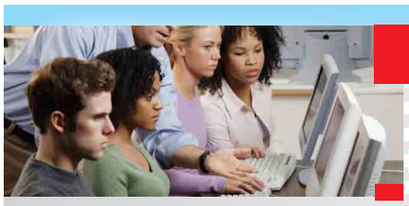

The Software People

High Technologies Solutions

IBM Mainframe

DURATION: 48 Hours

BM Mainframe Concepts

- Mainframe Concepts
- Basic IBM Architecture
- OS Concepts

JCL – Job Control Language

- **Basic concept of JCL**
- **JOB Statement**
  - **Positional Parameters**
  - **Keyword Parameters**
- **EXEC Parameters**
  - **Positional Parameters of EXEC Statements**
  - **PARM Parameters**
  - **COND Parameters**
- **JOB and EXEC (Additional Parameters)**
- **JOBLIB and STEPLIB Statements**
  - **ADDRSPC**
  - **DPRTY**
  - **PERFORM**
  - **RD**
- **DD (Data Definition) Statements**
  - **DSN Parameter o Qualified and Non-qualified names**
  - **Temporary Data Set**
  - **DISP Parameter**
  - **STATUS fields**
  - **Normal and Abnormal Disposition**
- **UNIT, VOL and LABEL Parameters**
  - **Serial No, Refer back Private, Label, Retain, Defer, AFF**
  - **Password, IN, OUT, EXPDT, RETPD**
- **SPACE and DCB Parameters**
  - **TRK, CYL, Primary, Secondary, Directory**
  - **RLSE, CONTIG, MAXIG, ROUND**
  - **RECFM, LRECL, BLKSIZE, BUFNO**
- **Coding Data Sets, and I/O on DD statement**
  - **DUMMY**
  - **SYSDUM**
  - **SYSABEND**
  - **DUMMY**
  - **SYSDUM**
  - **SYSOUT**
  - **DEST**
  - **HOD**
  - **OUTLIM**
- **In-Stream and Catalog Procedures**
  - **PROC**
  - **PEND**
  - **Overriding Parameter**
  - **Symbolic Parameter**
- **Generation Data Group (GDG)**
  - **Rules for coding GDG**
  - **Feature of GDG**
  - **Advantage of GDG**
  - **GDG Model**
  - **IDCAMS Utility**
    - **Define, Limit, Empty, No Empty**

- Scratch, No Scratch, Delete, Purge, Force

► Utilities Programs
- IEBGENER
- IEBCOPY
- IEHPROGM
- IEBCOMPR
- IEFBR14

► SORT/MERGE Utilities
- External Sorting
- Parameters and Sub Parameter of Sort Utility
- Merge Function
- Sort Queries

► Compile, Link Edit, and Run
- Compiler Program (IGYCRCTL)
- Link Editor Program (IEWL)
- Compiler Options

COBOL – Common Business Oriented Language

► Introduction of COBOL
- Coding format for COBOL program
- Character Sets,
- Literals
- Identifiers
- Figurative Constants

► COBOL Divisions and Sections
- ID, Environment, Data, & Procedure Division
- Configuration Section
- Input-Output Section
- Working-Storage Section
- Linkage Section o File Section

► COBOL Verbs
- Data Movement Verbs
- Arithmetic Verbs
- Sequence Control Verbs
- Input Output Verbs
- Condition Verbs
- Categories of COBOL Statement

► Writing Complete Programs
- Compile and program
- Run a COBOL program
- Program Testing

► Usage Clause
- SYNCHRONIZED
- JUSTIFIED
- REDEFINES
- RENAMES
- SIGN
- Qualification of Data Names

► Conditional and Sequence Control Verbs
- Relational, Sign, Class, Condition-Name, Negated, and Compound conditions
- IF Statement
- Evaluate Statement
- Perform Statement
- EXIT
- ALTER etc.

► Table Handling
- Occurs clause and Sub scripting
- Assigning value to table elements
- Multi-Dimensional Table
- Indexed Table and Indexing
- SET Verb
- Search Verb
  - Sorted tables and binary search
  - Searching a Multi-dimensional table
- Sorting a Table
- Index Data Items

► Structured Programming
- Program Design
- Objectives and Methodologies of Structure Programming

- Structure Programming in COBOL
  - Three Basic statements
  - Modular Programming in COBOL
  - Combination of Basic Structures
- File Handling
  - Steps in file handling
  - Allocation of file
  - Defining the file in file section
  - Open Statement
    - Input
    - Output
    - Extend
  - Open and Close for Tape file
- Sorting and Merging files
  - Simple Sort Verb
  - FILE UPDATION
  - Simple Merge Verb
  - Input and Output Procedure in Sort Statement
  - Merge Verb with Output Procedure
- Character Handling
  - String Verb
  - Unstring Verb
  - Inspect Verb
- COBOL Subroutines
  - Structure of a Subroutines
  - Calling of Subroutines
  - State of a Subroutine and Cancel statement

VSAM (Virtual Storage Access Method)

- VSAM overview
- VSAM Advantage and Disadvantage
- CLUSTERS
- Data organization of VSAM
  - KSDS
  - ESDS
  - RRDS
  - LDS
- Internal Organization of VSAM
  - Control Interval
  - Control Area
  - Free Space
  - CA, CI Split
- Accessing VSAM Data Set
  - Using KEY, RRN, RBA
- Repro Record Selection
- Export, Import, Delete, LISTCAT

Alternate Index

- Need of AIX
- Define Alternate Index
- BLD Index
- Define path
- APM Parameters in JCL
  - AMROG
  - BUFND
  - BUFNI
  - BUFSP

