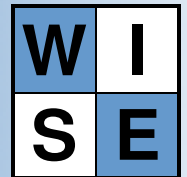


# SQL Server 2005/2008 Integration Services (SSIS) Fundamentals



WISE LTD.

- COURSE CODE:** SQSSIS
- COURSE TITLE:** SQL Server 2005/2008 Integration Services (SSIS) Fundamentals
- LEVEL:** Beginner-to-intermediate
- AUDIENCE:** Business intelligence and data warehouse developers, ETL architects and SQL Server DBAs.
- PREREQUISITES:** At least six (6) months experience with SQL Server 2000 or later. Experience of Visual Studio useful but not necessary.
- DURATION:** 3 days
- SUMMARY:** After reviewing Business Intelligence (BI) terms and concepts, including dimensional modelling, data warehousing (DW), data marts, OLTP vs. OLAP, this hands-on course focuses on the more useful and challenging features of SSIS as they relate to BI/DW solutions in general and ETL solutions in particular.
- This presentation provides detailed treatment of the following SQL Server Integration Services (SSIS) topics:
- Creating and managing SSIS packages
  - Connecting to, querying and transforming disparate data sources
  - Scripting
  - Business Intelligence and data warehousing considerations
  - Etc.
- OBJECTIVES:** As about 80% of this presentation is ETL based, upon its completion, the delegate should be able to think clearly with regards the available SSIS options and implement these options to meet a variety of extract, transform and load solutions in BI and non-BI environments.
- FORMAT:** Lecture and hands-on.

### 1. REVIEW OF BI TERMS & CONCEPTS

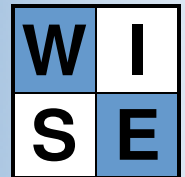
- The data warehousing (DW) environment
- The DW computing context
- What is a data warehouse?
- What is a data mart?
- What is Business Intelligence (BI)?
- How do OLTP & OLAP differ?
- What is data mining?
- Operational vs. historical data
- Dimensional modelling
- Some dimensional modelling characteristics
- What is a star schema?
- What is a snowflake schema?
- What is metadata?

### 2. MICROSOFT BI PLATFORM OPTIONS

- Relational DB
- SQL Server Management Studio
- Reporting Services (SSRS)
- Analysis Services (SSAS)
- Integration Services (SSIS)
- Visual Studio/ Business Intelligence Development Studio (BIDS)

### 3. SSIS ARCHITECTURE & COMPONENTS

- What is SQL Server Integration Services (SSIS)?
- What is SSIS's Scope?
- What is a Package?
- SSIS Architecture
- Run-time Engine vs. Data Flow Engine
- What is Control Flow?
- What is Data Flow?
- What are Event Handlers?
- What is Logging?
- What are Variables?
- Optional Features
- What is the SSIS Designer?
- What are the Command Prompt Utilities?
- What are Integration Service Wizards?
- SSIS Data Types



#### 4. BUSINESS INTELLIGENCE DEVELOPMENT STUDIO (BIDS)

- Purpose
- How to create an SSIS project
- Solution Explorer
- Properties
- Toolbox
- SSIS Designer
- Control Flow
- Data Flow
- Package Explorer
- Progress tab
- Code window
- Task List window
- Output window
- Error List window
- Connection Manager area

#### 5. SQL SERVER MANAGEMENT STUDIO

- Connecting to services
- Object Explorer
- Query window
- Template Explorer

#### 6. SSIS BUILDING BLOCKS

- Adapters
- Control Flow
- Data Flow
- Containers
- Precedence constraints
- Variables
- Expressions
- Scoping
- Wizards

#### 7. BUILT-IN CONNECTION MANAGERS

- Connection concepts
- Connection creation
- Data Sources and Data Source Views

### 8. TASKS, CONTAINERS & PRECEDENCE CONSTRAINTS

- Control flow architecture
- SSIS tasks
- Containers
- Sequence container
- For Loop container
- Foreach Loop container
- Precedence constraints
- Task grouping
- Annotation
- Variables
- Setting task properties via the Properties window
- Setting task properties via the task editor

### 9. USING TASKS –EXAMPLES

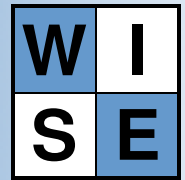
- Data Profiler Task
- Execute SQL (and stored procedure) Task
- Data Flow Task
- File System Task
- Script Task
- Send Mail Task
- XML Task
- Execute Package Task

### 10. EXTRACT, TRANSFORM, LOAD (ETL) TERMS & CONCEPTS

- ETL overview
- The ETL process
- ETL staging considerations
- Source-to-destination mapping considerations
- Source system monitoring document
- Normalised (OLTP) vs. dimensional model
- Planning source-to-ETL processing
- How to handle 'inferred members' (late arriving dimensions)
- Fact table properties & overview
- Introduction to Change Data Capture (CDC)

### 11. DATA FLOWS

- Data flow tasks
- Data flow components
- Connection managers
- Data sources
- Destinations
- SSIS transformations



### 12. SSIS TRANSFORMATION EXAMPLES

- Aggregation
- Character Map
- Conditional Split
- Data Conversion
- Derived Column
- Lookup
- Cache
- Fuzzy Lookup/Fuzzy Grouping
- Merge and Merge Join
- Multicast
- Row Count
- Script Component
- Slowly Changing Dimension
- Inferred (late arriving) dimensions

### 13. ERROR & EVENT HANDLING

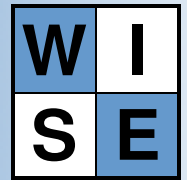
- Types
- Audit
- Precedence constraints
- Script debugging
- Logging

### 14. SSIS BUSINESS SCENARIOS – WORKSHOPS

- ETL requirements
- Data source and destination
- SSIS project
- Connection managers
- Data flows
- Lookup transformations
- Foreach Loop container
- Flat file connection manager
- Package configurations
- Directory property configurations
- Logging
- Error and exception handling

### 15. SSIS SCRIPTING

- SSIS scripting options
- Script task vs. Script component
- Visual Studio for Applications (VSA)/ Visual Studio Tools for Applications (VSTA)
- Scripting languages: Microsoft Visual C# 2008, Microsoft Visual Basic 2008
- IntelliSense
- Script task vs. Custom managed tasks
- Debugging scripts



### 16. DEPLOYMENT

- Deployment facilities
- Deployment controls
- How to organise a package for deployment
- How to organise configuration files and variables
- How to create destination computer bundle
- How to install the deployment bundle on the destination computer
- Package execution options
- Package security and roles considerations

### 17. BEST PRACTICES

- Naming conventions
- Queries
- Data loads
- Controlled sorts
- Optimised aggregation
- Package templates