Course Outline

IBM MQ Introduction & Application Programming

Course Summary

Description

Day 1 is designed to provide the skills necessary to determine the feasibility for using Message Queuing in implementation of application systems. A complete look at the features and facilities provided by the various MQI products will be provided. Days 2 thru 4 are designed to provide the skills necessary to understand the Application Programming Interface (API) provided by IBM MQ.

Objectives

At the end of this course, students will be able to:

- Describe the key related features and facilities available within IBM MQ and the MQI.
- Describe, explain and understand the various queue and message styles used in message queuing.
- Describe, explain and understand the functions provided for most of the API commands.
- Understand the characteristics and basic design approaches for coding IBM MQ applications.
- Gain a basic knowledge of the recovery, and system management facilities provided.

Topics

- Introduction
- Message Queuing Features and Facilities
- Related Topics
- Message Queuing Interface: Initial Design Considerations
- Message Queuing Interface: Accessing Queue Managers
- Message Queuing Interface: Accessing Queues
- Message Queuing Interface: Writing and Reading Messages
- Message Queuing Interface: Special Message Retrieval Options
- Message Queuing Interface: ReplyToQ and Report Options
- Message Queuing Interface: Special Call Processing
- Message Queuing Interface: Special Topics and Options

Audience

The first day of the course is intended for information systems personnel at all levels. The last three days of the course are intended for applications and systems development staff desiring to understand the writing of IBM MQ applications.

Prerequisites

It is highly recommended that students have the following knowledge and skills: Introduction to Client/Server course (or equivalent knowledge), have at least 1 year of programming experience with COBOL or C/C++ and have at least a general knowledge of operating system environments in use.

Duration

Four Days

IBM MQ Introduction & Application Programming

Course Outline

I. Introduction
- A. IBM MQ Definition and Concept
- B. IBM MQ Components
  1. Queue Managers and Clients
  2. Queues
  3. Channels
  4. System Default Queues
  5. Process Definitions and Trigger Monitor
- C. IBM MQ Parallel Execution
- D. Load Balancing
- E. IBM MQ Clusters
- F. Getting Data Nearer to the Program
- G. No Dedicated Connection
- H. IBM MQ and the Network
  1. Open Network Blueprint
  2. Conversation Model
  3. Call Model
  4. Messaging Model
- I. Messaging Models
  1. One-To-One Messaging
  2. One-To-Many Messaging
  3. Many-To-One Messaging
  4. Many-To-Many Messaging

II. Message Queuing Features and Facilities
- A. Function Queues
  1. Local Queue
  2. Remote Queue
  3. Simple Queue topology
  4. Transmission Queue
  5. Alias Queue
  6. Model Queue
  7. Message Queues
  8. Reply-To Queue
  9. Initiation Queue
  10. Command Queue
  11. Event Queue
  12. Dead-Letter Queue
- B. Message Types
- C. Report Message Processing
- D. Direct MQI Calls
- E. High-Level AMI Calls
- F. Recovery Basics
- G. Security Basics

III. Related Topics
- A. Message Groups and Segmentation
- B. Public and Subscribe
- C. IBM MQ Performance Notes
- D. Installable Services
- E. Message and Channel Exits
- F. IBM MQ Integrator
- G. IBM MQ Workflow
- H. Implementation Approach

IV. Message Queuing Interface: Initial Design Considerations
- A. MQI Objects
  1. Queues Managers and Queues
  2. Local and Remote Queues
  3. Defining Queues and Their Attributes
  4. Transmission Queue
  5. Channels
- B. Parallel Execution
- C. Call Type Introduction
- D. Program Preparation
  1. Structures and Attributes
  2. Dynamic Call Processing on z/OS
  3. Compiling and Linking Programs
- E. Review Quiz

V. Message Queuing Interface: Accessing Queue Managers
- A. Connection to a Queue Manager
  1. Connect to Local Queue Manager
  2. Connect to Multiple Queue Managers
  3. MQCONN Call
  4. MQCNO, For MQCONNX Call
  5. MQCONNX Call
- B. Disconnection from a Queue Manager
  1. Disconnect from Local Queue Manager
  2. MQDISC Call
- C. Review Quiz and Workshop #1

Course Outline (Cont'd)

VI. Message Queuing Interface: Accessing Queues
- A. Opening A Queue
  - 1. General Description
  - 2. MQOD Structure
  - 3. MQOPEN Call
- B. Closing A Queue
  - 1. General Description
  - 2. MQCLOSE Call
- C. Model and Dynamic Queues Use
- D. Review Quiz and Workshop #2

VII. Message Queuing Interface: Writing and Reading Messages
- A. Message Types
- B. Processing Messages
  - 1. MQMD Structure
  - 2. MSGID and CORRELID Processing
  - 3. Normal MQMD Settings
  - 4. Common MQMD Attribute Processing
- C. Writing Messages
  - 1. MQPMO Structure
  - 2. MQPUT Call
- D. Reading Messages
  - 1. MQGMO Structure
  - 2. MQGET Call
- E. Review Quiz and Workshop #3

VIII. Message Queuing Interface: Special Message Retrieval Options
- A. MQGET with WAIT Processing
- B. Queue Browse Processing
- C. Review Quiz and Workshop #4

IX. Message Queuing Interface: ReplyToQ and Report Options
- A. MQPUT1 Call
- B. Reply-To Queues
- C. Report Message Processing
- D. Review Quiz and Workshop #5

X. Message Queuing Interface: Special Call Processing
- A. Data Synchronization Functions
  - 1. Processing Messages With Syncpoint
  - 2. MQBACK Call
  - 3. MQCMIT Call
- B. Control of MQSeries Unit of Work
  - 1. Structure (MQBO) For MQBEGIN Call
  - 2. MQBEGIN Call
- C. MQINQ and MQSET Attributes
  - 1. Common Plus Local Queue Attributes
  - 2. Attributes for Other Queue Types
- D. Special Calls
  - 1. MQINQ Call
  - 2. MQSET Call
- E. Review Quiz and Workshop #6

XI. Message Queuing Interface: Special Topics and Options
- A. Trigger Queue Processing
  - 1. Process Definitions and Trigger Monitor
  - 2. MQTM and MQTMC2 Structures
  - 3. Initiation Queues
- B. Undelivered Messages
  - 1. Dead-Letter Queue
  - 2. MQDLH Structure
- C. Message Context Processing
- D. Course Summary and Next Steps