



TS Accessing Data with Microsoft .NET Framework 4 - Exam 70-516

About this Exam

This exam is designed to test the candidate's knowledge and skills on accessing data sources using ADO.NET and the .NET Framework.

Questions that contain code will be presented in either VB or C#. Candidates can select one of these languages when they start the exam.

Audience Profile

- Candidates for this exam use Microsoft Visual Studio 2010 and ADO.NET 4 to develop the data access layer of an application.
- Candidates should have a minimum of two to three years of experience developing application components that interact with a variety of data sources. In addition, candidates should have a thorough understanding of relational database concepts and should have a minimum of one to two years of experience using a relational database management system.
- Candidates should also have a good grasp of the following:
 - ADO.NET 4 coding techniques and framework components
 - ADO.NET Data Services LINQ
 - LINQ to SQL
 - Entity Framework technologies
 - Structured Query Language (SQL)
 - stored procedures
 - Database Structures/Schemas (Objects) XML

Skills Being Measured

This exam measures your ability to accomplish the technical tasks listed below. The percentages indicate the relative weight of each major topic area on the exam.

Modeling Data (20%)

- Map entities and relationships by using the Entity Data Model.
This objective may include but is not limited to: using the Visual Designer, building an entity data model from an existing database, managing complex entity mappings in EDMX, editing EDM XML, mapping to stored procedures, creating user-defined associations between entities, generating classes with inheritance and mapping them to tables
This objective does not include: using MetadataWorkspace
- Map entities and relationships by using LINQ to SQL.



This objective may include but is not limited to: using the Visual Designer, building a LINQ to SQL model from an existing database, mapping to stored procedures

- Create and customize entity objects.

This objective may include but is not limited to: configuring changes to an Entity Framework entity, using the ADO.NET EntityObject Generator (T4), extending, self-tracking entities, snapshot change tracking, ObjectStateManager, partial classes, partial methods in the Entity Framework

- Connect a POCO model to the Entity Framework.

This objective may include but is not limited to: implementing the Entity Framework with persistence ignorance, user-created POCO entities

This objective does not include: using the POCO templates

- Create the database from the Entity Framework model.

This objective may include but is not limited to: customizing the Data Definition Language (DDL) (templates) generation process, generating scripts for a database, Entity Data Model tools

- Create model-defined functions.

This objective may include but is not limited to: editing the Conceptual Schema Definition Language CSDL, enabling model-defined functions by using the EdmFunction attribute, complex types

Managing Connections and Context (18%)

- Configure connection strings and providers, using the ConfigurationManager, correctly addressing the Microsoft SQL Server instance, implementing connection pooling, managing User Instance and AttachDBfilename, switching providers, implementing multiple active result sets (MARS)

This objective does not include: using the ConnectionStringBuilder; Oracle data provider; creating and using a custom provider; using third-party providers

- Create and manage a data connection.

This objective may include but is not limited to: connecting to a data source, closing connections, maintaining the life cycle of a connection

- Secure a connection.

This objective may include but is not limited to: encrypting and decrypting connection strings, using Security Support Provider Interface (SSPI) or SQL Server authentication, read only vs. read/write connections

This objective does not include: Secure Sockets Layer (SSL)

- Manage the DataContext andObjectContext.

This objective may include but is not limited to: managing the life cycle of DataContext andObjectContext, extending the DataContext andObjectContext, supporting POCO

- Implement eager loading.

This objective may include but is not limited to: configuring loading strategy by using LazyLoadingEnabled, supporting lazy loading with POCO, explicitly loading entities

- Cache data.



This objective may include but is not limited to: DataContext andObjectContext cache including identity map, local data cache

This objective does not include: Velocity, SqlCacheDependency

- Configure ADO.NET Data Services.

This objective may include but is not limited to: creating access rules for entities, configuring authorization and authentication, configuring HTTP verbs

Querying Data (22%)

- Execute a SQL query.

This objective may include but is not limited to: DBCommand, DataReader, DataAdapters, DataSets, managing data retrieval by using stored procedures, using parameters, System.Data.Common namespace classes

- Create a LINQ query.

This objective may include but is not limited to: syntax-based and method-based queries, joining, filtering, sorting, grouping, aggregation, lambda expressions, paging, projection

- This objective does not include: compiling queries

- Create an Entity SQL (ESQL) query.

This objective may include but is not limited to: joining, filtering, sorting, grouping, aggregation, paging, using functions, query plan caching, returning a reference to an entity instance, using parameters with ESQL, functionality related to EntityClient classes

- Handle special data types.

This objective may include but is not limited to: querying BLOBs, filestream, spatial and table-valued parameters

This objective does not include: implementing data types for unstructured data, user-defined types, Common Language Runtime (CLR) types

- Query XML.

This objective may include but is not limited to: LINQ to XML, XmlReader, XmlDocument, XPath

This objective does not include: XSLT, XmlWriter

- Query data by using WCF.NET Data Services.

This objective may include but is not limited to: implementing filtering and entitlement in WCF.NET Data Services, addressing resources, creating a query expression, accessing payload formats, Data Services interceptors

Manipulating Data (22%)

- Create, update, or delete data by using SQL statements.

This objective may include but is not limited to: Create/Update/Delete (CUD), using DataSets, calling stored procedures, using parameters

- Create, update, or delete data by using DataContext.



This objective may include but is not limited to: CUD, calling stored procedures, using parameters

This objective does not include: ObjectTrackingEnabled

- Create, update, or delete data by usingObjectContext.

This objective may include but is not limited to: CUD, calling stored procedures, using parameters, setting SaveOptions

- Manage transactions.

This objective may include

- but is not limited to: System.Transactions, DBTransaction, rolling back a transaction, Lightweight Transaction Manager (LTM)

This objective does not include: distributed transactions, multiple updates within a transaction, multiple synchronization of data within an acidic transaction

- Create disconnected objects.

This objective may include but is not limited to: creating self-tracking entities in the Entity Framework, attaching objects, DataSets, table adapters

Developing and Deploying Reliable Applications (18%)

- Monitor and collect performance data.

This objective may include but is not limited to: logging generated SQL (ToTraceString), collecting response times, implementing performance counters, implementing logging, implementing instrumentation

- Handle exceptions.

This objective may include but is not limited to: resolving data concurrency issues (handling OptimisticConcurrency exception, Refresh method), handling errors, transaction exceptions, connection exceptions, timeout exceptions, handling an exception from the Entity Framework disconnected object, security exceptions

- Protect data.

This objective may include but is not limited to: encryption, digital signature, hashing, salting, least privilege

- Synchronize data.

This objective may include but is not limited to: online/offline Entity Framework, synchronization services, saving locally

- Deploy ADO.NET components.

This objective may include but is not limited to: packaging and publishing from Visual Studio, deploying an ADO.NET Services application; packaging and deploying Entity Framework metadata

This objective does not include: configuring IIS, MSDeploy, MSBuild