Microservices Architecture Course Curriculum

Module 1:
Evolution Of Microservices:-

Learning Objectives: In this Module, you will learn how Microservices have evolved over time and how different is Microservices from SOA. In addition, you will get to know about different architectures and where does Microservices architecture fit.

Topics:
1) Monolithic Architecture
2) Distributed Architecture
3) Service oriented Architecture
4) Microservice and API Ecosystem
5) Microservices in nutshell
6) Point of considerations
7) SOA vs. Microservice
8) Microservice & API

Skills:
1) Architecture styles
2) Advantages of different architecture styles
3) Limitations of Architectures
4) What is Microservices

Module 2:

Learning Objectives: Learn the various principles of REST, the various characteristics of Microservices, the importance of messaging in Microservices architecture, and the concept of distributed transactions.

Topics:
1) Microservice Architecture principles
2) Inter-Process Communications
3) Microservice Transaction Management

Skills:
1) What are the points you need to consider while building microservices
2) How the services communicate with each other
3) How the transaction management is done in microservice.

Module 3:

Learning Objectives: This Module gives you an insight into Domain Driven Design, the approach called Big Ball of Mud, the approaches and their strategies that can be used while moving from Monolithic to Microservices.

Topics:
1) Microservice Architecture Decisions
2) Big Mud Ball to Sweet Gems
3) Design and develop a microservice

Skills:
1) Architecture Decisions
2) Monolithic to Microservices redesign.
3) Learn to identify and design microservices.

Module 4:

Learning Objectives: Know why security is an important factor to be considered in Microservices. Learn what are the various best practices around Microservice security design, and what techniques can be used to implement security.

Topics:
1) Why it’s so important
2) Microservice Security Principles
3) Access Tokens
4) Oauth 2.0

Skills:
1) Oauth 2.0
2) Security tokens
3) Secure by design

Module 5:

Learning Objectives: Learn the different testing strategies that can be implemented in Microservices, how Spring Boot features help in testing Microservices, and the various testing tools that are available to be used.

Topics:
1) Testing scenarios and strategy
2)Test at Different Levels
3) Testing Best Practice for Microservices

Skills:
1) Testing methodology
2) How to test Microservices

Module 6:

Learning Objectives: Get an insight into Microservices reference architecture, what are the key Microservice enablers and how does DevOps and Microservice go hand in hand. In addition, know what features an API system provide to Microservices, and how Netflix has benefited by implementing Microservices.

Topics:
1) Netflix Architecture
2) Future Trends
3) Enabler Technologies

Skills:
1) Scalable Architecture
2) How Netflix uses Microservices
3) How cloud and DevOps enables Microservice architecture

Module 7:

In this In-Class Project, you will develop a virtual wallet for an e-commerce marketplace - www.microkart.com.

The Project is divided into two phases –
1) Build a simple marketplace with a few products having a shopping cart and an e-wallet.
2) Refactor the marketplace to perform e-wallet integration by adding a circuit-breaker Microservice.