SIEMENS

Automation - SIMATIC S7 with STEP 7 v5 S7 Programming with SCL

General Information

Course Code: SCT-S7SCLP1A Length: 31/2 Days

Audience

This course is for engineering and maintenance personnel, who create, diagnose and troubleshoot SIMATIC STEP7 applications with Structured Control Language (SCL) content.

Prerequisites

S7 Programming 1

Profile

2.3 CEUs (Continuing Education Credits)

This course provides an in depth look at STEP7 programming and program troubleshooting with a focus on the Structured Control Language (SCL) - a PASCAL- similar high level text language for programming mathematical algorithms, data management and organization tasks for Siemens automation systems.

Students should have a solid working knowledge of STEP7, SIMATIC Manager and the basic diagnostics and editor tools. This is a hands-on course filled with programming exercises in SCL. Students will use advanced software tools of STEP7 including PLCSIM to complete system integration programming, troubleshooting, and functional testing of applications.

Objectives

Upon completion of this course, the student shall be able to:

- Efficiently use the SIMATIC Manager program editor tools. •
- Use the STEP7 program monitor, diagnostics and troubleshooting tools.
- Build or modify SCL programs.
- Package an SCL program into a custom library block and use within a STEP7 project.
- Explore the SCL syntax requirements and the system debug functions.
- Use PLCSIM to software to simulate PLC hardware and . build hardware independent project.

Topics

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- The SIMATIC Manager 1.
 - Starting SIMATIC Manager a.
 - SIMATIC Manager Layout h
 - Project Structured. C.
 - Offline/Online Views d.
 - STEP 7 Help System e.
 - Hardware Configuration Tool Overview f.
 - Signal Module Addressing g.
 - h. Symbolic Addressing
 - Creating a Variable Table i.
 - SCL Overview
 - SCL Defined a.
 - Supported Block Types b.
 - SCL Editor c.
 - d Compile, Debug and Troubleshooting SCL code
 - Download and Program Test e.
- 3 SCL Program Structure
 - а SCL Header, Authoring, and Version Management
 - b. Block call order
 - Local Instances of FBs c.
 - **Global Data Blocks** d.
 - **Instance Data Blocks** е
 - SCL Instruction Section f
 - Adding Code comments g.
- SCL Syntax 4
 - Keywords and Identifiers a.
 - **Assignment Statements** b.
 - **Conditional Statements** c.
 - Ь **Control Statements**
- **OK Flag** e. 5.
 - SCL Data Types
 - Elementary Data Types a.
 - b. **Complex Data Types**
 - User Defined Data Types C.
 - Data Types for Parameters d.
 - Constants and Jump Labels e.
- SCL Declarations 6
 - **INPUT** Parameters a.
 - **OUTPUT** Parameters b.
 - **IN OUT Parameters** c.
 - d. STATIC Parameters
 - **TEMP** Parameters e.
 - CONSTANTS f
- SCL Math Operations 7.
 - а Arithmetic Operations
 - **Comparison Operators** b.
 - Logical Operators C. d.
 - Standard Functions
 - **Conversion Functions** e. Numerical Functions f
 - SCL Control Instructions
 - IF, Then, Instructions а
 - **CASE** Instruction b.
 - FOR Instruction C.
 - d. WHILE Instruction
 - **REPEAT Instruction** e.
 - **CONTINUE** Instruction f.
 - EXIT, RETURN, and GOTO Instructions g.

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