Message Queuing System – Course Outline

# Duration

* 3 days

# Objectives

By end of this workshop, participants will able to:

* Understand key messaging concepts: Message, Message Producer, Message Consumer, Message Bus, Topic, Queue
* Understand various Messaging API / Standards / Protocols: JMS, AMQP, STOMP, MQTT
* Get overview on IBM MQ and various other message queue implementations and it's usage
* Get knowledge on distributed message queue and it's implementations
* Design and build an application with message queuing implementation

*Note: Hand-on will be based on WebLogic Server JMSimplementation*

# Audience

* ApplicationDevelopers and Architects who are responsible for development and design of messaging applications.

# Pre-requisite

* Good Programming knowledge with Java
* Basic knowledge in messaging system
* Working knowledge in Eclipse
* Basic knowledge in Maven (preferable)

# Hardware & Network Requirements

* All participants to have individual desktops/laptops with at least i3 2nd gen with 4GB RAM
* Access to internet

# Software Requirements

* Windows 64 Bit
* Eclipse IDE 4.2+
* Java 7+
* Maven (preferable)
* Active MQ 5.10+
* Oracle VirtualBox

# Outline

## Day 1 - Session 1

1. **Introduction to Message Queue**
2. Introduction to Messaging
3. Synchronous vs Asynchronous
4. Need for Messaging Queue
5. Message Queue Overview
6. Messaging Terminologies
7. Concepts behind Messaging Systems
8. Messaging API, Standards and Protocols
9. **Introduction to JMS**
10. JMS overview
11. Messaging Styles
12. JMS Interfaces
13. Developing a JMS Application
14. Security, Multi-threading, Triggering Clients, Request / Reply
15. **JMS Message Model**
16. Goals
17. JMS Messages
18. Message Header Fields
19. Message Properties
20. Message Acknowledgement
21. The Message Interface
22. Message Selection
23. JMS Message body

## Day 1 - Session 2

1. **JMS Common Facilities**
2. Connection, Session
3. Message Consumer, Message Producer
4. Message Delivery Mode, Message Time-To-Live
5. Exceptions
6. Reliability
7. **JMS Point-to-Point Model**
8. Queue Management
9. Queue, Temporary Queue
10. QueueConnectionFactory, QueueConnection, QueueSession, QueueReceiver, QueueBrowser, QueueRequestor
11. Reliability

## Day 2 - Session 1

1. **JMS Publish/Subscribe Model**
2. Topic Management
3. Topic, Temporary Topic
4. TopicConnectionFactory, TopicConnection, TopicSession, TopicPublisher, TopicSubscriber, TopicRequestor
5. Recovery and Redelivery
6. Reliability
7. Administering Subscriptions
8. Pub/Sub Latency
9. Durable Subscription
10. **JMS Transaction**
11. Transaction Overview
12. JMS Transaction API
13. Transacted Session

## Day 2 - Session 2

1. **JMS Application Server Facilities**
2. Concurrent Processing of a Subscription’s Messages
3. XAConnectionFactory, XAConnection, XASession
4. JMS Application Server Interfaces
5. **IBM MQ**
6. IBM MQ Overview
7. IBM MQ Architecture
8. IBM MQ Components and Processes
9. Messaging Styles, Topologies
10. Transaction, Security, Exception Handling

## Day 3 - Session 1

1. **Introduction to Messaging Standards / Protocols**
2. AMQP overview
3. STOMP overview
4. MQTT overview
5. **Message Queue Implementations**
6. Active MQ
7. Rabbit MQ
8. Qpid

## Day 3 - Session 2

1. **Introduction to Distributed Messaging System**
2. Distributed Messaging Overview
3. Introduction to Kafka
4. Need, Benefits and Use Cases
5. Kafka Architecture
6. Kafka Components - Consumers, Producers and Brokers
7. Zookeeper Overview
8. How it works
9. Sample programs to publish and consume messages
10. Troubleshooting, Monitoring and Best Practices
11. **Messaging Patterns, Best Practices and Case Study**
12. **Assessment**