



الجامعة السورية الخاصة
SYRIAN PRIVATE UNIVERSITY

المحاضرة 4

كلية الهندسة المعلوماتية

مقرر بنیان البرمجيات

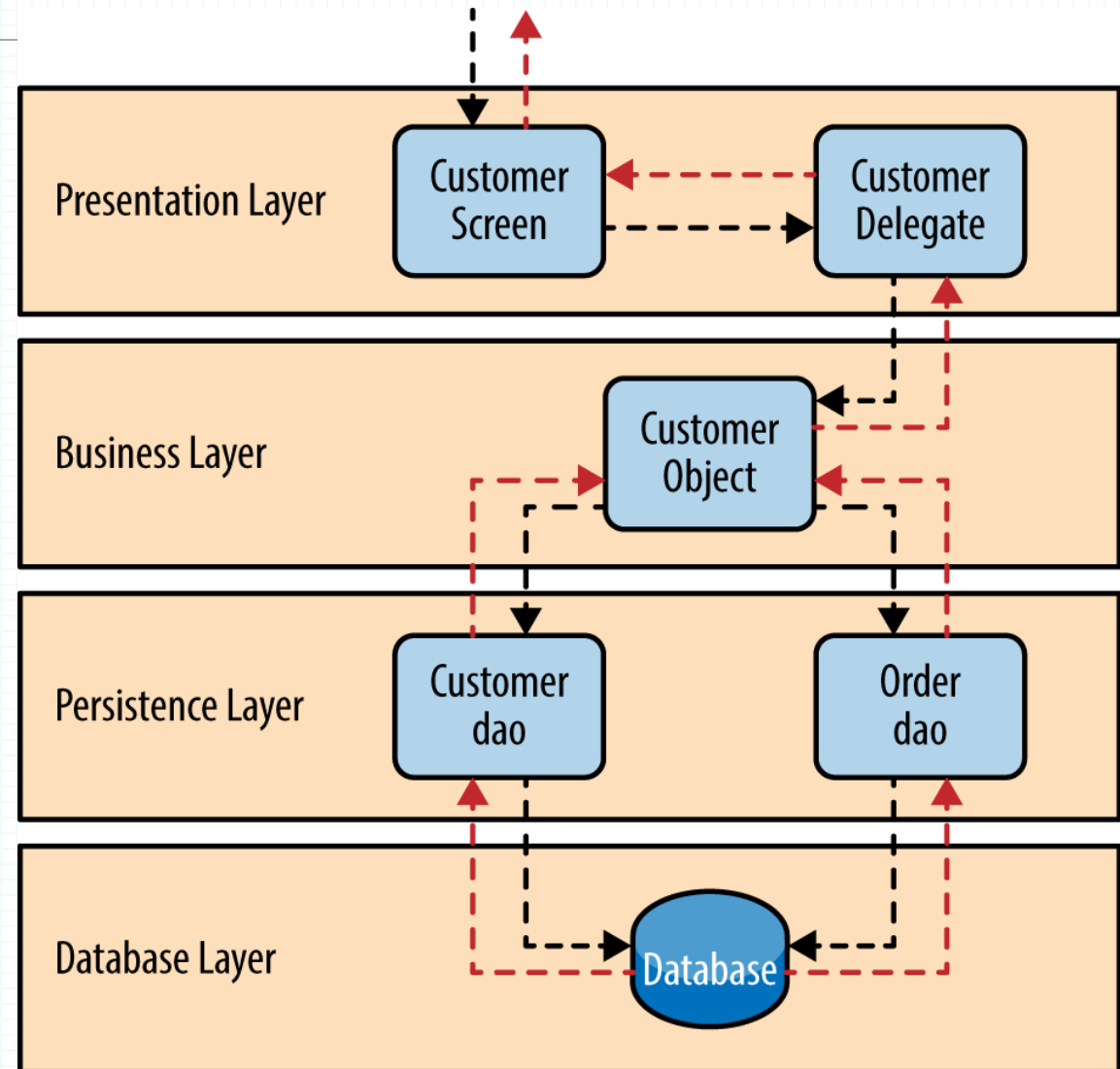
Software Architecture Style

Layered Architecture

د. رياض سنبل

Example: Layered Architecture

- Data Base Layer
- Persistence Layer (or Data access layer)
- Business Layer.
- Presentation Layer.



