

## IMS Fundamentals

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### Course Summary

#### Description

This course is designed to present an introduction to the basic and enhanced facilities of IMS (Information Management System) and its use in today's IS environment.

#### Objectives

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

- Identify of the components of an IMS system
- Describe the services provided by and the control blocks used by the IMS database manager
- Identify the IMS database organization types and optional implementations including secondary indexing and logical relationships
- Describe the components and services of the IMS Transaction manager and MFS
- Describe the flow of a message through IMS
- Identify the components of IMS DB and IMS TM application programs
- Describe the advantages of IMS Fast Path and how it differs from IMS DB/DC
- Describe ways to connect IMS to other systems
- Describe ways to improve the availability IMS,
- Describe ways in which IMS supports the Web
- Describe tasks to support and control the IMS environment.

#### Topics

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| <ul style="list-style-type: none"> <li>• IMS Overview</li> <li>• IMS Database Manager</li> <li>• IMS Hierarchic Access Methods</li> <li>• IMS Database Programming</li> <li>• IMS Transaction Manager</li> <li>• IMS Transaction Message Processing</li> <li>• Application Message Processing</li> <li>• IMS Fast Path</li> <li>• IMS Interface to Other Systems</li> </ul> | <ul style="list-style-type: none"> <li>• IMS Data Sharing, Sysplex, &amp; Shared Queues</li> <li>• IMS Additional Availability Support</li> <li>• IMS Operations</li> <li>• IMS System Programming &amp; Administration</li> <li>• IMS Service Oriented Architecture (SOA)</li> <li>• Highlights of the current two versions of IMS</li> </ul> |
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#### Audience

For Information Technology professionals (application programmers, database administrators, systems administrators, and systems programmers) who want a basic understanding of, or who work with or manage an IMS System (IMS DB, IMS DB/DC, or IMS DBCTL).

#### Prerequisites

An introductory knowledge of Enterprise Systems hardware and software.

#### Duration

Five days

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### Course Outline

#### I. IMS Overview

- A. Who uses IMS & usage statistics
- B. IMS Components, Features, & Environments
- C. IMS Database & Transaction Management Systems
- D. IMS System Services
- E. IMS Product Documentation plus Hardware & Software Requirements
- F. Application Programming Languages Supported
- G. IMS Features

#### II. IMS Database Manager

- A. What is a database
- B. IMS Databases, hierarchic structure & terminology
- C. Storing data in IMS & Db2 for z/OS & storing XML data
- D. Open database manager
- E. Components of an IMS database system and its control blocks (DBD, PCB, PSB, ACB)
- F. IMS program communication overview
- G. PCB Processing Options
- H. The IMS Catalog
- I. Database Integrity and Recoverability

#### III. IMS Hierarchic Access Methods

- A. Order, Structure, Relationships, Prefixes & Pointers
- B. IMS Sequential Access Methods: HSAM, HISAM, GSAM, SHSAM, SHISAM
- C. IMS Direct Access Methods: Segment Prefix Area, Free Space Management, HDAM, PHDAM, HIDAM, PHIDAM
- D. HALDB: Highlights, data sets, partitions, partition selection, partitioned secondary index, and support
- E. Variable length segments
- F. Secondary Indexes
- G. Logical Relationships
- H. Database Utilities

#### IV. IMS Database Programming

- A. Program components, PCB review and mask layout
- B. DL/I Call parameters, function codes (sequential & direct retrieval, adding, deleting, modifying data), segment search arguments
- C. AIB Interface
- D. Using EXEC DLI
- E. CICS PSB Scheduling
- F. IMS Status codes
- G. DL/I test program

#### V. IMS Transaction Manager

- A. Goals of an online system
- B. Architecture (control region, DLISAS region, DBRC region, Dependent Regions (MPR, BMP, IFP, JBP, JMP))
- C. Logical Terminal concept
- D. Message types & examples
- E. Message queues
- F. Message Format Services (MFS)
- G. Master Terminal
- H. IMS Security
- I. IMS Online system integrity & logging (OLDS, WADS, SLDS, RLDS)
- J. DBRC: Database Recovery Control (purpose, components, planning, commands, & records)
- K. Program Isolation, System Checkpoints
- L. IMS TM related products

#### VI. IMS Transaction Message Processing

- A. Scheduling (classes, priorities, additional factors)
- B. Dynamic transaction backout
- C. Batch message processing (BMP)

#### VII. Application Message Processing

- A. Message Processing calls
- B. Communicating with IMS (IO-PCB, TP-PCBs)
- C. Conversational processing
- D. Synchronization point events
- E. Application abends and recovery
- F. IMS Connect

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### Course Outline (cont'd)

#### VIII. IMS Fast Path

- A. Components
- B. Data Entry Databases (DEDB): Structure, storage format, special characteristics & utilities, additional features
- C. Fast Path system functions
- D. Main Storage Databases (MSDB): types, processing
- E. Expedited Message Handler (EMH): components, definition, flow through system

#### IX. IMS Interface to Other Systems

- A. Multiple Systems Coupling (MSC)
- B. Inter-System Communication (ISC)
- C. CICS-DBCTL
- D. IMS Connection to Db2
- E. Advanced Program to Program communication (APPC)
- F. Open Transaction Manager Access (OTMA)
- G. IMS Connect
- H. Open Database Access (ODBA)

#### X. IMS Data Sharing, Sysplex, & Shared Queues

- A. Data Sharing: definition, types, components, integrity, caching, & impact of failures
- B. Parallel Sysplex Overview: hardware, software, services, implementation
- C. IMSplex: definition, components, functions, implementation (CSL, SCI, OM, RM), global online change
- D. Shared Queues: components, functions, implementation

#### XI. IMS Additional Availability Support

- A. DFSMS Concurrent Copy
- B. Recovery Data Manager (DRF)
- C. XRF: Extended recovery facility
- D. FDBR: Fast database recovery facility
- E. RSR: Remote Site Recovery

#### XII. IMS Operations

- A. Commands overview
- B. Master Terminal and TSO SPOC
- C. Type 1 and Type 2 command formats, command examples
- D. IMS Start: cold, warm, emergency
- E. IMS Shutdown: normal, forced

#### XIII. IMS System Programming & Administration

- A. IMS system generation & macros
- B. ETO: extended terminal option
- C. DRD: dynamic resource definition (IMS Repository)
- D. IMS Catalog
- E. IMS system data sets, execution parameters, procedures, exit routines, system and database utilities, tools, monitoring & tuning

#### XIV. IMS Service Oriented Architecture (SOA)

- A. Definitions and terminology
- B. IMS Connect
- C. OTMA
- D. Websphere MQ
- E. IMS Callout using DL/I ICALL
- F. ODBA
- G. ODBM
- H. Universal drivers

#### XV. Highlights of the current two versions of IMS