

CICS TS (Transaction Server) Programming

Duration	5 days.
Participants	Application programmers and developers.
Overview	This course teaches experienced application programmers and developers to code CICS TS (Transaction Server) commands within COBOL programs and to write the logic that supports pseudo-conversational, multi-module, online transaction applications. CICS with DB2 is an optional day with this course.
Objectives	After successfully completing this course, you will be able to: • Design, code, and execute COBOL CICS TS programs that use full screen I/ O (send and receive mapsets) and process data. • Code BMS macros to create CICS screens for SEND and RECEIVE MAP commands. • Create and use maps for formatted screen input and output. • Understand and implement efficient programming techniques to minimize the use of CICS resources. • Use CICS commands and transactions to access and process VSAM files. • Interactively debug CICS programs using CEDF. • Use CEMT, CECI, and CEBR transactions within CICS. • Describe the new and enhanced features for COBOL TS and CICS/ ESA programming.
Prerequisites	COBOL programming experience is required. No prior knowledge of CICS is assumed.
Format	Lecture and hands-on computer workshops.
Related Courses	SDF - 1 day SDF II - 1 day Advanced CICS Programming Topics - 5 days Abend-AID/ FX for CICS - 1 day Xpediter for CICS - 1 day InterTest for CICS - 1/ 2 day CICS with DB2 is an optional day with this course or with Advanced CICS.
Topic Outline	Introduction - Batch vs online - Processing differences - Processing goals - CICS - Product description - Environment - CICS Regions - Product components - CICS tables - Programming impact - Menu programs - Access programs - Update programs - Maintenance programs

CICS TS Programming *(continued)*

Topic Outline

Introduction *(continued)*

- Program preparation
 - Precompile process
 - Compile requirements
 - Link requirements
 - NEWCOPY in CICS
 - Running an online transaction

Pseudo Conversational Programming

- Contrast with Conversational programming
- Basic program structure and logic
- RETURN to stop program
- RETURN with TRANSID and COMMAREA

Terminal I/O

- Terminal control commands: SEND, RECEIVE
- Basic mapping support (BMS)
 - Map creation
 - Map transmission
 - SEND MAP
 - RECEIVE MAP
 - Physical and symbolic maps
- Attention key usage
 - HANDLE AID
 - EIBAID
 - COPY DFHAID
- Screen design
 - BMS Macros
 - DFHMSD
 - DFHMDI
 - DFHMFDP
 - JCL to generate physical and symbolic maps
- Attribute bytes
 - Physical map
 - Dynamically modifying in the symbolic map
- Cursor location
 - Physical map
 - Dynamically modifying in the symbolic map

CICS Error Handling

- HANDLE CONDITION
- Response code tests
- HANDLE ABEND
- ABEND

Topic Outline

Pseudo-Conversational Programming Techniques

- Using EIBCALEN and DFHCOMMAREA

- Logic requirements

 - First time logic

 - Last time logic

 - Normal logic

- Screen edit and save techniques

File Access for VSAM

- Random I/ O

 - READ, REWRITE, DELETE, and WRITE

- Browse mode

 - STARTBR, READNEXT, READPREV

 - ENDBR, RESETBR

- Locking

 - UNLOCK

 - Recoverable vs non-recoverable resources

- Service transactions

 - CEMT I FILE

 - CECI READ

 - CRTE

- Tokens

Program Control

- Creating application systems with LINK and XCTL

- Using LOAD and RELEASE to access common tables

- CALLing subprograms

- RETURN with IMMEDIATE and TRANSID

Queues

- TS - Temporary storage

 - Concepts

 - WRITEQ, READQ, DELETEQ

- TD - Transient data

 - Intrapartition vs extrapartition

 - Trigger levels

 - DCT entries

 - WRITEQ, READQ, DELETEQ

Resource Usage

- GETMAIN and FREEMAIN

- Minimizing storage requirements by using the

 - LINKAGE SECTION and SET option

- Using ENQ and DEQ to gain exclusive control

- ASSIGNing system information

- Obtaining ADDRESSes

- CWA

- TWA

- TCTUA

CICS TS Programming *(continued)*

Topic Outline

Interval Control

- ASKTIME and FORMATTIME
- START tasks
- RETRIEVE and CANCEL
- POST
- WAIT
- SUSPEND
- DELAY

Recovery Features

- SYNCPOINT and SYNCPOINT ROLLBACK
- HANDLE ABEND
- Journals
- Protected resources and dynamic transaction backout
- Recovery and restart procedures

CICS and DB2 *(Requires an extra day of class.)*

CICS New Feature Highlights

- Accessing transactions beyond the mainframe
- BTS (Business Transaction Services)
- EXCI - call batch programs from CICS
- OO for C++ interface
- 3270 Bridge program
- Java and VAJ front-ends