Task 1 (Report)

🔍 Database Search and Reporting Task

🎯 Objective:

To develop research and analytical reporting skills by exploring key database concepts 😊

Make a new git hub repo (Database Course documentation) and add the following requirements to a one report and upload it

1. Comparison Assignment
Create a comparison between **Flat File Systems** and **Relational Databases** covering:

- Structure
- Data Redundancy
- Relationships
- Example usage
- Drawbacks

2. DBMS Advantages Mind Map
Draw a mind map (or use online tools like MindMup) illustrating the **advantages of using a DBMS**. Include short descriptions or icons for:

- Security
- Integrity
- Backup
- Redundancy
- Concurrency
- Data sharing

3. Roles in a Database System
Explaining each of the following roles:

- System Analyst
- Database Designer
- Database Developer
- DBA (Admin)
- Application Developer
- BI Developer

🔍 Additional Research Topics to Include in the Report:

❗ These topics are often overlooked but important for understanding the ecosystem of databases in modern applications.

🔸 Types of Databases

Search and briefly describe:

- **Relational** vs **Non-Relational** (e.g., MongoDB, Cassandra)
- Centralized vs Distributed vs Cloud Databases
- Use case examples

🔸 Cloud Storage and Databases

- What is **Cloud Storage** and how does it relate to databases?
- Advantages and Disadvantages of using cloud-based databases (e.g., Azure SQL, Amazon RDS, Google Cloud Spanner)

🔸 Database Engines and Languages

Search about:

- What is a **Database Engine**?
- Examples: **SQL Server**, **MySQL**, **Oracle**, **PostgreSQL**
- What languages do they use? (e.g., T-SQL, PL/SQL, ANSI SQL)
- Is there a relationship between the **engine** and the **language**?
- Can one language work across different engines?

🔸 Can We Transfer a Database Between Engines?

Search and answer:

- Is it possible to migrate a database from **SQL Server to MySQL**, or **Oracle to PostgreSQL**?
- What are the challenges of engine-to-engine migration?
- What should we consider before transferring (data types, triggers, stored procedures, etc.)?

- **Logical vs. Physical Schema**
  - What is the **Logical Schema** in database design?
  - What is the **Physical Schema**?
  - What's the difference between them?
  - Why is it important to understand both?
  - Example: Show how one entity (e.g., Student) would appear in both logical and physical schemas.

✅ Evaluation Criteria:

Criteria	Marks
Content Accuracy and Depth	10
Research Effort	10
Organization & Clarity	5
Visuals and Mind Map	5
GitHub Submission	5
Total	**35 marks**