

An Introduction to IMS

Your Complete Guide to IBM
Information Management System

Barbara Klein, Diane Goff, John Butterweck, Kenny Blackman,
Margaret Wilson, Moira McFadden Lanyi, Rick Long,
Sandy Sherrill, and Steve Nathan

Second Edition



An Introduction to IMS

Second Edition

Introduction to IMS, An: Your Complete Guide to IBM Information Management System

Table of Contents

Contents

Acknowledgments

About the Authors

Preface

Part I: Overview of IMS

Chapter 1 IMS: Then and Now

Chapter 2 Overview of the IMS Product

IMS Database Manager

IMS Transaction Manager

IMS System Services

IMS Documentation

Hardware and Software Requirements for IMS

Chapter 3 Access to and from IMS

IMS Managed Application Program Access

Access to IMS from Other Application Runtime Environments

Access to and from IMS Using the IMS SOA Integration Suite

Chapter 4 IMS and z/OS

How IMS Relates to z/OS

Structure of IMS Subsystems

Running an IMS System

Running Multiple IMS Systems

Table of Contents

How IMS Uses z/OS Services

Chapter 5 Setting Up and Running IMS

Installing IMS

Defining an IMS System

IMS Startup

IMS Logging

IMS Utility Programs

IMS Recovery

IMS Shutdown

Part II: IMS Database Manager

Chapter 6 Overview of the IMS Database Manager

Functions of the IMS Database Manager

Implementation of IMS Databases

Storing Data in IMS and DB2 UDB for z/OS

Storing XML Data in IMS

Open Database Manager

Chapter 7 Overview of the IMS Hierarchical Database Model

IMS Hierarchical Database Basics

Basic Segment Types

Sequence Fields and Access Paths

Chapter 8 Implementing the IMS Hierarchical Database Model

Segments, Records, and Pointers

IMS Hierarchical Access Methods

Operating System Access Methods

IMS Checkpoints

Locking Data

Chapter 9 Data Sharing

How Applications Share Data

DBRC and Data Sharing

Table of Contents

Chapter 10 The Database Reorganization Process

Purpose of Database Reorganization

When to Reorganize Databases

Overview of the Database Reorganization Process

Chapter 11 The Database Recovery Process

Determining When Recovery Is Needed

Overview of the Database Recovery Process

IMS Backup and Recovery Utilities

Part III: IMS Transaction Manager

Chapter 12 Overview of the IMS Transaction Manager

IMS TM Control Region

IMS TM Network Overview

Operating an IMS Network

Chapter 13 How IMS TM Processes Input

Input Message Origin

Transaction Scheduling

Part IV: IMS Application Development

Chapter 14 Application Programming Overview

Application Program Structure

IMS Setup for Applications

IMS Application Programming Interfaces

IMS Application Calls

IMS System Service Calls

Testing IMS Applications

Chapter 15 Application Programming for the IMS Database Manager

Introduction to Database Processing

Processing a Single Database Record

COBOL and PL/I Programming Considerations

Table of Contents

Processing Databases with Logical Relationships

Processing Databases with Secondary Indexes

Loading Databases

Using Batch Checkpoint/Restart

Chapter 16 Application Programming for the IMS Transaction Manager

Application Program Processing

Transaction Manager Application Design

Chapter 17 Editing and Formatting Messages

Message Format Service

Basic Edit Function

Chapter 18 Application Programming in Java

IMS Database Java Metadata

Supported SQL Keywords

Developing JMP Applications

Developing JBP Applications

Enterprise COBOL Interoperability with JMP and JBP Applications

Accessing DB2 UDB for z/OS Databases from JMP or JBP Applications

XML Storage in IMS Databases

Part V: IMS System Administration

Chapter 19 The IMS System Definition Process

Overview of the IMS System Definition Process

IMS System Definition Macros

The Extended Terminal Option

Chapter 20 Customizing IMS

What You Can Customize

Changeable Interfaces and Control Blocks

IMS Standard User Exit Parameter List

Binding the Routines

Table of Contents

Saving Registers

IMS Callable Services

Summary of IMS Exit Routines

Chapter 21 IMS Security

Chapter 22 IMS Logging

IMS System Checkpoints

Database Recovery Control Facility

Chapter 23 Database Recovery Control Facility

Overview of DBRC

DBRC Tasks

DBRC Components

When Should You Use DBRC?

Communicating with DBRC

DBRC Functions

Overview of the RECON Data Sets

Defining and Creating the RECON Data Sets

Initializing the RECON Data Sets

Allocating the RECON Data Sets to an IMS System

Maintaining the RECON Data Sets

Reorganizing RECON Data Sets

Recreating the RECON Data Sets

Chapter 24 Operating IMS

Modifying and Controlling System Resources

Chapter 25 IMS System Recovery

Chapter 26 IBM IMS Tools

Application Management Tools

Performance Management Tools

Information Integration Management Tools

Utilities Management Tools

Table of Contents

Miscellaneous IMS Tools

Part VI: IMS in a Parallel Sysplex Environment

Chapter 27 Introduction to Parallel Sysplex

Goals of a Sysplex Environment

IMS and the Sysplex Environment

Chapter 28 IMSplexes and the IMS Common Service Layer

Components of an IMSplex

Operating an IMSplex

Part VII: Appendixes

Appendix A: Glossary

A

B

C

D

E

F

G

H

I

J

L

M

O

P

Q

R

S

T

U

Table of Contents

V

W

Appendix B: Notices