AeroAspire -SDE Intern Training

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Week4-Day2-Oct14

Learning Topics:

- DB integration
- ORM vs direct SQL

Tasks:

- Connect Flask to SQLite or MySQL
- Implement CRUD using raw SQL or ORM (SQLAlchemy)

QUESTIONS:

1. What is ORM, what are its advantages & disadvantages?

- a. ORM means **Object Relational Mapping**.
  b. It is used to **link programming objects with database tables**.
  c. It basically **helps connect your code to the database** by mapping objects to rows and columns.
- **Advantages:**
  i. **Reduces manual SQL writing** for common operations.
  ii. **Makes database handling simpler and faster** for developers.
  iii. **Automatically syncs** with table changes like added columns or updated rows.
  iv. Offers a **structured, table-like view of data**, making it easy to manage.
- **Disadvantages:**
  i. **Performance drops** when working with very large datasets.
  ii. **Complex SQL queries** are harder to run or optimize through ORM.

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2. How does a parameterized query prevent SQL injection?

- a. Instead of mixing user inputs directly in SQL code, we **use placeholders (like ? or :name)**.
  b. The program then **passes values separately** from the SQL statement.
  c. The database **treats inputs only as data**, not as SQL code, which **blocks SQL injection attacks**.

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3. What is the flow from request → ORM / SQL → DB → return result → commit / rollback?

- a. The **client or user** sends a request to the Flask backend.
  b. The **ORM layer turns the request** into an SQL command.

c. The **database executes** this command and sends the output back.
d. Based on success or failure, the **ORM performs a commit or rollback**.
e. Finally, the **updated results** appear in the database or are returned to the user.