PMA
fit for mainframe

Application development with COBOL, Db2 and CICS

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1   Objectives of the training module

After this module, participants will know the origin and importance of the COBOL programming language. You can develop and test programs with the COBOL programming language independently in a mainframe environment.

Our course "EMA Certified IBM Mainframe System Practitioner" or comparable knowledge is required. Above all, the handling of TSO/ISPF and JCL should be mastered.

Knowledge of programming logic and algorithms is also required. Participants already know how to program and have practical experience with at least one other programming language.

Basic knowledge of SQL is also required.

2   Information on the EMA's "Blended Learning"

We use "blended learning" and a "flipped classroom" concept as a learning format. Participants who are not yet familiar with this will receive detailed information on how this works before the start of the training. The start of an apprenticeship begins with a kick-off of a maximum of three hours. Afterwards, the participants are provided with assignments and a virtual classroom session takes place twice a week, accompanied by experts from the EMA.

3   Description of Contents

The modules are described in detail below.

3.1   Kick-off

Duration approx. 3 hours

Place   Virtual Classroom

Goals of the kick-off

During the kickoff

- The participants and the key lecturers get to know each other
- Participants will learn about the most important e-learning tools, especially the Virtual Classroom and the Learning Server
- The participants get an initial overview of the seminar content

Content

Introduction
Round of introductions
Introduction to the topic

The Virtual Classroom
Goals of a VC session
Use of the Virtual Classroom

Learning efficiency
Learning and Insights in Neurobiology
Efficient learning

Mainframe Access
Prerequisites / VIRTEL
Access to the IBM computer

E-Learning & Blended Learning
The importance of e-learning
The benefits of blended learning
The "flipped classroom" concept

Learning platform Moodle
Overview of the learning platform
Structure of the learning platform

3.2 COBOL Data Declarations and Program Constructs

Objectives of this sub-module

The participants know the basic structure of a COBOL program. You will know how to define variables, literals, and constants, and you will know the essential data types in COBOL. You can handle the program constructs in COBOL and know the possibilities for using selections and iterations.

Content

COBOL Basic Structure and Syntax
Divisions, Sections, Paragraphs, Sentences and Statements

Data declaration in COBOL
Variables, literals, constants
Types
Picture Clauses

Tables and Arrays

Internal COBOL Sort
Sorting without external sort files

Basic File Handling
Sequential Files
Input/Output

3.3   Handling Files and Extended Declarations

Objectives of this sub-module

Participants know the ways to access sequential data. You can use extended declarations sensibly. You can programmatically create tables and search table contents. They recognize and use the advantages of structuring programs and can integrate internal and external subroutines.

Content

Complex data types
COMP-1 – COMP-5
Pointer
Space allocation links

Complex program structures
Sections with loop chains

Intrinsic Functions
Recursive programming
BOMs and Decision Trees

Subroutines for Call Chains
Creating modules

COBOL and JSON
Handling complex data structure

3.4 COBOL and Access to Db2 Databases and Transactions

Objectives of this sub-module
Participants will be able to describe the key features of DB2 for z/OS in conjunction with applications. You know the basics of SQL and can set up a database environment interactively with SPUFI. You can use COBOL programs to access DB2 data, retrieve data, and modify data. Participants know the characteristics of transactions and can access transactions from within a COBOL program.

Content

DB2 Database Applications
Introduction / Review of DB2

Interactive SQL
Handling and use of DB2I
SQL Processing Using File Input (SPUFI)
RDBMS Interfaces
Static vs. Dynamic SQL
Embedded SQL

Embedded SQL in COBOL
DB2 API for COBOL Programs
EXEC SQL and END-EXEC
Host Variables in SQL Statements
Host Structures in COBOL
Dealing with DCLGEN
Preparation of DB2 applications (precompile, bind, compile)
Running DB2 Applications

Stored Procedures
Concepts of Stored Procedures
Definition and execution of SPs

Operations
Characteristics of transactions
ACID Properties

Programs and Transactions
COBOL and CICS