ENTERPRISE ARCHITECTURE

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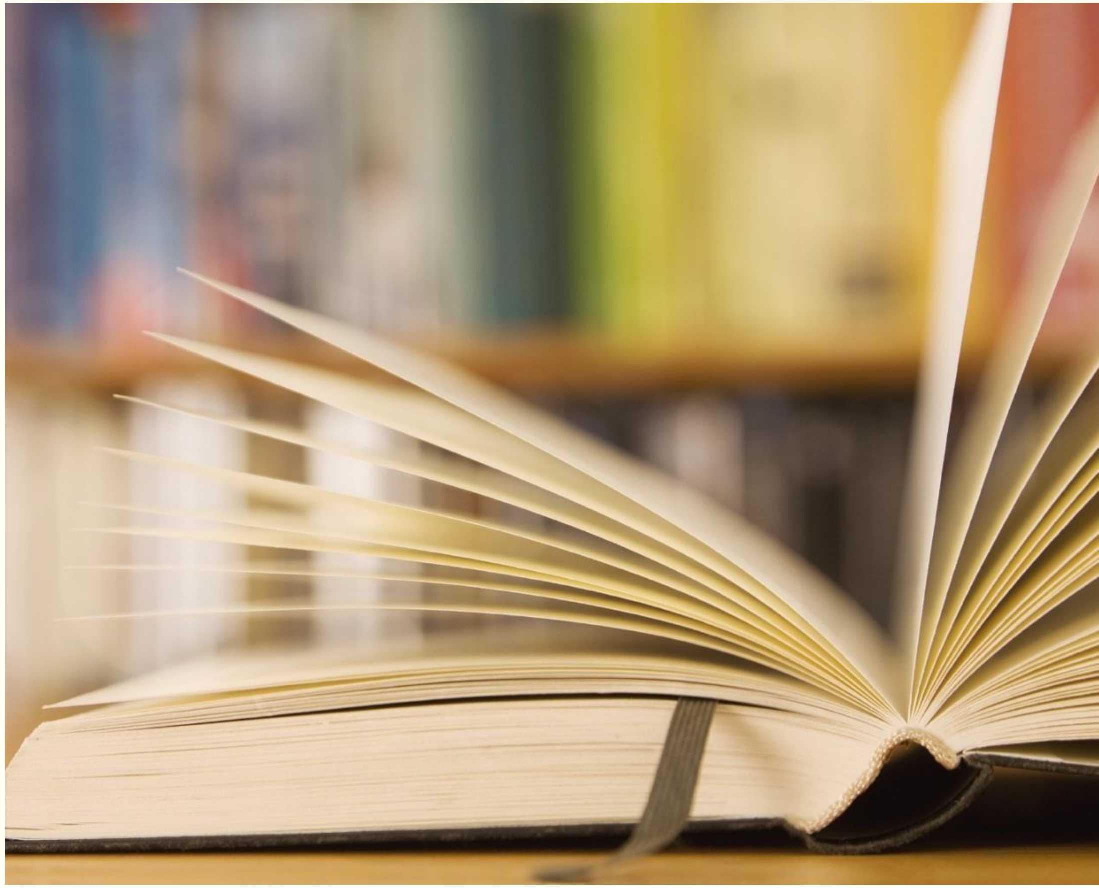

DETACHED ENTITIES PROBLEM

Lazy Loading Problem

- Typical problem in web applications.
- Scenario
    - Page 1: Select course.
    - Page 2: Display list of all students.
- The course is loaded but the students are lazy loaded.
- Once the transaction is closed, we get an error when fetching the students.

DEALING WITH DETACHMENT

Trigger Lazy Loading

- When loading main entity (course) the associated entity (students) are lazy loaded.
- Trigger the lazy loading, such that we have all associated entities (students) before the transaction ends.
- You may need to access an actual attribute to make sure the loading happened.
- Example:

```
Course FindCourse(int courseId) {

    Course course= em.find(Course.class, courseId);
    for (Student student : course.getStudents()) {
        student.getName();
    }
    return course;

}
```

Configure Eager Loading

- If the relationship is frequently accessed, then we may force the entities to be eager loaded.
- Better to explicitly annotate and provide a comment.
- There is a cost associated with this approach
  - Excessive database access.
  - Memory consumption.

AVOID DETACHMENT

Transaction View

- Keep the transaction open between the pages that need the entities.
- Servlet manages the transaction.
- Use bean managed transaction in the servlet, open before getting the main entity (course) and close after dispatching the child entity page (students).
- Possible to implement using filters (not recommended).

Entity Manager per Request

- Use application-managed entity manager.
- Only close em after child entities are rendered.
- Disadvantage
    - Query code could possibly be inside servlet code.

Main Point

- Detached entities are a real thing and could cause a lot of headache when not planned for properly. We can address them using some levels of eager loading or by planning for them with proper transaction scopes and entity manager scopes. While we do have several solutions, each come with a cost that needs to be weighed for your specific application.