

# COBOL Programming

<b>Course No.</b>	2200
<b>Description</b>	Students will go in-depth to learn the four divisions of a COBOL program. Student knowledge is greatly enhanced through the actual creation and execution of several small programs designed to reinforce lecture and in-class discussions. Emphasis is placed on structured programming throughout the course.
<b>Audience</b>	Individuals who are required to understand, develop, and maintain application programs written in COBOL.
<b>Prerequisites</b>	Students should have an understanding of basic information systems concepts. No prior programming experience is required. It would be helpful if the students were somewhat familiar with the installation's compiling and testing environment, since the course includes programming workshops.
<b>Objectives</b>	<ul style="list-style-type: none"><li>• Become familiar with the structure of COBOL programs</li><li>• Experience compiling and testing a COBOL application program</li><li>• Create a COBOL program to process sequential files</li><li>• Learn and practice the application of Structured Programming constructs to COBOL programs</li><li>• Explore advanced topics such as subprograms and table handling</li></ul>
<b>Major Topics</b>	<ul style="list-style-type: none"><li>• The Basic Elements of a COBOL Program</li><li>• Compiling and Testing</li><li>• Data Division Elements</li><li>• Procedure Division Elements</li><li>• Structured Programming</li><li>• Additional COBOL Elements</li><li>• Additional Topics</li></ul>
<b>Duration</b>	5 days



## Course Contents

### 1. Overview

- Programming Life Cycle
- What is COBOL?
- COBOL Evolution
- COBOL/MVS
- COBOL Advantages
- COBOL Limitations
- Research Support
- COBOL Preparation
- COBOL Structure
- COBOL Columns
- COBOL Lines
- COBOL Syntax
- Summary
- COBOL/MVS Eliminated Features

### 2. First Three Divisions

- Identification Division
- Environment Division
- Data Division
- Variable Length Records
- Describing Data
- PICTURE Clause
- Compiling Procedures
- Compiler Files
- Compiler Options
- Compiler JCL
- Code Optimization

### 3. Procedure Division

- Statements and Sentences
- Paragraphs
- Sections
- Input/Output Statements
- OPEN
- CLOSE
- READ
- WRITE
- GOBACK
- STOP RUN
- RETURN-CODE
- Exercise - I/O Statements
- Switches
- Perform

- Perform Until

### 4. Data Manipulation

- VALUE Clause
- Numeric Literals
- Alphanumeric Literals
- Figurative Constants
- ACCEPT
- DAY-OF-WEEK
- DAY
- DISPLAY
- MOVE
- Alphanumeric MOVE Examples
- Numeric MOVE Examples
- INITIALIZE
- INITIALIZE Examples
- Reference Modification

### 5. Linking

- Compile and Link PROCs
- Linkage Editor Functions
- Linkage Editor Files
- Linkage Editor Options
- Linkage Editor Control Statements
- Linking the Program
- Static/Dynamic Compile/Link

### 6. Branching

- EXIT
- GO TO
- Perform Times
- Perform Thru
- Inline PERFORM
- Perform Until with Test Before
- Perform Until with Test After

### 7. Usage

- USAGE Clause
- Display Usage
- Packed-Decimal Usage
- Binary Usage
- Moving Between Usages
- Table of Allowable MOVES
- Condition Names (88 LEVELS)
- Set to True



## 8. Editing

- IF-ELSE
- CONTINUE
- NEXT SENTENCE
- Class Condition
- Sign Condition
- Relation Condition
- Condition-Name Condition
- Table of Allowable Comparisons
- Compound & Negated IF-ELSE
- Compound Examples
- Truth Tables
- EVALUATE

## 9. Reports

- Report Components
- COBOL Report Preparation
- Data Editing
- Data Editing: Blank, Comma, Period
- Data Editing: Dollar Sign, Minus, Plus
- Data Editing: Credits and Debits
- Suppressing & Protecting
- Data Editing Characters - Floating
- Paper Positioning
- Working Storage: Layout Definition
- Working Storage: Header Layouts
- Working Storage: Detail Line Layouts
- Working Storage: Footer Layouts

## 10. Arithmetic

- COBOL Arithmetic
- COBOL Arithmetic Options
- ADD
- SUBTRACT
- MULTIPLY
- DIVIDE
- COMPUTE

## 11. Called Modules

- COPY Statement
- REPLACE Statement
- COBOL Modules
- CALL Statement
- CALL Statement with Parameters
- CALL Extensions
- CALL Examples

## 12. Table Handling

- Table Handling
- Table Terminology
- Table Coding with REDEFINES
- Building A Table (Data Division)
- Building A Table (Procedure Division)
- Table Lookup
- PERFORM VARYING
- INDEXES
- SET Statement
- SEARCH Statement
- SEARCH ALL Statement

## 13. Sorting & Merging

- The SORT/MERGE Process
- SORT/MERGE Parameters
- SORT/MERGE Collating Sequence
- Describing the Files
- Procedure Division - SORT
- Procedure Division - Input
- Procedure Division - Output
- RELEASE & RETURN
- Notes
- SORT Special Registers
- JCL Considerations
- Merge Considerations

## 14. VSAM File Handling

- QSAM
- VSAM
- VSAM Catalogs
- KSDS
- ESDS
- RRDS
- Access Methods Services (IDCAMS)
- Sample Delete/Define for Tax Table
- Sample Load from Sequential File to KSDS
- COBOL/VSAM Considerations
- Indexed File (KSDS)
- Sequential File (ESDS)
- Relative File (RRDS)
- File Status Code
- Selected File Status Codes
- Sample Environment/Data Division
- File I/O



- Reading a Record
- Writing a Record
- Removing a Record

## Appendices

- A. Advanced VSAM
- B. Intrinsic Function
- C. Batch Tracing Facility

