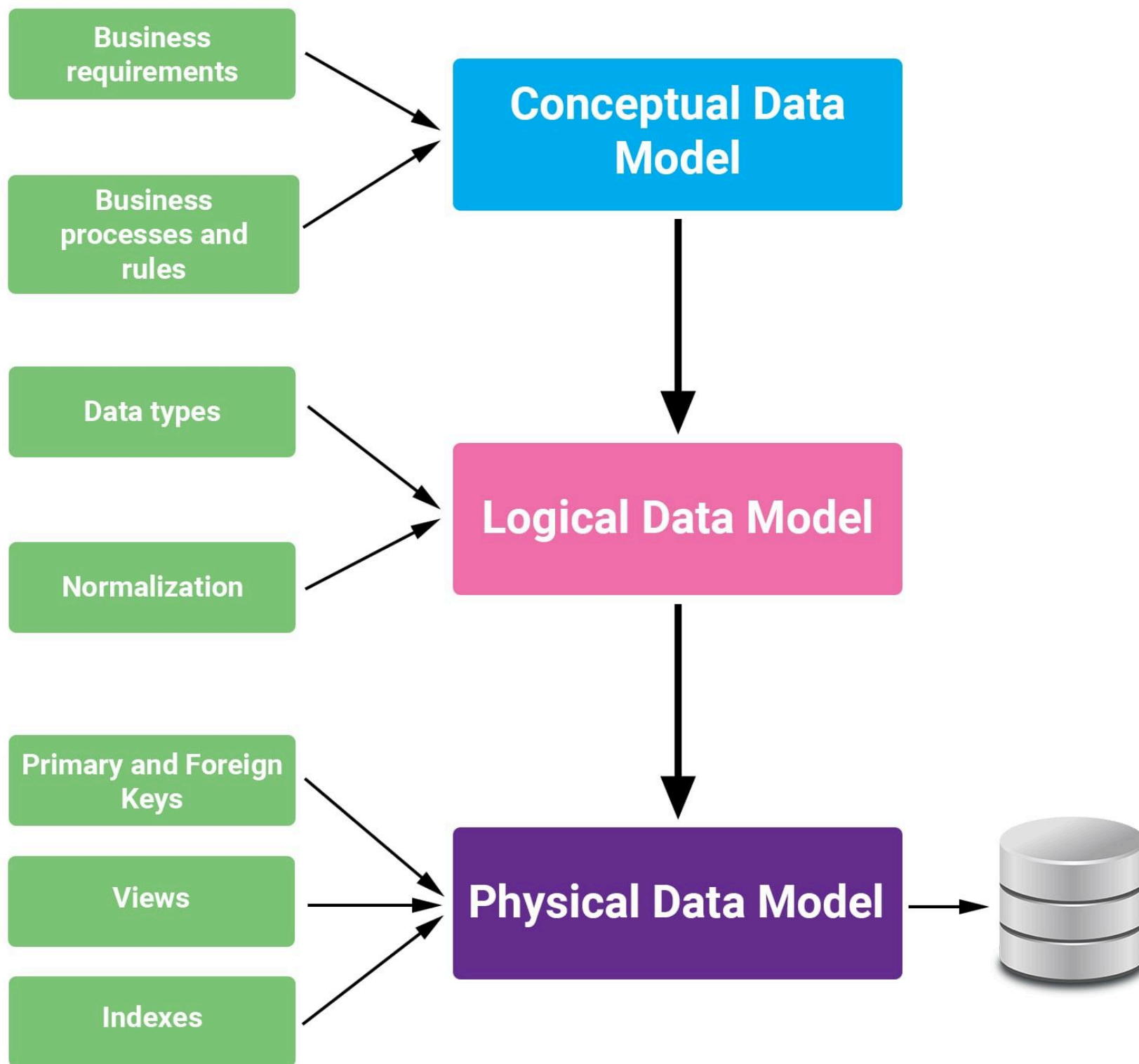Form   Report

Tables

Query (View)

