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education

course description

NonStop SQL/MP programming (U4182S)

course overview

In this 4-day class you will acquire the skills you need to design, implement, and build embedded HP NonStop™ SQL/MP programs using the host programming language, C, and COBOL85. Classroom discussions and valuable hands-on lab exercises enable you to apply these programming techniques for your programming tasks. You will also become familiar with the available tools and functions in the NonStop SQL/MP product and the operating system, which affect the program's execution and run-time environment.

audience

Software developers who are responsible for programming or supporting embedded SQL database applications

benefits to you

- NonStop SQL/MP statements and directives relevant to programming in C or COBOL85 host language
- Basic formats for an embedded SQL program and the use of host variables
- SQL cursor concepts and related DML operations
- The program compilation process—the tools and utilities for compiling, executing, and debugging an embedded SQL program in the NonStop Kernel operating system environment
- Design considerations such as maintaining database integrity, controlling concurrency with locks, and the effects of data buffering on program performance
- The concepts and effects of run-time program recompilation and the trade-offs between program availability and performance
- Programming techniques including the use of the date-time and interval data types, pattern matching, handling long-running transactions, and programming for SQL servers
- The NonStop SQL/MP mechanisms available for controlling query execution plans and the EXPLAIN utility

prerequisites

- NonStop SQL/MP Essentials course
- COBOL85 or C programming experience

next steps

NonStop SQL/MX Database Quick Start course

to order

You can order this course online at <http://education.hp.com>. At the site, select a country, then choose "registration" or "Book a course" and fill out the online registration form.

why hp education?

- Experienced and best-in-the-field HP instructors
- Comprehensive student materials
- State-of-the-art classroom facilities
- Hands-on practice
- Focus on job-specific skills
- More than 120 locations worldwide
- Customized on-site delivery
- Online instructor-led and self-paced training at <http://itresourcecenter.hp.com>

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| module | key topics |
|---------------------------------------|--|
| NonStop SQL/MP program development | <ul style="list-style-type: none">• Format and structural differences between traditional and embedded NonStop SQL/MP application programs• Compilation steps for an embedded NonStop SQL/MP program• Run-time NonStop SQL/MP components and their functions• Compiling and generating an executable object file and executing the program in the NonStop SQL/MP environment when given a sample embedded NonStop SQL/MP program Lab Exercises (1 hour) <ul style="list-style-type: none">• Gain practice working with embedded NonStop SQL/MP program structures, compile an embedded NonStop SQL/MP program, and validate the program |
| NonStop SQL/MP program structure | <ul style="list-style-type: none">• Different NonStop SQL/MP data types and mapping the NonStop SQL/MP data types to the host-language data types• Performing the following when given a COBOL85 or C program, a database schema, a list of NonStop SQL/MP objects, and database access specifications:<ul style="list-style-type: none">• Embedding host variables, NonStop SQL/MP statements and directives, and other programming constructs into the host program to satisfy the given database access specifications• Building executable program files• Validating program compliance with the given database access specification Lab Exercises (3 hours) <ul style="list-style-type: none">• Write, compile, and execute embedded SQL programs incorporating various data types, host variables, SELECT statements, cursors, and appropriate error handling |
| design considerations | <ul style="list-style-type: none">• Concepts of database integrity for NonStop SQL/MP• Strategies and programming techniques for maintaining database integrity• Attributes and functions of locks, and strategies for handling deadlocks• Impact of using different data buffering methods on program performance• Selecting the appropriate buffering and locking strategies that maximize concurrency and maintain database integrity Lab Exercise (1 hour) <ul style="list-style-type: none">• Reinforce the concepts of row locking and gain experience in the use of FUP LISTLOCKS |
| run-time environment | <ul style="list-style-type: none">• Causes and effects of program invalidation• Rules for similarity checks and how this feature can be used to avoid automatic program recompilation at runtime• Identifying the SQLCOMP options that can be used to control automatic recompilation• Impact and trade-off of automatic recompilation on program execution given different scenarios Lab Exercise (1 hour) <ul style="list-style-type: none">• Explain the impact of program automatic recompilation on program execution and describe the mechanism to avoid program automatic recompilation at run-time |
| NonStop SQL/MP programming techniques | <ul style="list-style-type: none">• Programming techniques to handle NULL columns, detect data existence, check for referential integrity, and use pattern matching and row positioning with alphanumeric key values• Specific programming techniques for Transaction Services/MP (TS/MP) (Pathway) servers and long-running transactions in offline (large batch) applications Lab Exercise (2 hours) <ul style="list-style-type: none">• Design and implement programs to handle NULL columns, referential integrity, and pattern matching using the LIKE predicate |
| program query performance | <ul style="list-style-type: none">• Performance impact of the different CONTROL directives• Relevant performance information from the output of an EXPLAIN plan report• Different mechanisms to monitor and measure query performance |

NonStop SQL/MP programming (U4182S)

onsite-delivery equipment requirements

- One or two NonStop servers, CLX or above
- Four CPUs (two minimum), 16 MB each
- NonStop Kernel operating system, version D30 or later for NonStop K-series servers, or any Gxx version for NonStop S-series servers
- One 6530 or equivalent character-based terminal per student
- Two 6530 or equivalent character-based terminals for the instructor
- NonStop TM/MP, NonStop SQL/MP (Release 2), COBOL85, and C
- A 132-line printer

for more information

For more information on HP Education Services, contact any of our worldwide offices or visit our worldwide web site on the internet at <http://education.hp.com>

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