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Abstract

In this module I learn how I use database with C# using ADO.NET.

ADO.NET

Documentation



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1. DataReader

# Introduction

* This class is used to read data from database.
* It read data in only forward direction of rows.
* it is sealed class so that cannot be inherited.
* It inherits DbDataReader class and implements IDisposable interface.

# Properties

|  |  |
| --- | --- |
| Property | Description |
| Connection | It is used to get the SqlConnection associated with the SqlDataReader. |
| Depth | It is used to get a value that indicates the depth of nesting for the current row. |
| FieldCount | It is used to get the number of columns in the current row. |
| HasRows | It is used to get a value that indicates whether the SqlDataReader contains one or more rows. |
| IsClosed | It is used to retrieve a boolean value that indicates whether the specified SqlDataReader instance has been closed. |
| Item[String] | It is used to get the value of the specified column in its native format given the column name. |
| Item[Int32] | It is used to get the value of the specified column in its native format given the column ordinal. |
| RecordsAffected | It is used to get the number of rows changed, inserted or deleted by execution of the Transact-SQL statement. |
| VisibleFieldCount | It is used to get the number of fields in the SqlDataReader that are not hidden. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| Close() | It is used to closes the SqlDataReader object. |
| GetBoolean(Int32) | It is used to get the value of the specified column as a Boolean. |
| GetByte(Int32) | It is used to get the value of the specified column as a byte. |
| GetChar(Int32) | It is used to get the value of the specified column as a single character. |
| GetDateTime(Int32) | It is used to get the value of the specified column as a DateTime object. |
| GetDecimal(Int32) | It is used to get the value of the specified column as a Decimal object. |
| GetDouble(Int32) | It is used to get the value of the specified column as a double-precision floating point number. |
| GetFloat(Int32) | It is used to get the value of the specified column as a single-precision floating point number. |
| GetName(Int32) | It is used to get the name of the specified column. |
| GetSchemaTable() | It is used to get a DataTable that describes the column metadata of the SqlDataReader. |
| GetValue(Int32) | It is used to get the value of the specified column in its native format. |
| GetValues(Object[]) | It is used to populate an array of objects with the column values of the current row. |
| NextResult() | It is used to get the next result, when reading the results of SQL statements. |
| Read() | It is used to read record from the SQL Server database. |

1. DataAdapter

# Introduction

* The DataAdapter works as a bridge between a DataSet and a database.
* It is used to transfer data between DataSet and database.
* DataAdapter is a class that represents a set of SQL commands and a database connection.
* It can be used to fill the DataSet from data source.
* It is also used to update the data source.

# Constructors

|  |  |
| --- | --- |
| Constructors | Description |
| DataAdapter() | It is used to initialize a new instance of a DataAdapter class. |
| DataAdapter(DataAdapter) | It is used to initializes a new instance of a DataAdapter class from an existing object of the same type. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| CloneInternals() | It is used to create a copy of this instance of DataAdapter. |
| Dispose(Boolean) | It is used to release the unmanaged resources used by the DataAdapter. |
| Fill(DataSet) | It is used to add rows in the DataSet to match those in the data source. |
| FillSchema(DataSet, SchemaType, String, IDataReader) | It is used to add a DataTable to the specified DataSet. |
| GetFillParameters() | It is used to get the parameters set by the user when executing an SQL SELECT statement. |
| ResetFillLoadOption() | It is used to reset FillLoadOption to its default state. |
| ShouldSerializeAcceptChangesDuringFill() | It determines whether the AcceptChangesDuringFill property should be persisted or not. |
| ShouldSerializeFillLoadOption() | It determines whether the FillLoadOption property should be persisted or not. |
| ShouldSerializeTableMappings() | It determines whether one or more DataTableMapping objects exist or not. |
| Update(DataSet) | It is used to call the respective INSERT, UPDATE, or DELETE statements. |

1. DataSet

# Introduction

* It is a collection of data tables that contain the data.
* It is used to fetch data without interacting with a Data Source that's why, it also known as disconnected data access method.
* It is an in-memory data store that can hold more than one table at the same time.
* We can use DataRelation object to relate these tables.
* The DataSet can also be used to read and write data as XML document.

