

Software Architecture Solution

This assignment requires students to apply the architecture process to design a software solution from scratch for a system of their choice. It encourages understanding of both functional and non-functional requirements, technology selection, and architectural design.

1. Instructions:

1. Choose Your Topic:

Students must select a system or application they wish to design, e.g.:

- E-commerce platform
- Online learning system
- Healthcare management system
- IoT-based smart home solution
- Social networking site
- Any other software/system idea of their choice

2. Follow the Architecture Process:

Use the provided steps to create a comprehensive Software Architecture Solution:

1. Understand the System's Requirements:

- Write down detailed functional requirements (features the system will provide).
- Example: *For an e-commerce app, features may include user account creation, product search, shopping cart, payment, etc.*

2. Understand the Non-Functional Requirements:

- Identify critical non-functional requirements (how the system should behave).
- Example: *Scalability to support 100,000+ users, data security, reliability, and fast response times.*

3. Map the Components:

- Break the system into smaller components.
- Example: *For an online learning system, components might include user registration, course management, payment service, and notifications.*

4. Select the Technology Stack:

- Select technologies for your solution's core systems (programming language, database, backend framework, frontend framework, cloud services, etc.).
- Justify why you chose this stack (consider scalability, compatibility, ease of development, etc.).

5. Design the Architecture:

- Create a high-level diagram to show how the components interact. You can use <https://draw.io/>.
- Provide details on the types of interactions (e.g., REST APIs, event-driven messaging).
- Example: *Use a client-server model, describe data flow, and explain communication mechanisms.*

6. Write the Architecture Document:

- Compose a brief document describing the architecture and choices.
- Include:
 - Functional and non-functional requirements
 - Component descriptions
 - Technology stack
 - Diagram of architecture
 - Key decisions and reasoning