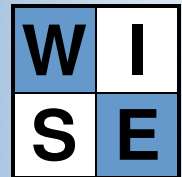




- COURSE CODE:** SQSDBA
- COURSE TITLE:** SQL Server 2005/2008 DBA Fundamentals
- AUDIENCE:** Would-be system and database administrators.
- PREREQUISITES:** At least 6 months experience with a Windows operating system.
- DURATION:** 5 days
- SUMMARY:** After discussing relational database design, theories and practices, this presentation elaborates on the SQL Server database engine in terms of its facilities related to:
- Architecture
  - Configuration
  - DB vs. DB files
  - Logging and recovery of transactions
  - Tables and indexes
  - SQL queries
  - Locking and concurrency
  - Security
  - Data replication
  - DB backup/recovery
  - DB performance issues
  - Troubleshooting
  - And the like
- OBJECTIVES:** Upon completion of this presentation, the delegate should have an intimate understanding of the SQL Server DB engine per the 'Core Topics' that follow.
- FORMAT:** Lecture and hands-on (about 60%).



### 1. RELATIONAL DATABASE (DB) TERMS & CONCEPTS

- Relational DB defined
- DB terminology (e.g., tables, indexes, primary keys)
- Data integrity (e.g., referential integrity)
- Normalisation (e.g., 3NF)
- Schemas
- Relationships (e.g., 1-1, 1-M, M-M)
- Logical vs. physical design
- SQL types and usage

### 2. INTRODUCTION TO SQL SERVER 2005/2008

- Editions
- Hardware requirements
- Maximum limits (e.g., DBs per instance, DB size)

### 3. DATABASE COMPONENTS

- Integration Services (SSIS)
- Analysis Services (SSAS)
- Reporting Services (SSRS)
- Notification Services
- Replication Services
- Workstation (e.g., Books online)
- DB Engine Tuning Advisor

### 4. DATA WAREHOUSE TERMS & CONCEPTS

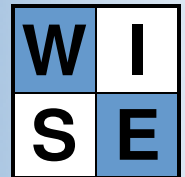
- Business Intelligence
- Data warehouse
- Dimensional modelling
- Data mart
- OLTP vs. OLAP
- Data mining
- ETL
- And the like

### 5. SQL SERVER ARCHITECTURE

- Components of DB engine
- Protocols
- Relational engine
- Storage engine
- SQLDS

### 6. SQL SERVER MEMORY & USAGE

- Buffer pools
- Data cache
- Data pages
- Checkpoints



### 7. DATABASES VS. DATABASE FILES

- System DBs
- Sample DBs
- DB creation
- Expand/shrink DBs
- Filegroups
- DB snapshots
- DB security
- DB copy/restore

### 8. LOGGING & RECOVERY

- Transaction logs
- Log sizing
- DB backup and restore

### 9. TABLES

- System tables
- How to create
- INDENTITY property
- Table's initial organisation and structure
- Page organisation and structure
- Constraints
- Table ALTERations

### 10. INDEXES

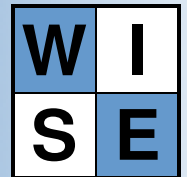
- Purpose
- Structure
- Types
- How to create
- Maintenance
- Managing
- Uses

### 11. MANAGEMENT TOOLS

- Management Studio
- Profiler
- Tuning Advisor
- SQLCMD

### 12. DATA ACCESS OPTIONS

- Components (e.g., OLE DB, ADO.NET)
- .NET SQL Server Data Provider (e.g., SqlDataReader Class)



### 13. SQL SELECTS (DATA RETRIEVAL)

- Single tables
- Multiple tables
- Single values
- XML data
- Sorting data
- Views

### 14. DATA MODIFICATION

- INSERTs
- DELETEs
- UPDATEs

### 15. STORED PROCEDURES (T-SQL)

- Fundamentals
- Variables
- Flow control
- Temporary table/variables
- Error handling

### 16. LOCKING & CONCURRENCY

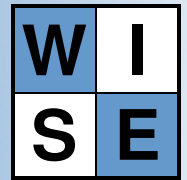
- Concurrency architecture
- Transaction processing
- Locking
- Lock compatibility
- Row locking vs. page locking
- Row versioning

### 17. SECURITY

- Principles
- Securables
- Permissions

### 18. REPLICATION

- Purpose
- Publisher/subscriber model
- Components
- Physical models
- Configuration
- Types
- Backup and recovery
- Performance issues
- Replication management
- Monitoring replication (via PERFMON and Replication Monitor)



### **19. HIGH AVAILABILITY OPTIONS**

- Disaster recovery
- Failover clustering
- Log shipping
- Database mirroring

### **20. PERFORMANCE & TROUBLESHOOTING – INTRODUCTION**

- SQL Server
- Using Profiler
- Using Management Studio
- Using Tuning Advisor
- Using Dynamic Management Views
- Tuning queries via hints and plan guides