# Constructors:

|  |  |
| --- | --- |
| Constructor | Description |
| DataSet() | It is used to initialize a new instance of the DataSet class. |
| DataSet(String) | It is used to initialize a new instance of a DataSet class with the given name. |
| DataSet(SerializationInfo, StreamingContext) | It is used to initialize a new instance of a DataSet class that has the given serialization information and context. |
| DataSet(SerializationInfo, StreamingContext, Boolean) | It is used to initialize a new instance of the DataSet class. |

# Properties

|  |  |
| --- | --- |
| Properties | Description |
| CaseSensitive | It is used to check whether DataTable objects are case-sensitive or not. |
| DataSetName | It is used to get or set name of the current DataSet. |
| DefaultViewManager | It is used to get a custom view of the data contained in the DataSet to allow filtering and searching. |
| HasErrors | It is used to check whether there are errors in any of the DataTable objects within this DataSet. |
| IsInitialized | It is used to check whether the DataSet is initialized or not. |
| Locale | It is used to get or set the locale information used to compare strings within the table. |
| Namespace | It is used to get or set the namespace of the DataSet. |
| Site | It is used to get or set an ISite for the DataSet. |
| Tables | It is used to get the collection of tables contained in the DataSet. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| BeginInit() | It is used to begin the initialization of a DataSet that is used on a form. |
| Clear() | It is used to clear the DataSet of any data by removing all rows in all tables. |
| Clone() | It is used to copy the structure of the DataSet. |
| Copy() | It is used to copy both the structure and data for this DataSet. |
| CreateDataReader(DataTable[]) | It returns a DataTableReader with one result set per DataTable. |
| CreateDataReader() | It returns a DataTableReader with one result set per DataTable. |
| EndInit() | It ends the initialization of a DataSet that is used on a form. |
| GetXml() | It returns the XML representation of the data stored in the DataSet. |
| GetXmlSchema() | It returns the XML Schema for the XML representation of the data stored in the DataSet. |
| Load(IDataReader, LoadOption, DataTable[]) | It is used to fill a DataSet with values from a data source using the supplied IDataReader. |
| Merge(DataSet) | It is used to merge a specified DataSet and its schema into the current DataSet. |
| Merge(DataTable) | It is used to merge a specified DataTable and its schema into the current DataSet. |
| ReadXml(XmlReader, XmlReadMode) | It is used to read XML schema and data into the DataSet using the specified XmlReader and XmlReadMode. |
| Reset() | It is used to clear all tables and removes all relations, foreign constraints, and tables from the DataSet. |
| WriteXml(XmlWriter, XmlWriteMode) | It is used to write the current data and optionally the schema for the DataSet using the specified XmlWriter and XmlWriteMode. |

1. DataTable

# Introduction

* DataTable represent relational data in tabular form.
* ADO.NET provides a DataTable class to create and use data table independently.
* Initially, when we create DataTable, it does not have table schema.
* We can create table schema by adding columns and constraints to the table.
* After defining table schema, we can add rows to the table.

**Namespace: “**System.Data”

# Constructors

|  |  |
| --- | --- |
| Constructors | Description |
| DataTable() | It is used to initialize a new instance of the DataTable class with no arguments. |
| DataTable(String) | It is used to initialize a new instance of the DataTable class with the specified table name. |
| DataTable(SerializationInfo, StreamingContext) | It is used to initialize a new instance of the DataTable class with the SerializationInfo and the StreamingContext. |
| DataTable(String, String) | It is used to initialize a new instance of the DataTable class using the specified table name and namespace. |