Db2

- Introduction to RDBMS
  - Relational Concept
  - CODD's Relational Rules
- Overview of DB2/VDB ver. 7 for OS/390
  - DB2 Migration from OS/390 to Z/OS
- DB2 Objects
  - System Objects
    - DB2 Catalog
    - DB2 Directory

- Bootstrap Data Set
- Active and Archive Logs
- Buffers Spools
- Locks

▶ Data Objects
- STOGROUP
- Database
- Table Spaces
- Table
- Indexes
- Views

▶ Structure Query Language (SQL)
- Data Type
- DB2 Database Design
- DB2 Table Parameters
- Referential Integrity
- DDL
  - Create
  - Alter
  - Drop
- DML
  - Insert
  - Update
  - Delete
- DCL
  - GRANT
  - REVOKE
- Column and Scalar functions
- Sorting and Grouping
- Join and Sub queries
  - Inner Join
  - Outer Join
  - Left Outer Join
  - Right Outer Join
  - Full Outer Join
- Sub queries
- Correlated sub queries
- Union and Union All
- View
- Alias
- Synonyms
- SPUFI (SQL Process Using File Input)
- QMF (Query Management Facility)

▶ DB2 Interfaces
- DCLGEN

▶ DB2 Application Development Overview
- DB2 Program Preparation Step
- Pre compilation
- Binding
  - Compile the Program
  - Link the Program
- DBRM (Data Base Request Module)
- PLAN
- Package
- Embedded SQL
- Modifying Data with Embedded SQL
  - Host Variables
  - Host Structures
  - Null Indicator Variables

▶ Cursor Processing
- Programming with Cursor
- Using Cursor for Data Modification

▶ SQL Execution Validation
- SQLCA
- SQL Code
- SQL State

- Error Handling
- ► Advance SQL
  - Dynamic SQL Vs Static SQL
  - Dynamic SQL & Performance
  - Fixed List Select Statement
  - Triggers
- ► Performance Monitoring/Tuning
  - DB2 Optimizer
  - Influencing the Access Path
  - Access Path & Optimizer
  - Explain Function
- ► Locking and Concurrency
  - Locking Data
  - Page Lock Modes
  - Lock Durations
  - Isolation Options
  - Time outs and Dead locks
- ► DB2 Utilities
  - RUNSTATS
  - REORG
  - CHECK
  - MERGECOPY
  - LOAD
- ► DB2 Environment with OS/390 & Z/OS
  - DB2 with CICS
  - DB2 with TSO
  - Call Attach Facility
  - RRSAF

CICS – Customer Information Control System

- ► Introduction to CICS
  - Batch and Online: Differences
  - Features of CICS
  - CICS System Services
  - Task & Transaction
  - Control Programs (or Management Module)
    - ○ Control Tables
    - ○ Control Blocks
- ► CICS Unique Features
  - Multitasking
  - Multithreading
  - Reentrant
  - Quasi Reentrant
- ► CICS Command Format
- ► Execution of CICS Application
  - Terminal Conversion
    - ○ Conversation
    - ○ Non Conversation
    - ○ Pseudo Conversation
- ► Exceptional Conditions
  - Handle Condition
  - Ignore Condition
  - Push and Pop Commands
  - RESP option
  - Attention Identifier Keys(AID)
- ► CICS Program Control Commands
  - Link Command
  - XCTL Command
  - Return Command
- ► Interval and Task Control
  - ASKTIME
  - Delay
  - Format Time
  - POST and WAIT EVENT Commands
  - START Command
  - CANCEL Command
  - SUSPEND Command
- ► Basic Mapping Support (BMS)

- Primary function of BMS
- MAP and MAPSET
- Types of Maps
  - Physical map
  - Symbolic map
- Receive map
- Send map
- Text Building Commands
  - Send Text
  - Text Header and Footer
  - Cursor Pointing Techniques
  - Number sign/Decimal point

► File Control
- VSAM
  - KSDS
  - ESDS
  - RRDS
- Defining file
- Random read
- Sequential read
- STARTBR

► Queues
- Transient Data Control
  - WRITEQ TD Command
  - READQ TD Command
  - DELETEQ TD Command
  - Destination Control Table
  - Automatic Task Initiation
  - Design Considerations for TDQ
- Temporary Storage Control
  - WRITEQ TD Command
  - READQ TD Command
  - DELETEQ TD Command
  - Design Considerations for TSQ

► System Security
- Sign-on Table (SNT)
- Transaction Security
- Resource Access Control Facility (RACF)

► Test and Debugging
- HANDLE ABEND Command
- DUMP Command
- Trace Control
- Execution Diagnostic Facility (EDF)
- Command Level Interpreter (CECI)
- Temporary Storage Browse (CEBR)
- Master Terminal Transaction (CEMT)
- Dynamic File Open/Close (DFOC)

Tools

► ENDEVOR (Version Control Tool)
- Perform Display function
- Execute Foreground action
- Perform Batch action processing
- Define or Modify Environment information.
- Perform Foreground Package Processing
- Batch Package SCL Generation

► Xpediter (Debugging Tool)
- Prepare program for debugging
- Debug program interactively under TSO/Batch
- Debug DB2 Stored procedures
- Utility Functions

► FILE AID (File Handling Tool)
- Display File Contents
- Create or Change File Contents
- File Aid / ISPF Extended Utilities
- Print File Contents

Create of Change Selection Criteria
Create or Change record layout cross reference
View Interpreted Layout
Convert file from one format
Compare File Content

Projects

► Types of Mainframe Projects
► Mainframe Project Life Cycle.

Salient Features:

Individual /Corporate Training.
Daytime, weekends, evenings and flexible hours available.
Personal attention to everyone.
Highly experienced faculty with Real-time scenarios.
Placement assistance after the training.
Discounts to group students / Professionals.
Small Batches for individual attention.
Course Duration : 3 Month