Architecture Patterns

Course	ES
Done?	☐

PART A

Task 1

1.1. Provide 3 unique definitions for software architecture.

1.2. List and explain with sample diagrams, 3 types of software architecture.

1.3. What are the differences between System architecture and Software architecture

1.4. Differentiate between the following in the context of software architecture and provide examples;

- Software correctness and Software robustness.
- Topic & queue
- Architecture & design
- User, primary stakeholder and secondary stakeholder
- Cohesion & coupling.

Task 2

2.1. List and explain the key concepts of Object-Oriented programming.

2.2. What is an architectural view? Explain characteristics of architecture patterns in pattern based.

2.3. Which are the main approaches to describing a software architecture? List and explain with sample diagrams.

2.4. Provide the advantages and disadvantages of the main approaches explained in question 2.3.

Task 1 and 2 will be submitted as an individual report.

PART B [Team work]

Task 3

This task is based on a real world application used by customers and costing millions with regards development and deployment. It will be done in a team of four(4).

Devices such as cameras, electric switches, fridges, thermostats, intercoms and more, all have an individual respective application with which it can be managed from a smartphone. Regardless, having a unified view of all devices on a single display would be easier on a user.

A startup company called Is3 develops a dashboard system which in almost real time, reports on the status of it's clients' devices. The application gathers stateless information from registered IoT devices, and formats the data into the visually beautiful dashboard which provides information on the happenings of the customer's devices. Furthermore, some pre-defined queries can be executed by the customer in order to gain access to more information with respects to the devices.

Kindly note that no data is added or updating by the customer. The information with regards the device status is received directly from the devices in the field and this data is simply presented to the end-user. Also, the sales team will add customers into the system manually after an intense verification process; hence, you can assume that the devices are already registered as there is no registration process for the system.

You are the architect🙌🏽 and it's your duty to design the architecture in order to ensure the Is3 application will push the business and lead eventually to a successful initial public offering. In order to achieve the best possible architecture; your team is expected to achieve this by following the process:

3.1. Define the requirements.

a: Functional

b: Nonfunctional

3.2. Map the components of the architecture.

3.3. Choose the Technology stack.

3.4. Design the architecture.

3.5. Write a detailed architecture document.

> 💡 Task3 will be submitted as a single team document.

BONUS [Team work. Can be done only after all tasks are completed]- #GiveUsMore 🤯

- Demonstrate an extensive evaluation of your architecture using the **ATAM** method.

> 💡 Bonus will be submitted as a 20mins team video with each team member discussing the ATAM phases followed. Good luck 💯