

MQSeries® Application Programming (CICS)

Course No.

3211

Description

In this course students learn the characteristics and benefits of applications that utilize messaging and queuing with MQSeries®. Although the course is geared toward the mainframe COBOL/CICS® platform, many of the concepts and techniques learned are applicable to the other environments supported by MQSeries®. A large portion of the course is devoted to the actual coding and testing of the MQI calls, which place and retrieve messages to and from queues. Familiarity with COBOL/CICS® or other mainframe language is all that is necessary to attend the class.

Audience

Application Programmers and Analysts interested in coding MQSeries® calls, especially in COBOL programs

Prerequisites

Basic knowledge of MQSeries® fundamentals or our "MQSeries® Introduction" course. Students should have six months of programming experience using MVS COBOL/ CICS® and TSO™/ISPF

Objectives

- Design, write and test applications which use the MQI
- Understand the key elements of program design as related to the message queuing environment of MQSeries®
- Learn the importance of the Object Descriptor (OD) and Message Descriptor (MD)
- Use options, reports and triggers to learn how to enhance programs which use MQSeries®
- Code the Message Queue Interface (MQI) calls that place the retrieved messages to and from queues and describe the function of each of the verbs in the MQI

Major Topics

- Message queuing in programs
- Attributes of queues and messages
- MQI in different environments
- MQSeries® object types
- MQI calls and options
- Programming for a mixed network
- Security
- Assured delivery and transactions
- Time independent programming and triggers
- Parallel applications
- Application approaches to problems

Duration

3 days



Course Contents

1. MQSeries® Overview

- Challenges of Distributed Computing
- Classic Communication Models
- What is Message Queuing
- MQSeries®
- Time Independent Processing
- Parallel Processing
- Security
- Syncpoint Support
- Recovery Support
- Products and Supported Platforms
- Message Queue Manager (MQM)
- MQSeries® Client
- Clusters
- Queue Sharing Groups
- Queue
- Channels
- Message Channels
- MQI Channels
- Process Definitions
- Namelists
- Message Application Programming Interface
- Message Queue Interface (MQI)
- MQI Verbs
- MQSeries® for OS/390 Unique Considerations
- The MQSeries® - CICS™ Adapter
- Local Communication
- Remote Communication
- Where to Get More Information
- Hands-On Workshop

2. Queues and Messages

- Types of Queues
- Types Of Local Queues
- Attributes of All Queues Types
- Attributes of Queue Types
- Parts of a Message
- Types of Messages

3. MQI Programming

- Message Queue Interface (MQI)
- MQI Verbs
- Elementary Data Types
- Structure Data Types

- Data Definition Files
- Program Set-Up
- MQCONN
- Return Codes
- Handles
- MQOPEN
- QUEUE Name Resolution
- MQPUT
- MQPUT1
- MQGET
- MQCLOSE
- MQDISC
- Hands-On Workshop

4. Further MQI Programming Options

- Manipulating Message Delivery
- Waiting for Messages to Arrive
- Signaling
- Message Priority
- Message Persistence
- Message Expiration
- Message Conversion
- Conversion Errors
- Conversion Warnings
- Conversion Exit Programs
- Message Conversion
- Browsing Queues
- Units of Work
- Unit of Work Resource Coordinators
- Unit of Work Containing MQPut and MQGet
- Distributed Units of Work
- MQCMIT
- MQBACK
- Poisoned Messages
- Preventing Infinite Loops - Backout Count
- Preventing Infinite Loops – Mark Skip Backout
- Hand-On Workshop

5. Programmed Administration

- Manipulating Objects
- MQINQ
- MQSET
- MQINQ and MQSET Common Errors
- Local and Physical Messages



- Message Groups
- Grouping Local Messages
- Logical Versus Physical Ordering
- Retrieving Logical Messages
- When Grouping Spans a Unit of Work
- Handling Large Messages
- Message Segmentation By Queue Manager
- QueueManager Segmentation Message
- Controlling Retrieval of Segments
- Reference Messages
- Further Points on Reference Messages
- Distribution Lists

6. Distributed Environment Security

- Security in MQSeries®
- Access Control
- Message Context
- Passing Context
- Context Code Example
- Alternate Authority
- Alternate Authority Example
- Setting Context from Programs
- Security Exits

7. Reporting

- Report Messages

- Report Options
- More Report Options
- Report Message Options
- Application Generated Exceptions
- Determining the Exception
- Reporting the Exception
- Dynamic Queues
- Events
- Event Types
- Event Message Format

8. Triggering

- What is Triggering?
- Uses of Triggering
- Trigger Queues
- Special Case of Trigger Type First
- Queue Attributes Used to Set Trigger
- Process Definitions
- Trigger Messages
- Trigger Monitor
- Process Review
- Unit of Work Considerations
- Triggering Conditions
- Client/Server

