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education

course description

C programming in the guardian environment (U4143S)

course overview

Through a series of lectures and labs, you are taught how to use both the C compiler and the native mode C compiler used with hp NonStop™ servers, how to take advantage of various extensions, and how to interface with Guardian system procedure. In learning to use those compilers, you will become familiar with various aspects of the unique C run-time environment such as memory model issues, diagnostics, special debugging issues, and the retrieval of specific run-time and environment information. Prior C knowledge is essential.

audience

- Programmers
- Programmer analysts
- System analysts
- System programmers

benefits to you

- Building TNC C and native C programs
- Native mode considerations
- The C run-time environment
- Compiler operation and diagnostics
- Debugging C programs with Inspect
- Interfacing to Guardian system procedures
- Mixed language programming
- Embedded SQL, DML operations, cursor concepts, and locking strategies

pre-requisites

- Concepts and Facilities
- ANSI/ISO C Programming experience
- Recommended: Experience with the Inspect symbolic debugger
- TAL programming experience

next steps

Guardian API Programming

to order

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detailed course outline: C programming in the guardian environment (U4143S)

module	key topics
compiling and linking TNS C programs	<ul style="list-style-type: none">• Basic operation of the TNS C compiler• Compiler syntax and the analysis of a compiler listing• Binder commands needed to combine multiple object files to build a single executable program• Lab exercise: compile a complete C program• Lab exercise: separate compilation and binding
native mode considerations	<ul style="list-style-type: none">• Native mode• Benefits and constraints of native mode and the native mode development tools• Process attributes and organization
native mode compilation	<ul style="list-style-type: none">• Various native mode migration issues particular to C programming• Using the TNS/R native compiler (NMC)• Usage of the ndl utility for linking separately compiled modules• Lab exercise: use the NMC compiler to build runnable programs from separately compiled units
run-time environment	<ul style="list-style-type: none">• NonStop server run-time environment for C programs• Obtaining and processing environment and startup protocol messages• Essentials of memory models available for NonStop C and show the four basic areas of heap, RTL, global and stack• 32 bit pointers and access to system procedures that require 16 bits• Large and wide memory models• Lab exercise: gain hands-on experience in fetching process startup information
Tandem C compiler operation and diagnostics	<ul style="list-style-type: none">• Subset of the available compiler pragmas for Tandem C• Compiler pragmas for the native C compiler• Compile-time and run-time diagnostic facilities
debugging C programs	<ul style="list-style-type: none">• Demonstrating, with examples, various aspects of compiler operations• Basic framework of inspect commands which can be used for debugging NonStop server C programs• Information regarding inspect commands specifically helpful for the NonStop server C environment• Demonstrating an inspect session• Lab exercise: do an inspect session on an C program
interfacing to Guardian procedures	<ul style="list-style-type: none">• Specifics of interfacing to Guardian operating system procedures from a C program• Interface declarations for non-C functions• Usage of the guardian procedure calls reference manual and special/problem Guardian procedures• Lab exercise: make calls to guardian procedures needed for various terminal display options
mixed-language programming	<ul style="list-style-type: none">• Mixed language programming as it relates to NonStop C• Interface declarations, common run-time environment (CRE), specific alignment rules, data storage requirements, and global data sharing• Lab exercise: gain hands-on experience with interface between NonStop C and other languages such as TAL

for more information

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