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C# & Database Connectivity



ADO.NET

Data Providers

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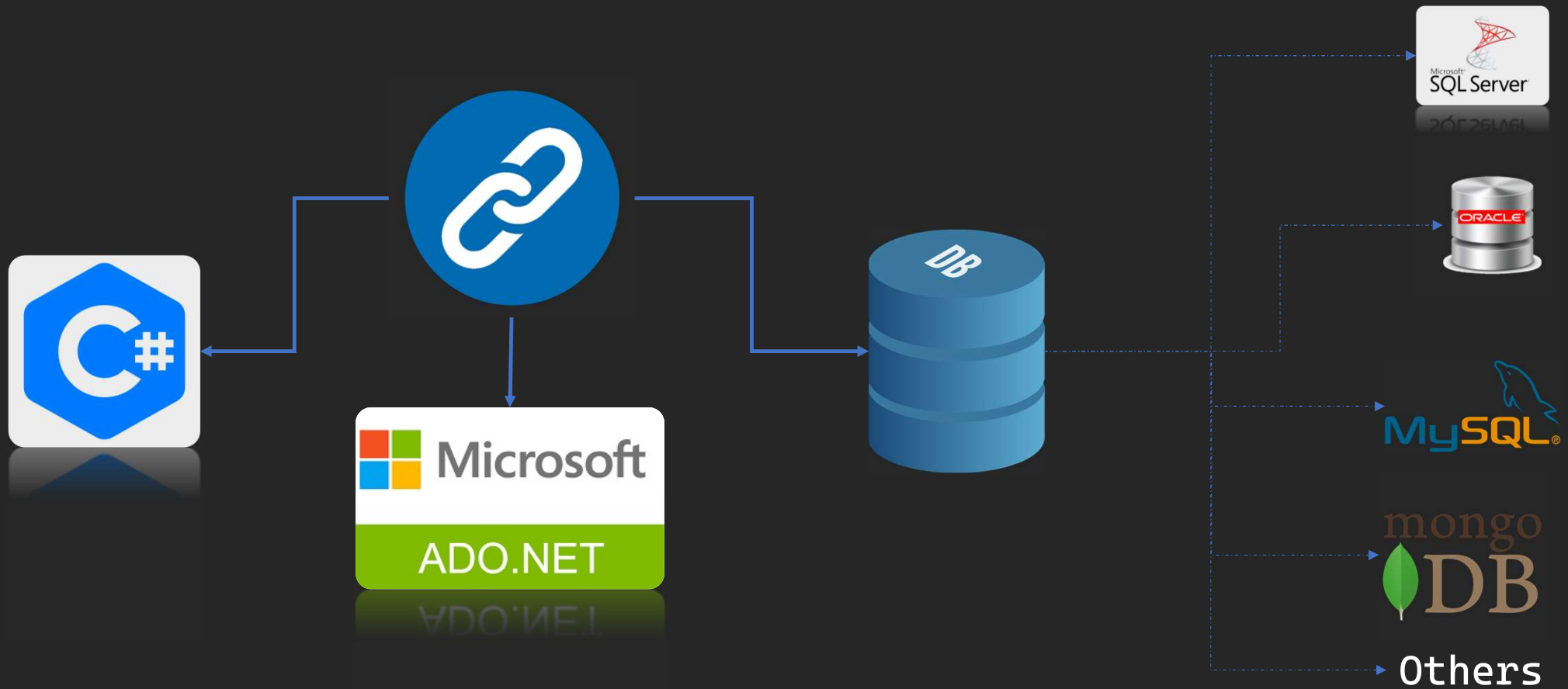
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Which Databases I can connect to?



Data Providers:



.NET Framework Data
Provider for SQL Server
`System.Data.SqlClient`

.NET Framework Data
Provider for Oracle
`System.Data.OracleClient`

.NET Framework Data
Provider for MySQL
`System.Data.MySqlClient`

MongoDB.Driver

.NET Framework OLEDB
`System.Data.OleDb`

.NET Framework Odbc
`System.Data.Odbc`

Entity Framework (EF)



Access,
< SQL 6.5,
Sybase,
DB2.

Most Databases

What is Data Provider?

.NET Framework data provider is used for:

- Connecting to a database
- Executing commands,
- And retrieving results.

Those results are either processed directly, placed in a DataSet in order to be exposed to the user as needed, combined with data from multiple sources, or remoted between tiers.

ADO.NET supports various data providers, including SQL Server, Oracle, MySQL, and OLE DB. It provides a consistent programming model for working with different databases, allowing developers to write data access code that is independent of the underlying database.

Data Providers:

- `System.Data.SqlClient` (SQL Server):
 - This data provider is specifically designed for Microsoft SQL Server databases.
 - It provides classes like `SqlConnection`, `SqlCommand`, `SqlDataAdapter`, and `SqlDataReader` to establish connections, execute commands, and retrieve data from SQL Server databases.
- `System.Data.OracleClient` (Oracle):
 - This data provider allows connectivity to Oracle databases.
 - It provides classes such as `OracleConnection`, `OracleCommand`, `OracleDataAdapter`, and `OracleDataReader` to work with Oracle databases.
- `System.Data.MySql(MySql)`:
 - This data provider allows connectivity to MySQL databases.

Data Providers:

- **System.Data.OleDb (OLE DB):**
 - OleDb (Object Linking and Embedding Database)
 - This data provider allows access to various databases through the OLE DB technology.
 - OleDb is a Microsoft technology and is primarily used on Windows platforms.
 - It supports a wide range of databases, including Microsoft Access, Oracle, MySQL, and more.
 - It provides classes like OleDbConnection, OleDbCommand, OleDbDataAdapter, and OleDbDataReader for interacting with OLE DB data sources.
- **System.Data.Odbc (ODBC):**
 - ODBC (Open Database Connectivity) .
 - This data provider enables connectivity through the ODBC (Open Database Connectivity) standard.
 - ODBC is a widely adopted standard for accessing databases and is supported on various platforms, including Windows, macOS, and Linux.
 - It supports databases that comply with the ODBC standard, such as Microsoft SQL Server, Oracle, MySQL, and others.
 - It provides classes like OdbcConnection, OdbcCommand, OdbcDataAdapter, and OdbcDataReader for working with ODBC data sources.

Data Providers:

- Entity Framework (EF):
 - Entity Framework is an ORM (Object-Relational Mapping) framework provided by Microsoft as part of ADO.NET.
 - It allows developers to work with databases using a high-level object-oriented API.
 - Entity Framework supports multiple database providers, including SQL Server, Oracle, MySQL, and more, through the use of provider-specific DbContext and DbSet classes.



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Thank You

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