ASSIGNMENT 01
COURSE: SOFTWARE ARCHITECTURE AND DESIGN

1. Objectives

- Understand Monolithic, Clean Architecture, and Microservices.
- Design software systems using UML.
- Implement Django + MySQL systems following three architectural styles.

2. Project Topic

Book Store Web System

3. Entities

Customer: id, name, email, password.
Book: id, title, author, price, stock.
Cart: id, customer_id, created_at.
CartItem: id, cart_id, book_id, quantity.

4. Functional Requirements

- Customer registration and login.
- View book catalog.
- Add books to the shopping cart.
- View shopping cart contents.

5. UML Design Requirements

Design the system using Visual Paradigm:

- Class Diagram
- MVC Layer Diagram (Monolithic version)
- Clean Architecture Diagram
- Microservices Architecture Diagram

Export diagrams as images or PDF files.

6. Implementation Requirements

Version A – Monolithic Django

- Single Django project
- Apps: accounts, books, cart
- MySQL database

Version B – Clean Architecture Django

Suggested project structure:

Listing 1: Clean Architecture layout of the Django system

```
project/
  domain/
  usecases/
  interfaces/
  infrastructure/
  framework/ (Django)
```

Version C – Microservices Django

The system is decomposed into independent services communicating via REST APIs:

- customer-service
- book-service
- cart-service

7. Database

- Use MySQL as the database system.
- Each version maintains its own database.
- Provide SQL scripts for table creation.

8. Submission

Submit the following:

- GitHub repository containing:
  - /monolith
  - /clean
  - /micro
- PDF report
- UML design files

9. Deadline

Submission at the beginning of **Week 2**.

10. Grading Criteria

Item	Weight
Correct UML design	30%
Working Monolithic version	20%
Correct Clean Architecture structure	20%
Working Microservices communication	20%
Report and on-time submission	10%

11. Regulations

- ChatGPT is allowed as a support tool.
- Students must understand submitted code.
- Late submission will be penalized.

Good luck and enjoy building your system!