

# IBM Mainframes

## Basic Concepts

- What is Mainframe and Course contents
- MVS Overview
- Operating Systems
- TSO & ISPF

## COBOL (Common Business Oriented Language) VSCOBOL II

- **Introduction to COBOL**
  - Coding format of COBOL programs
  - Structure of a COBOL program
  - Data names and identifiers
- **Identification Division**
  - Program-ID, Author Name
- **Environment division**
  - Configuration Section and Input-output section
- **Data division**
  - Level Structure
  - PIC and Value Clause
  - File-Section
  - Working-Storage Section
- Editing characters for numeric, alphabet and alphanumeric data
- Classes and categories of data
- Linkage section and its importance with examples
- **Clauses**
  - Comp, Comp-1, Comp-2 & Comp-3
  - Sign
  - Synchronize
  - Redefines
  - Renames
- **Procedure Division**
  - Structure
    - COBOL Verbs
    - MOVE & MOVE Corresponding
    - ADD & ADD Corresponding
    - SUBTRACT & SUBTRACT Corresponding
    - MULTIPLY
    - DIVIDE
    - GOTO
    - STOP & EXIT

- OPEN, READ, WRITE, REWRITE & CLOSE
- ACCEPT
- DISPLAY
- IF statement
- COMPUTE
- ROUNDED & ONSIZE ERROR
- Writing Simple programs

- **TABLE Handling**
  - Occurs clause and subscripting
  - Single and Multidimensional tables
  - Different types of PERFORM statements used in Table Handling
  - Indexing
  - SET Verb
  - SEARCH & SEARCH ALL
    - Differences and example programs
- **FILES**
  - File handling techniques using
    - Sequential files with FB & VB record lengths
    - Indexed files
    - Relative record files
  - SORTING techniques (COBOL SORT / Internal SORT)
    - Input and Output procedures
- **Character Handling**
  - Inspect Verb
  - STRING & UNSTRING verbs

## Job Control Language (JCL)

- **Introduction to JCL**
  - Basic format of a JCL statement
  - JCL coding sheet with all necessary
  - JCL job card parameters
- **JES2 & JES3**
  - Job entry sub system
  - JES2 & JES3
- **JOB Statement**
  - Job Name
  - Accounting Information
  - CLASS, TIME, MSGCLASS, MSGLEVEL, TYPRUN, REGION, PARM & RESTART
- **EXEC Statement**

- Name of the job step
- TIME, COND, REGION, PARM parameters at Step Level
- IF/THEN/ELSE/ENDIF statement
- SYSUDUMP, SYSOUT

#### ▪ DATASET allocation

- How to write DD statement
- DISP, DCB & SPACE parameters and their importance with examples
- How to allocate dummy, temporary datasets
- Concatenate datasets
- What is refer back parameter
- What are different types of space abends
- Different types of DD Names

#### ▪ JCL Procedures (PROCS)

- Catalogued and Instream procedures
- Advantages of Catalogued procedures over Instream procedures
- Creating procedures
- How to Override/ADD/Modify procedures
- USE of Symbolic parameters in procedures
- Real time examples in creating Catalogued procedures
- Different ways of passing data from JCL and PROC limitations

#### ▪ Important IBM Utilities

- IKJEFT01
- IEFBR14
- IEBCOPY
- IEBGENER
- IDCAMS

#### ▪ JCL sort

- Copy data from one file to another file
  - With selection criteria
  - All records
- INCLUDE/ OMIT statement
- SORT Card to change data from
  - Binary to Decimal
  - Decimal to Binary
- DUPLICATE records from the file
  - Eliminate the duplicate records and discard them
  - Eliminate the duplicate records and save them

#### ▪ Generation Data Group

- What is GDG
- How to create GDG and its parameters
  - LIMIT, EMPTY/NOEMPTY, SCRATCH/NOSCRATCH
- What is Model Dataset

#### ▪ Common Abends and their explanation

- How to resolve SOC4 & SOC7 with examples

## DB2 (Database 2)

#### ▪ Database concepts

- Type of database
  - Hierarchical
  - Network
  - Relational

#### ▪ DB2 Objects

- TABLE SPACES and Types
- SYNONYM & ALIAS
- VIEWS
- INDEXES

#### ▪ Program preparation

- Detailed explanation of COBOL-DB2 program preparation with example
- DB2 PLAN & PACKAGE; differences
- Advantages of PACKAGE over PLAN
- DB2 Program execution and SYSTSIN DD card
- Explanation & example for SQLCODE – 805; how to overcome this error
- BIND Parameters
  - ISOLATION
  - PLAN
  - EXPLAIN
  - VALIDATE
- What is REBINDING

#### ▪ SQL Statements

- DDL (Data Definition Language) with examples
- DML (Data Manipulation Language) with examples
  - WHERE NOT
  - WHERE LIKE
  - BETWEEN & IN
  - GROUP BY & ORDER BY
  - Difference between WHERE and GROUP BY

- UNION and UNION ALL
- CONCAT
- JOIN statements (INNER & OUTER)
- Correlated sub queries
- Column and scalar function
- DB2 Nulls' how to handle them in program with example
- DCL (Data Control Language)
- Important topics
  - Referential integrity, foreign key
  - What is DCLGEN and how to create them
  - What is HOST variable
  - Different types of Important SQL Codes and their explanation with examples
- **CURSOR techniques**
  - Static Cursor and serial cursor
  - OPEN, FETCH, CLOSE statements in cursor technique
  - Program (real time scenario) using cursor
- **What is DB2 restart logic and its importance with detailed explanation**
  - Commit and Roll back statements in DB2
- **LOCK, TIMEOUT & DEAD LOCK**

## CICS

### (CUSTOMER INFORMATION CONTROL SYSTEM)

- **Introduction to CICS**
  - CICS concepts
  - Batch Vs. Online processing
  - What is Task and Transaction?
  - Conversation and pseudo conversation
  - Multitasking and Multithreading
  - Reentrant & Quasi reentrant
  - CICS control program and Control tables
  - How to compile CICS-DB2-COBOL program
- **BMS MAPS**
  - BMS Macro coding sheet
  - Physical & Symbolic maps and their structure
  - Cursor positioning techniques
  - What is MDT and its effective use
  - Text building techniques
  - ACCUM and PAGING techniques

- CICS commands to develop CICS screen
- **COMMAREA**
  - Ways of passing data between transactions
- **LINK, XCTL & CALL statements**
  - HANDLE condition,
  - HANDLE AID,
  - IGNORE CONDITION &
  - HANDLE ABEND
  - PUSH & POP condition
- **FILE handling in CICS**
- **SYNC POINT & TWO PHASE COMMIT in CICS**
- **QUEUES**
  - TSQ and TDQ
  - What is ATI (Automatic task initiation?)

### Virtual Storage Access Method (VSAM)

- Introduction to VSAM concepts
- VSAM Cluster, Data Component
- Datasets
  - KSDS
  - ESDS
  - RRDS
- Define VSAM Cluster using IDCAMS
- Alternative Indexes
- REPRO Command
- File status codes

### Mainframe Tools

- ENDEVOR/ CHANGEMAN
- FILE-AID
- XPEDITOR
- QMF and SPUFI

### Placement Assistance

- Resume preparation
- Soft skills
- Tips to succeed in interviews?
- Evaluation tests for facing interviews
- Mock interviews
- Motivation lectures