# Properties

|  |  |
| --- | --- |
| Property | Description |
| Columns | It is used to get the collection of columns that belong to this table. |
| Constraints | It is used to get the collection of constraints maintained by this table. |
| DataSet | It is used to get the DataSet to which this table belongs. |
| DefaultView | It is used to get a customized view of the table that may include a filtered view. |
| HasErrors | It is used to get a value indicating whether there are errors in any of the rows in the table of the DataSet. |
| MinimumCapacity | It is used to get or set the initial starting size for this table. |
| PrimaryKey | It is used to get or set an array of columns that function as primary keys for the data table. |
| Rows | It is used to get the collection of rows that belong to this table. |
| TableName | It is used to get or set the name of the DataTable. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| AcceptChanges() | It is used to commit all the changes made to this table. |
| Clear() | It is used to clear the DataTable of all data. |
| Clone() | It is used to clone the structure of the DataTable. |
| Copy() | It is used to copy both the structure and data of the DataTable. |
| CreateDataReader() | It is used to returns a DataTableReader corresponding to the data within this DataTable. |
| CreateInstance() | It is used to create a new instance of DataTable. |
| GetRowType() | It is used to get the row type. |
| GetSchema() | It is used to get schema of the table. |
| ImportRow(DataRow) | It is used to copy a DataRow into a DataTable. |
| Load(IDataReader) | It is used to fill a DataTable with values from a data source using the supplied IDataReader. |
| Merge(DataTable, Boolean) | It is used to merge the specified DataTable with the current DataTable. |
| NewRow() | It is used to create a new DataRow with the same schema as the table. |
| Select() | It is used to get an array of all DataRow objects. |
| WriteXml(String) | It is used to write the current contents of the DataTable as XML using the specified file. |

1. Connection

# Introduction

* It is used to establish an open connection to the SQL Server database.
* It is a sealed class so that cannot be inherited.
* SqlConnection class uses SqlDataAdapter and SqlCommand classes together to increase performance when connecting to a Microsoft SQL Server database.
* Connection does not close explicitly even it goes out of scope.
* Therefore, you must explicitly close the connection by calling Close() method.

# Constructor

|  |  |
| --- | --- |
| Constructors | Description |
| SqlConnection() | It is used to initializes a new instance of the SqlConnection class. |
| SqlConnection(String) | It is used to initialize a new instance of the SqlConnection class and takes connection string as an argument. |
| SqlConnection(String, SqlCredential) | It is used to initialize a new instance of the SqlConnection class that takes two parameters. First is connection string and second is sql credentials. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| BeginTransaction() | It is used to start a database transaction. |
| ChangeDatabase(String) | It is used to change the current database for an open SqlConnection. |
| ChangePassword(String, String) | It changes the SQL Server password for the user indicated in the connection string. |
| Close() | It is used to close the connection to the database. |
| CreateCommand() | It enlists in the specified transaction as a distributed transaction. |
| GetSchema() | It returns schema information for the data source of this SqlConnection. |
| Open() | It is used to open a database connection. |
| ResetStatistics() | It resets all values if statistics gathering is enabled. |

1. Command

# Introduction

* This class is used to store and execute SQL statement for database.
* It is a sealed class so that cannot be inherited.

# Constructors

|  |  |
| --- | --- |
| Constructor | Description |
| SqlCommand() | It is used to initialize a new instance of the SqlCommand class. |
| SqlCommand(String) | It is used to initialize a new instance of the SqlCommand class with a string parameter. |
| SqlCommand(String, SqlConnection) | It is used to initialize a new instance of the SqlCommand class. It takes two parameters, first is query string and second is connection string. |
| SqlCommand(String, SqlConnection, SqlTransaction) | It is used to initialize a new instance of the SqlCommand class. It takes three parameters query, connection and transaction string respectively. |
| SqlCommand(String, SqlConnection, SqlTransaction, SqlCommandColumnEncryptionSetting) | It Initializes a new instance of the SqlCommand class with specified command text, connection, transaction, and encryption setting. |

# Methods

|  |  |
| --- | --- |
| Method | Description |
| BeginExecuteNonQuery() | It is used to Initiate the asynchronous execution of the SQL statement described by this SqlCommand. |
| Cancel() | It tries to cancel the execution of a SqlCommand. |
| Clone() | It creates a new SqlCommand object that is a copy of the current instance. |
| CreateParameter() | It creates a new instance of a SqlParameter object. |
| ExecuteReader() | It is used to send the CommandText to the Connection and builds a SqlDataReader. |
| ExecuteXmlReader() | It is used to send the CommandText to the Connection and builds an XmlReader object. |
| ExecuteScalar() | It executes the query and returns the first column of the first row in the result set. Additional columns or rows are ignored. |
| Prepare() | It is used to create a prepared version of the command by using the instance of SQL Server. |
| ResetCommandTimeout() | It is used to reset the CommandTimeout property to its default value. |
| ExecuteNonQuery() | It is used to execute update, insert and delete. |