Indirect Interaction

Accounting programs
User

Marketing programs
User

Manufacturing programs
User

DBMS

Database

DBMS

Direct Interaction

User

Basic Database Objects

<u>SQL</u>:
Structured Query Language
<u>R</u>DBMS: Relational Data Base
Management System
<u>DBA</u>: Data Base Administrator
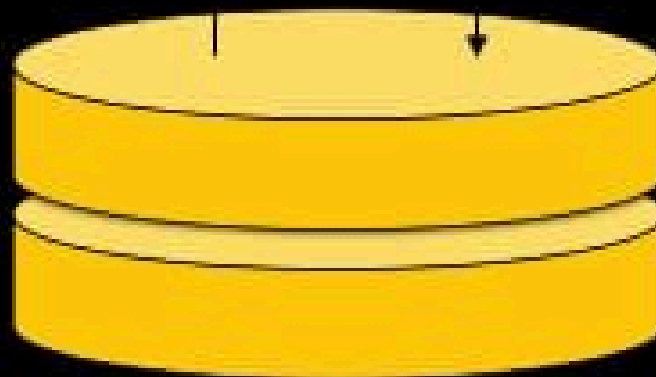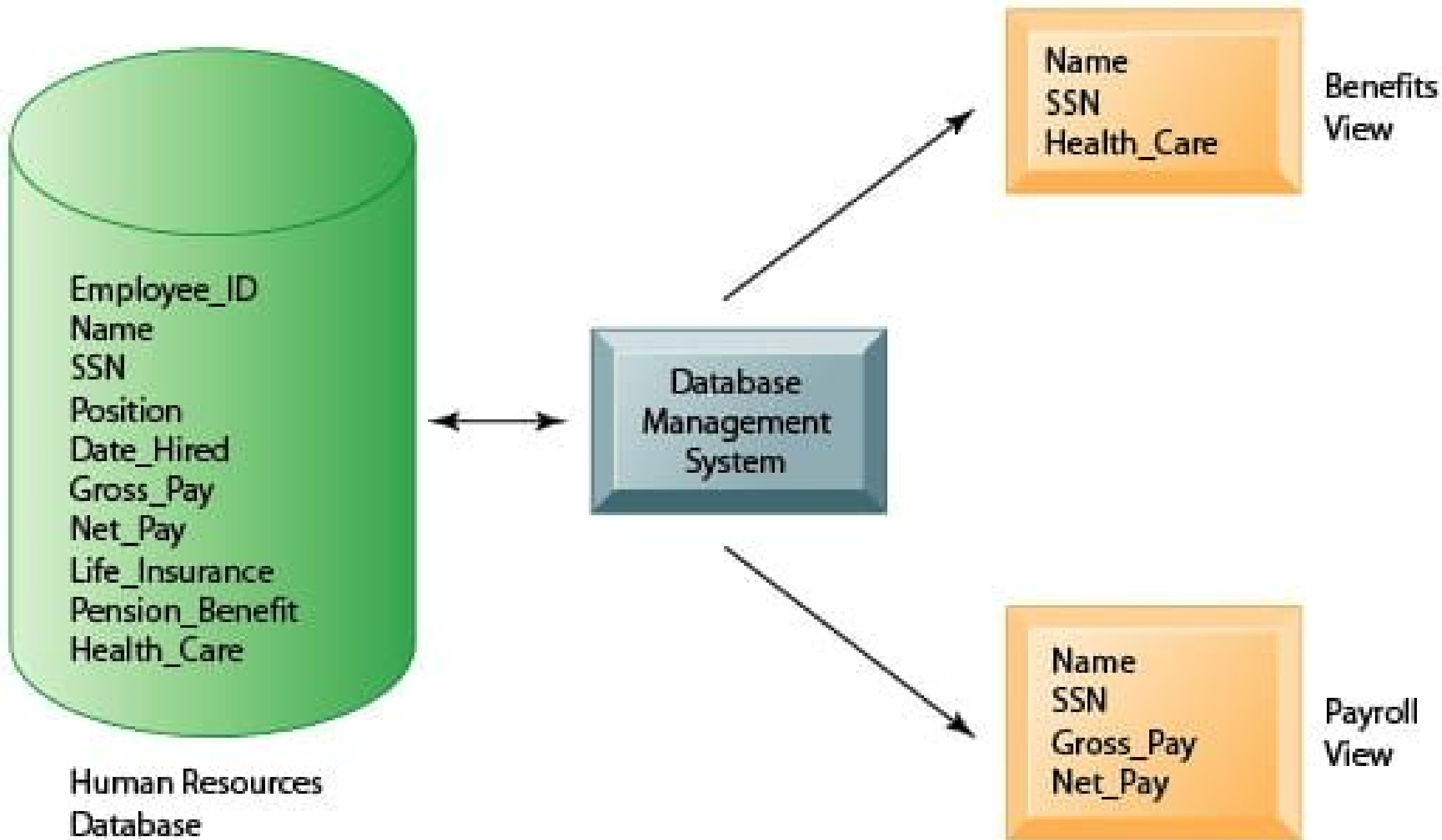DB designer/Data modeler
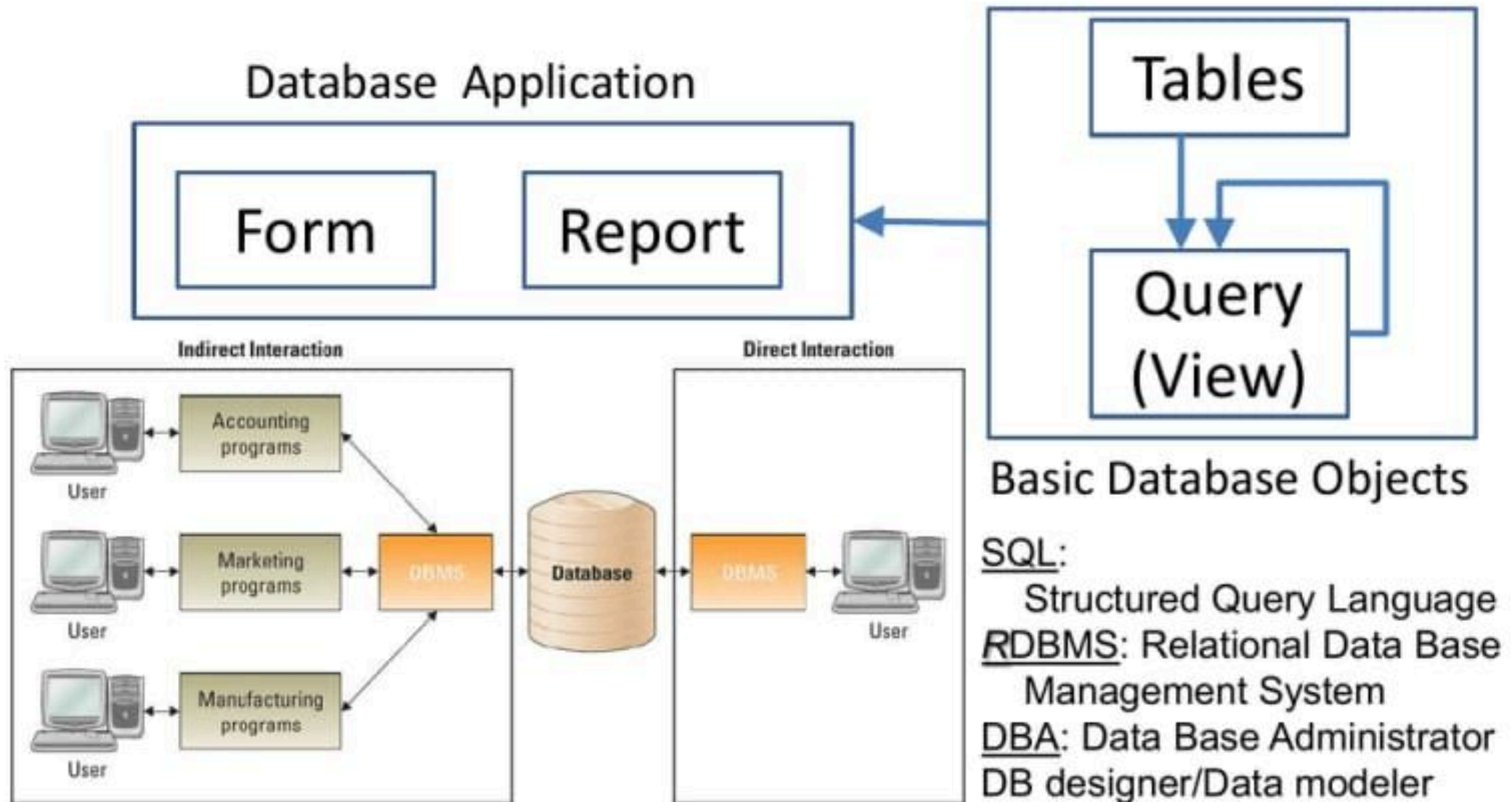
- A saved SELECT query is officially called a View in SQL.
- QUERY in Access can be SELECT, INSERT, UPDATE, or DELETE.
- You can create a query against a table or a query.
- You can create a form or report against a table or a query.

```
Business
requirements ─────────┐
                      ├──────▶  Conceptual Data
Business              │              Model
processes and ────────┘                │
rules                                  │
                                       ▼

Data types ───────────┐
                      ├──────▶  Logical Data Model
Normalization ────────┘                │
                                       │
                                       ▼

Primary and Foreign ──┐
Keys                  │
                      ├──────▶  Physical Data Model  ──▶  🗄
Views ────────────────┤
                      │
Indexes ──────────────┘
```

