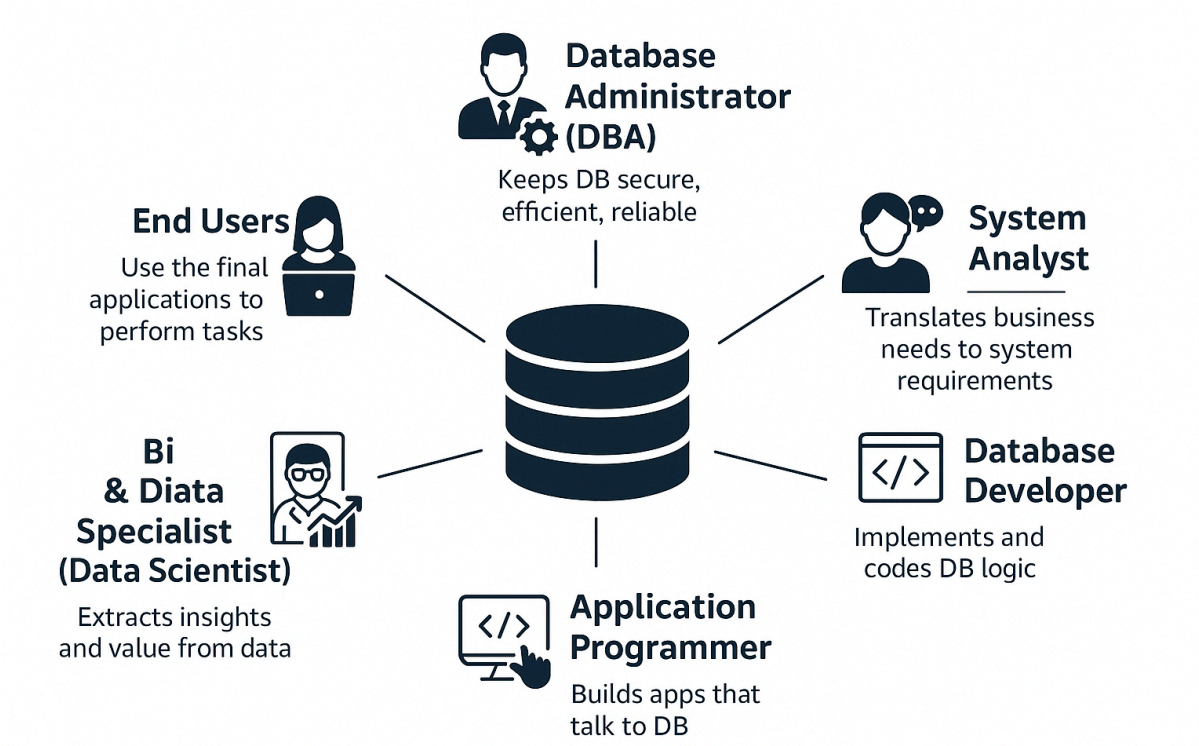
Database Users



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1. Database Administrator (DBA)

- **Role**: The “guardian” of the database.
- **Responsibilities**:
    - Install, configure, and upgrade the DBMS.
    - Manage storage, memory, and performance tuning.
    - Handle **user accounts, security, and permissions**.
    - Perform **backup and recovery** to prevent data loss.
    - Ensure **data integrity and availability**.
- **Example**: A DBA at a bank makes sure customer transactions are secure, databases are backed up daily, and queries run fast.

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2. System Analysts

- **Role**: Bridge between **business needs** and **technical design**.
- **Responsibilities**:
    - Gather requirements from stakeholders.
    - Analyze business processes and identify how the database can support them.
    - Define high-level specifications for the system.
    - Work closely with designers and developers to ensure business goals are met.
- **Example**: In a hospital, a system analyst studies how doctors, nurses, and staff use patient records, then defines requirements for the hospital's database system.

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3. Database Designer

- **Role**: Architect of the database structure.
- **Responsibilities**:
    - Create **conceptual models (ER diagrams)** and **schemas**.
    - Decide on relationships (one-to-many, many-to-many).
    - Define **constraints, keys, normalization** rules.
    - Work with DBAs and system analysts to align with requirements.
- **Example**: A database designer models a university's academic system: tables for students, courses, instructors, enrollments.

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4. Database Developer

- **Role**: The **builder/coder** for database functionalities.
- **Responsibilities**:
    - Write SQL queries, stored procedures, triggers, functions.
    - Implement schema design into the DBMS.
    - Optimize queries for performance.
    - Collaborate with application developers to provide APIs or stored logic.
- **Example**: A developer writes the SQL that retrieves available flight seats for an airline reservation system.

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5. Application Programmers

- **Role**: Build **software applications** that interact with the database.
- **Responsibilities**:
    - Use programming languages (Java, Python, C#, PHP) to connect applications to the database.
    - Create **interfaces** (web/mobile apps) for users.
    - Ensure smooth communication between app and DBMS (via SQL or ORM frameworks).
- **Example**: A programmer creates a mobile app where students can register for courses — the app communicates with the DB.

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6. BI & Big Data Specialist (Data Scientist)

- **Role**: Extract insights and knowledge from data.
- **Responsibilities**:
    - Design and run **ETL processes** (Extract, Transform, Load).
    - Perform **data mining, statistical analysis, and machine learning**.
    - Build dashboards and reports (using BI tools like Power BI, Tableau).
    - Handle large-scale data (Big Data platforms: Hadoop, Spark).
- **Example**: A data scientist analyzes customer purchase history in an e-commerce DB to recommend products.

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7. End Users

- **Role**: The people who actually **use the system**.
- **Types**:
    - **Casual Users** → occasional, use ad-hoc queries (manager running a monthly sales report).
    - **Naive/Parametric Users** → use pre-defined applications (cashier entering orders).
    - **Power Users** → write queries themselves (financial analyst).
- **Example**: A student checking grades via the university portal is an end user.