

Activity 2.1 – Learning Highlights

Key Architectural Patterns:

- **Layered Architecture:** This architecture organizes an application into a few layers, including user interface layer, application layer, data access layer and data layer.
- **Client-Server Architecture:** This architecture can be divided into two parts:
 - **Client:** An app or system send request to a server, this can be computers, or mobiles.
 - **Server:** The server hosts the application and send response back to clients
- **Microservices Architecture:** This architecture can be divided into many single applications as independent services. Each application runs independently and can be modified without altering other applications.
- **Event-Driven Architecture:** A system design approach where the focus is on the production, detection, consumption, and reaction to events. You can regard this architecture as a listener, when something happens, it will give corresponding response.
- **Service-Oriented Architecture (SOA):** This architecture supports the reuse of services and flexibility in integration. It is beneficial for large-scale enterprise applications.

Application Types:

- **Web Application:** Software applications that run in a web browser or on a web server. Usually follow Client-Server architecture and can be divided into Front-end and Back-end.
- **Mobile Application:** Designed for mobile devices. There are 3 types of mobile applications, namely native, cross-platform and hybrid applications.
- **Desktop Application:** Installed directly onto local devices, desktop apps often provide robust features and offline capabilities but require significant maintenance and system-specific integration.
- **Cloud-Native Application:** Built specifically for cloud environments, cloud-native apps take advantage of containerization, microservices, and CI/CD to offer scalable and resilient services. This is ideal for businesses aiming for fast growth and adaptability.