Human Resources
Database

Employee_ID
Name
SSN
Position
Date_Hired
Gross_Pay
Net_Pay
Life_Insurance
Pension_Benefit
Health_Care

Database
Management
System

Name
SSN
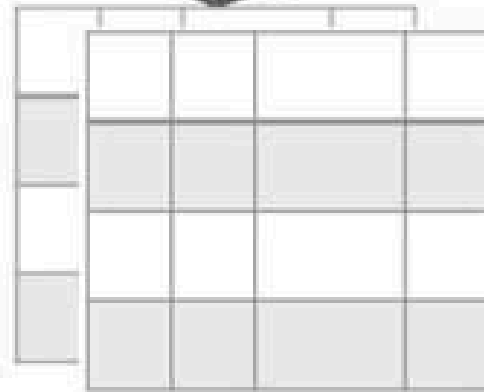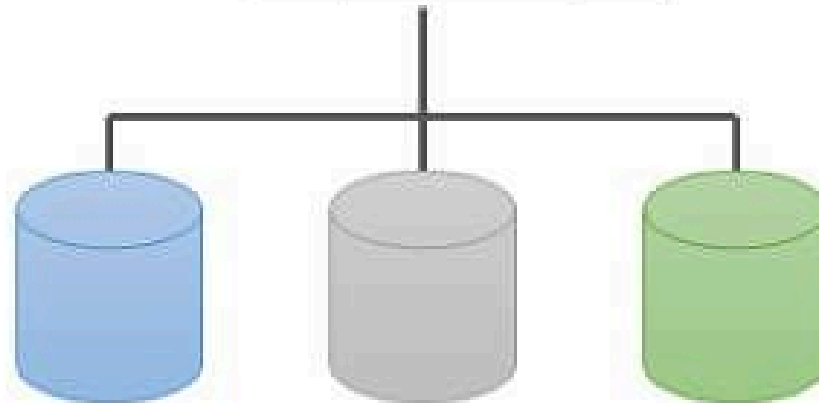Health_Care

Benefits
View

Name
SSN
Gross_Pay
Net_Pay

Payroll
View

View Level

Logical Level

Physical Level

Three-Schema Architecture