IMS Essentials Training

Duration: **4 Day**

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Overview

This course provides a comprehensive introduction to **IMS for professionals who are new to the IMS environment**. It is also well suited as cross-training for application support specialists coming from areas such as CICS, COBOL, Java, or DB2.

The programme explores IMS databases in both **Batch** and **Online** environments. Participants learn how data is accessed through the **DL/I Language Interface**, how IMS database structures are implemented, and how **Database Recovery Control (DBRC)** supports data integrity and recovery.

Theory is reinforced through written exercises and practical scenarios. Learners analyse sample applications and review the procedures and utilities used to recover from different application and system failure situations.

The course also introduces IMS transaction processing, Message Format Services, Fast Path, HALDB, data sharing, system restart, operational management, and performance considerations.

Prerequisites

Participants should have:

- A general understanding of the IBM enterprise server / mainframe environment,
- Familiarity with basic application development concepts.

Previous IMS experience is not required.

Who Should Attend

This course is particularly suitable for:

- Technical professionals who are new to IMS,
- Application support specialists moving from CICS, COBOL, Java, or DB2,
- Mainframe application support teams,
- Developers who need a foundation in IMS database and transaction processing,
- Learners preparing to work with IMS operations, recovery, or performance management.

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What You Will Learn

By the end of this course, participants will be able to:

- Describe the architecture of IMS batch and online systems,
- Analyse database and communication calls,
- Identify suitable logical and physical database design features,
- Explain the structure of secondary indexes and logical relationships,
- Understand how IMS utilities are used to back up, restore, and reorganise databases,
- Explain how IMS supports data integrity and system availability,
- Trace the flow of a transaction through an IMS environment,
- Understand the role of DBRC, logging, recovery, and restart facilities.

Outline

Introduction to IMS

- Why organisations use databases
- Common database types
- Hierarchical database terminology
- Understanding the Processing Path
- Accessing data in IMS
- Database implementation
- The IMS Online Environment
- Message Format Services (MFS)
- IMS Utilities
- Logging
- Operational responsibilities

Introduction to Batch Programming

- DL/I Language Interface
- Program Specification Block (PSB)
- IMS Call Format
- Function Codes
- Record Retrieval
- Fundamentals of batch processing
- Workshop

Advanced Database Programming

- Update Processing
- Command Codes
- PCB Addressing
- Boolean SSAs
- Advanced DL/I usage
- Workshop

Database Environment

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- Program Specification Block (PSB)
- PSB Statements
- Program Communication Block (PCB)
- PROCOPTs
- PSB Generation
- ACB Generation
- Relationships between PSBs and programs
- Batch JCL
- Workshop

Database Implementation – 1

- Database Description (DBD)
- Database Organisation
- Access Methods
- Building the physical database structure
- Selecting an appropriate organisation method

Database Implementation – 2

- Secondary Indexing
- Secondary Data Structures
- Stand-Alone Processing
- Design considerations
- Logical Relationships
- Alternative database access paths

Database Implementation – 3

- Introduction to HALDB
- Core HALDB features
- Processing Options
- Partitioning concepts for large IMS databases

Database Backup and Recovery

- IMS Logging
- Image Copy
- Database Reorganisation
- Database Recovery Control (DBRC)
- Recovery procedures
- DBRC-related tools and utilities
- Recovering databases after application or system failures

IMS/TM Concepts and Facilities

- IMS/DC Configuration
- Control Region (CTL)
- DL/I Separate Address Space (DLISAS)
- Database Recovery Control (DBRC)
- Message Processing Region (MPR)
- Batch Message Processing (BMP) Region
- Message Scheduling

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- Logging
- Understanding online transaction processing architecture

IMS Online Programming – 1

- Message Processing Program (MPP)
- Transaction Codes
- Transaction Flow
- Input Message Segment
- Output Message Segment
- IMS Message Calls
- IO PCB Mask
- Common Status Codes
- Workshop

Message Format Services

- Message Format Services (MFS)
- MFS Control Blocks
- DIF / DOF Coding
- MID / MOD Coding
- Attributes
- Message Management
- Managing online message formats

IMS Online Programming – 2

- Alternate PCB
- Using Alternate PCBs
- Transaction Switching
- Conversational Programming
- Checkpoint / Restart
- Restart considerations for longer-running online processing
- Workshop

Fast Path

- General Fast Path characteristics
- Fast Path EMH
- Data Entry Database (DEDB)
- Main Storage Database
- High-performance transaction processing scenarios

Online IMS System Recovery and Restart

- Online Logging
- Restart Data Set (RDS)
- Archiving
- Understanding Log contents
- Normal Restart
- Emergency Restart
- Recovery approaches for online IMS systems

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Sharing Data and Data Sharing

- The challenges of Shared Access
- Shared Access solutions
- Control Region / DLISAS
- Program Isolation
- Locking
- Deadlock Resolution
- Data Sharing
- Database-Level Sharing
- Block-Level Sharing
- DBCTL
- Supporting access to shared data across applications

IMS Operations

- Operational considerations
- Operations Planning
- Starting IMS
- Stopping IMS
- Online Change Facility
- Controlling IMS
- Day-to-day system operations

IMS Performance Management

- Database Performance
- DB Monitor
- Database Buffer Pools
- DC Performance
- Reviewing performance indicators
- Improving database and transaction performance