Relaxed (Open) vs. strict (Closed) Layers

RELAXED (OPEN)

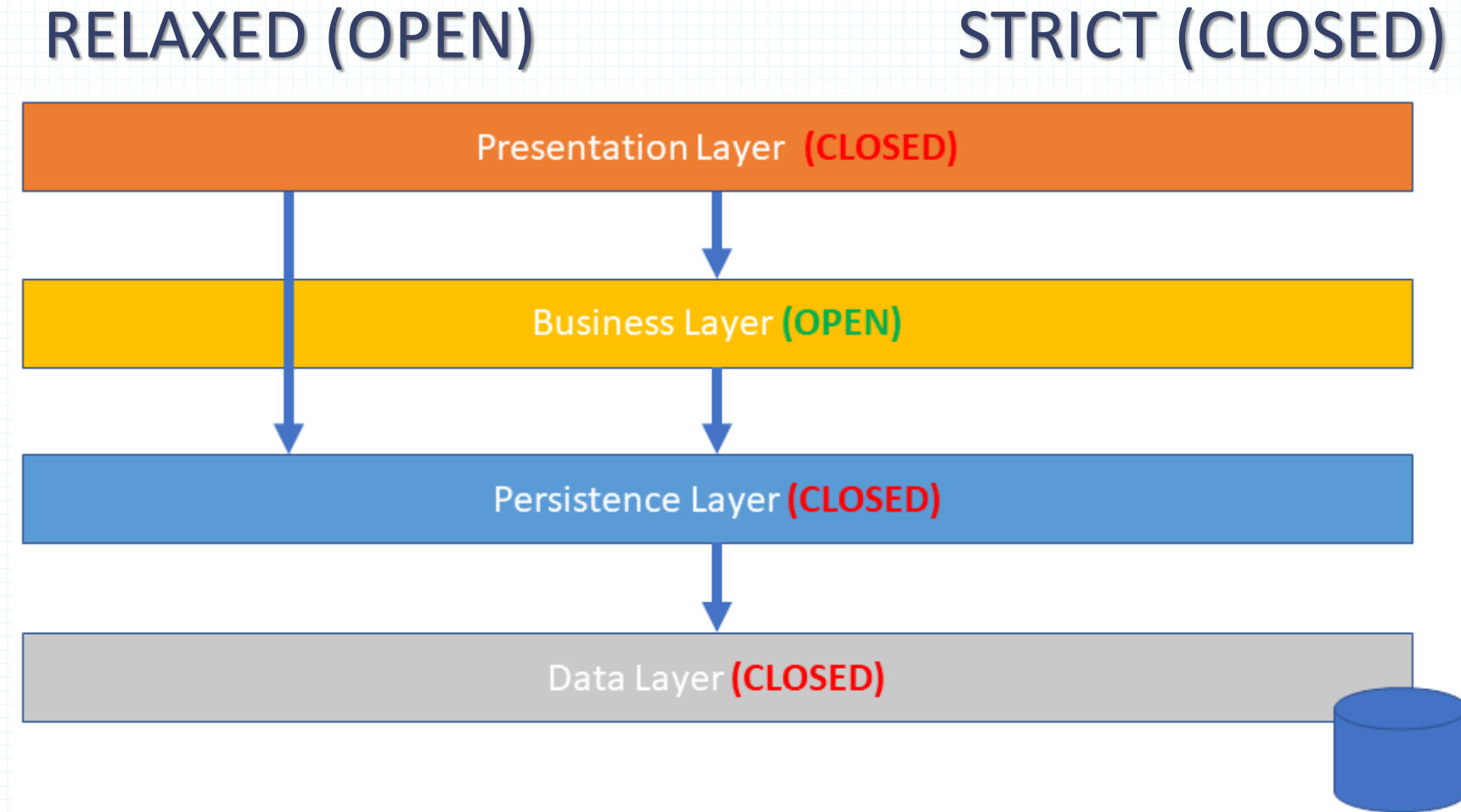
- Layer J can call directly into any layer below it, not just Layer J-1.
- **Pros:** More flexible and efficient than strict layers:
- **Cons:** Increases complexity, less understandable and maintainable than strict layers

STRICT (CLOSED)

- Layer J can **ONLY** call Layer J-1
- **Pros:** makes code easier to change, write, and understand.
- **Cons:** unnecessary traffic can result

It is not necessary to make all of the layers open or closed.
You may selectively choose which layers, if any, are open.

Relaxed (Open) vs. strict (Closed) Layers



Example

- Design a layered architecture for a system that includes the following features:
 - 1. Course Management:** The ability to manage courses (add, remove, update courses).
 - 2. Student Management:** The ability to manage students (add, remove, update student information).
 - 3. Enroll Students in Courses:** Implement business rules for enrollment:
 1. A course can have no more than 50 students.
 2. A student can be enrolled in no more than 5 courses.
 - 4. Print Course Enrollments:** Display a list of students for any given course.