



INFORMIX TRAINING: SYLLABUS

Advanced Informix-SQL and Application Development
Based on *Informix Handbook™*

Provided by One Point Solutions, the Informix Specialists

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BASED ON: *Informix Handbook*, a book by Ron Flannery: www.informixhandbook.com

DATES:

LOCATION:

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OVERVIEW

This document outlines the structure of the class. Each bullet summarizes the information covered and includes relevant page numbers in *Informix Handbook*. As the class evolves, this outline may be updated; the instructor will email the final version and a study guide to each student.

CLASS OBJECTIVES

Following is a list of objectives, as identified by the customer and One Point:

- Provide detailed SQL training on specific areas of Informix-SQL, applying it to application development
- Understand how to locate information quickly in *Informix Handbook*, become familiar with its table of contents, know where to find information, and understand specific chapters and sections
- Learn how to use other resources (Web, tech support, documentation, etc.) to get answers
- Explain usage of the stores database and other Informix learning tools including documentation and Web sites
- Apply your knowledge of Unix and databases to create a customized learning experience
- Explain fundamentals of Informix DBA: disk management, memory, installation, system monitoring/maintenance
- Apply real world examples from your environment
- Efficiently use Informix documentation

PREPARING FOR THE CLASS

Because this class covers a large amount of material and involves several students, pre-class preparation will vary between students, depending on skill level. We advise that you review the bullet points in the course outline below, identify sections with which you have the least experience, and review those sections – even if you just skim them – before the class. Learning is greatly enhanced if a student has been exposed to material before learning for the first time. In addition, this will help the student become familiar with the format of *Informix Handbook*, which is the main text for the class.

TRAINING ROADMAP / CLASS SYLLABUS

The following describes each section of the class. This syllabus can also be used as a study guide that will provide a map through *Informix Handbook*. Each section header lists the estimated time it will take. Specific bullet points list the page numbers in *Informix Handbook* (denoted by “ pp.”), if applicable. These sections may be modified as the class progresses; an updated syllabus would be sent to class members. Exercises are listed where they will occur in the class. **Learn more:** To create your own custom study guide, copy this syllabus on to your workstation and take notes right after each bullet point in the outline below. This will allow you to have notes interspersed with a section summary and matching references in *Informix Handbook!*

Introduction / Class Planning :15

- Introduction to Ron Flannery and One Point Solutions
- Introduction and goals of class members
- Review of syllabus
- Review of timeline and class structure

Finding Information About Informix :15

- Navigating *Informix Handbook* and its CD: pp. *lxii* (*book's introduction*)
- Online documentation for all Informix products
- More resources on IBM's Informix Web site
- Review of Informix documentation
- Answers Online CD
- IIUG.org

Chapters 1 & 2: Informix Past, Present and Future; History of Informix :15

Summarize product lines, history and strategy

- ORDBMS & Foundation.2000: pp. *10-12*
- Server summary: pp. *13*
- Application development tools: pp. *15*
- Product lists (INFORMIX-SQL, INFORMIX-4GL, etc.): pp. *23-24*
- In the 90's (Dynamic-4GL, 4Js, etc.): pp. *27-28*
- 2001: The beginning of a new era: Informix is purchased by IBM: pp. *28*
- Future support and enhancement plans

Chapter 3: Introduction to the stores database :15

- Overview of the stores database: *pp. 32-38*
- File and directory structure, demo files: *pp. 38*
- Learning and testing with stores: *pp. 39-41*
- Schema: *pp. 1233-1239*

**** *Exercise 1: Create stores database, review SQL and sample files, perform some queries* ***

Chapter 9: The SELECT Statement 2:30

- Syntax, WHERE clause, character values, NULLs: *pp. 197-216*
- Joins: *pp. 217-228*
- GROUP BY, HAVING, ORDER BY, TEMP: *pp. 229-235*

*** *Exercise 2: Create basic joins and SELECT statements* ***

- Built-in Functions: *pp. 235-254*
- Advanced usage: *pp. 254-264*

*** *Exercise 3: Use built-in functions and subqueries* ***

Chapter 13: Stored Procedures and Triggers 3:00

- Defining and creating stored procedures: *pp. 337-344*
- Logic commands used in the Stored Procedure Language: *pp. 344-347*
- Special considerations and conditions: *pp. 347-349*
- Handling errors and debugging: *pp. 349-354*
- Defining, understanding and creating triggers: *pp. 354-364*
- Error handling and advanced trigger usage: *pp. 364-367*

*** *Exercise 4: Create and use stored procedures and triggers* ***

Chapter 10: Inserts, Updates, and Deletes

2:30

- Review of transactions: *pp. 316-320*
- INSERT syntax, usage, column values, single / multiple rows, advanced usage: *pp. 266-274*

**** Exercise 5: Use INSERT for single rows, multiple rows, from other tables, temp tables ****
Note: Exercises 5-7 will probably be combined together after all study for Chapter 10.

