
Phil Riley's zArchitecture Assembler Language - Part 2

(Visit www.epstrategies.com for class schedule and pricing.)

A week of learning and doing!

Audience

This four-and-a-half-day seminar is the second of two ESA/390 and z/Architecture Assembler language classes offered. It is designed as a follow-up to the entry-level Assembler Language Part 1 and is intended for application programmers working with assembler programs, and for system programmers responsible for interfacing with the z/OS operating system via user exit routines.

Seminar Abstract

The seminar introduces the student to assembler programming considerations such as addressability, parameter passing, extended addressing, inter-module communication and Linkage Stack usage. 64-bit addressing considerations are discussed where relevant, and various system macros are covered.

Other advanced topics, specific to the z/OS operating system, include the use of dataspaces to extend program addressability, the coding of a recovery routine to protect a program's resources, plus considerations for writing shared programs for multiple concurrent users.

An important aspect of assembler programming is the diagnosis of failing programs. Students will be given instruction on using abend dumps to follow module flow leading to the point of failure, and to use effective diagnostic techniques for these dump types.

Lecture material is reinforced throughout the week with the use of lab exercises. These labs include SYSUDUMP analysis.

Prerequisites

Students attending this class should possess a working knowledge of the TSO/ISPF editor, Job Control Language and assembler language coding syntax plus basic assembler mnemonics.

Seminar Objectives

In this seminar, students will learn how to:

- Write exit routines to interface with z/OS operating system logic
- Perform addressing mode switching as required by program logic
- Use locate-mode techniques to perform Queued I/O operations in a program
- Transfer control across external modules in a given load module
- Use the Linkage Stack instead of the traditional save area to preserve a program's status
- Acquire and release additional virtual storage by the use of various macros
- Code logic and data structures permitting multiple users to concurrently execute a single copy of a storage resident program
- Write a recovery routine for a given module enabling that module to remain active even when a failure occurs
- Create and use one or more dataspaces thereby allowing a program to extend its available virtual storage
- Use IBM's AMBLIST service aid utility program to map a load module
- Use diagnostic techniques to analyze a SYSUDUMP abend dump



Seminar Outline

The following is a high level outline for this seminar:

Program Addressability

- Control sections and Base-Displacement review
- USING and DROP directives
- Dummy sections
- z/OS control block mapping structures

Data Management

- Coding for fixed and variable length data records
- GET and PUT macros for move-mode QSAM I/O
- GET and PUT macros for locate-mode QSAM I/O
- OPEN, CLOSE and DCB macros

Inter-Module Communication

- Module communication within a static load module
- “A” and “V” type address constants
- CALL macro
- Parameter passing using IBM standard rules

Extended Addressing

- RMODE and AMODE options
- Addressing mode manipulation – BASSM and BSM instructions
- Programming techniques to change addressing mode

Linkage Stacks

- Save Area review
- Linkage stack concept and structure
- Coding requirements for saving program status on linkage stack
- BAKR and PR instructions

Virtual Storage Management

- Virtual storage subpools
- GETMAIN, FREEMAIN and STORAGE macros

Debugging Concepts

- Load module structure and mapping
- External symbol dictionary and relocation dictionary
- AMBLIST service aid utility
- ABEND, Summary and Symptom dump contents
- ABEND macro
- SNAP macro “LIST” parameter
- Save area traces
- Save areas with linkage stack entries

Program Sharing

- Module reusability, reentrancy and refreshability attributes
- Standard, List and Execute macro formats
- Use of external work areas
- ENQ and DEQ macros



Recovery Processing

- Recovery routine overview
- ESTAE macro
- System Diagnostic Work Area control block
- SETRP macro and standard parameter settings

Dataspaces

- Extending a program's virtual storage
- Access vs. General register usage
- DSPSERV and ALESERV macros
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Seminar Dates and Location and Prices

For dates and locations and prices, please visit www.epstrategies.com for details, or call our office at 813-435-2297. Seminars are regularly offered in the USA and Europe.

Instructor

Phil Riley, Principal of Phil Riley Systems Consulting, has worked in the mainframe environment for over 37 years. He began his career working for Rolls Royce in his native England and decided to immigrate to Canada in 1973. After working with the installation of the first releases of MVS, he joined Amdahl Canada in 1977 as a Systems Engineer, specializing in MVS support and diagnostics. After being hardware trained to support Amdahl's mainframe product line, he was sent to Europe for 18 months to assist with hardware and software support in England, the Netherlands, Belgium and Sweden.

In 1985, **Phil** left Amdahl to join some friends who were forming an outsourcing company known as Aaski Management. The company was granted a marketing assistance role by IBM, whereby the two companies worked together to help IBM improve the sales of their mid-sized mainframes. Companies that were signed up with one of Toronto's data processing service bureaus then found they had a cost-justified alternative way to run their data processing operation using their own processor, either located in their own Aaski-built data centre, or in Aaski's own computer room where they were given remote access. **Phil** was responsible for the design of the 10,000 sq. ft. data centre, together with the installation and management of environmental, large-scale computer and communications hardware. He was also responsible for the hiring of operations and technical support staff, and the direct support of several MVS systems. He managed the projects for the successful conversion of six clients from service bureau to in-house environments.

Phil returned to Amdahl in 1991 to work as an instructor in their education division. His extensive knowledge of the MVS operating system plus mainframe architecture, his experiences at Aaski, and his desire to work in a teaching environment made him an ideal candidate for this role. When he became self-employed through downsizing in 1994, he continued to work under contract, not only for Amdahl, but also for IBM and several other companies specializing in large system education. **Phil** now has over 14 years experience in teaching, and has delivered open enrolment and contract classes throughout Canada and the United States, plus the Middle East, China and India. He specializes in z/OS internals and diagnostics, assembler language and hardware configuration.

For More Information...

For more information on this or other seminars, including prices and locations, please contact:

Enterprise Performance Strategies, Inc.
3547 53rd Avenue West, #145
Bradenton, FL 34210

Phone: 813-435-2297
Fax: 813-435-2298

Email: Peter.Enrico@EPStrategies.com
Dana.Novotny@EPStrategies.com
Web: www.epstrategies.com

Please do not hesitate to call if you would like more information or details on this seminar. Peter will be happy to talk with you.

In-house

All seminars are available for in-house instruction.