- UPDATE syntax, usage, determining number of rows, constants: *pp. 274-281*

**** Exercise 6: Use UPDATE statements, determine number of rows ****

- DELETE syntax, usage, determining number of rows, advanced concepts: *pp. 281-286*

**** Exercise 7: Use DELETE statements, determine number of rows ****

Chapter 11: Creating and Optimizing Indexes

2:00

A) Index Basics:

- Review of the need for indexes, syntax: *pp. 289-291*
- Unique indexes and primary keys: *pp. 291-294*
- Cluster indexes: *pp. 294*
- Fill Factor: 295
- Dbspace and fragmentation: *pp. 2296-300*
- Index mode: *pp. 300*

**** Exercise 8: Create various types of indexes ****

B) Index performance:

- Index structure and B+ trees: *pp. 301-303*
- Query optimizer, SET EXPLAIN, query plans, optimizer directives: *pp. 303-307, 815-820*
- Understanding and using UPDATE STATISTICS: *pp. 307-310, 825-844*
- Miscellaneous index strategies and tips: *pp.311-313*

**** Exercise 9: Create indexes, analyze statistics, use optimizer directives, use SET EXPLAIN ****

Chapter 39: Using Shell Scripts and SQL

2:00

- Advantages of using scripts, shell overview: *pp.1067-1071*
- Running scripts in the background: *pp.1071-1073*
- Programming scripts, error trapping, advanced scripts: *pp. 1074-1080*

**** Exercise 10: Modify a shell script for your database ****

Chapter 12: Handling Transactions and Locking

2:30

- Description of transactions and locking: *pp 316-320*
- Logged and non-logged databases, concurrency: *pp.320-324*
- Transaction handling: scope, types of locks, wait times, rules, isolation level: *pp. 324-330*
- Situations: logical logs, long transactions, too many locks, non-logged tables: *pp. 330-334*
- Putting the pieces together: *pp. 334-336*

**** Exercise 11: Check database logging status, logical log types, use onstat to view locks, work with isolation levels ****

Chapter 15: Other SQL Commands

- Data definition: *pp. 388-400*
- Data integrity, constraints, violations, triggers: *pp.400-414*
- Data manipulation, dataskip, locking tables, logged/non-logged, connecting: *pp.414-417*
- Optimization, PQOPRIORITY, obtaining information: *pp. 418-424*

**** Exercise 12: Experiment with other SQL commands ****

Chapter 8: Creating Databases and Tables

1:00

- Planning disk usage and logging, creating databases: *pp. 170-177*
- Creating tables – syntax, data types and checking, disk allocation, extents, lock mode, fragmentation, temp table: *pp. 177-191*
- Altering tables – adding, dropping, and changing columns, constraints, extent sizes, and lock mode: *pp. 191-195*

**** Exercise 13: Create new database, size tables, alter table characteristics ****

Chapter 14: Database Privileges

1:30

- Server and network access: *pp. 369-373*
- Database access -- users and roles: *pp. 373-375*
- Granting and revoking access: *pp. 375-382*
- Displaying current privileges: *pp. 383-385*

**** Exercise 14: Create database and experiment with privileges for database and tables ****

Chapter 31: Application Tuning

4:00

Note: Some of this material was covered in Chapter 11

- Defining tuning and goals: *pp. 801-803*
- Pre-production tuning – Normalization/denormalization, varchar data types, concurrency and lock handling, transactions, table locking, index handling, using memory: *pp. 803-820*
- Coding techniques: *pp. 820-823*
- Post-production tuning – monitoring, statistics, distributions, index-able columns: *pp. 823-831*
- Using SET EXPLAIN: *pp. 831-836*
- Tuning utilities – update statistics, recreate and identify indexes: *pp. 840-844*

**** Exercise 15: Review your code to determine where application tuning might benefit it ****

***** Optional Chapters *****

The following chapters were identified as being relevant to customer's needs, but may not fit in to the allotted timeframe. As the class evolves, we will determine if they can be incorporated.

Chap #	Title	Description	Pages	Est. Time
26	Administration Utilities (the on* commands)	Summary of all / examples	52	2.00
35	Application Development Strategy	All	26	3.00
4	Understanding Informix Architecture	4B: Shared memory, 4C: Disk usage	37	1.50
6	Getting at your Data: Interfaces	Database and Table menu		1.00