

LESSON 4.1

10754 Microsoft .NET Fundamentals

Understand .NET File Classes

Lesson Overview

Understand .NET file classes.

In this lesson, you will:

- Review streams.
- Learn about the `StreamReader` and `StreamWriter` classes.
- Write an application that reads and writes a text file.

Guiding Questions

1. What is a stream?
2. What classes does the Microsoft® .NET Framework provide for text file I/O?

Anticipatory Set

1. Give examples of applications that use text files (or other “serialized” file types) to store information.
2. Can you think of any examples of how text files are used by the Microsoft Windows[®] family of operating systems?

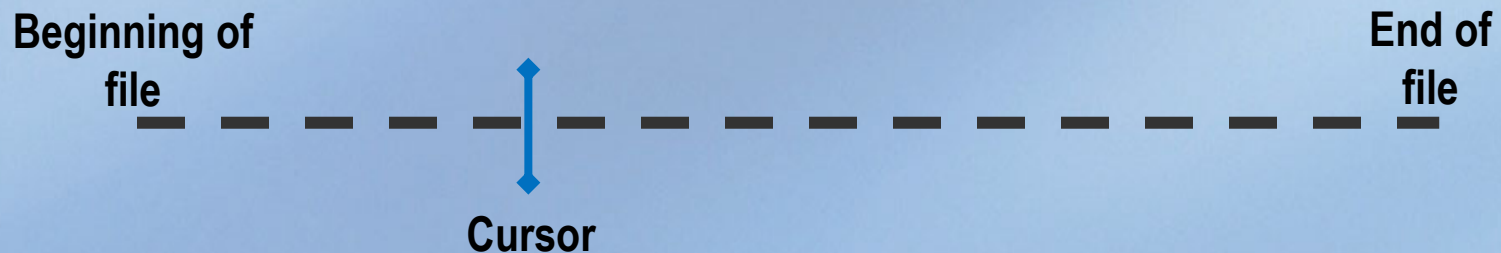
File Class

- The .NET Framework provides the `File` class for many of the basic tasks associated with file I/O.
 - Methods in the `File` class are static, so they can be called without instantiating an object.
- Methods include:
 - `Exist`: Determines whether the specified file exists.
 - `Move`: Moves a specified file to a new location, providing the option to specify a new file name.
 - `Delete`: Deletes the specified file.
 - `Create`: Creates a new (or overwrites an existing) specified file.

Streams

The .NET Framework uses streams for reading from and writing to files.

- Think of a stream as a set of data that has a beginning and an end, and in which a cursor indicates the current position in the stream.



- There are three fundamental stream operations:
 - **Reading** data from the stream
 - **Writing** data to the stream
 - **Seeking** (getting and/or setting the position of the cursor within the stream)

FileStream Class

- There are many different types of streams, and many sources of data, such as memory, a Transmission Control Protocol/Internet Protocol (TCP/IP) socket, and so on.
- The `FileStream` class (`System.IO.FileStream`) creates a stream around a file, allowing the developer to read and write data.
- Once a developer has created a stream, the `StreamReader` and `StreamWriter` classes provide methods for working with text files—a common task in application development.

StreamReader Class

- The `StreamReader` class (`System.IO.StreamReader`) is designed to work with character (as opposed to byte) data.
- It provides methods for reading a sequential series of characters and is often used to read text files.
- `StreamReader` provides constructors for creating an instance with a stream object or a file name.
- Once instantiated, a `StreamReader` object exposes several methods for reading text.
- Methods include:
 - `Read()`, which returns the next character from the stream.
 - `ReadLine()`, which reads the next line and returns the data as a string.

StreamWriter Class

- The `StreamWriter` class (`System.IO.StreamWriter`) provides write functionality. Like `StreamReader` it is also intended to work with streams with character data.
- It provides methods for writing character data sequentially; it can be used to write or append data to a text file.
- Again, `StreamWriter` provides constructors for creating an instance with a stream object or a file name.
- Methods include:
 - `Write`, for writing one character to a text stream.
 - `WriteLine`, which writes data plus a line terminator to the stream.

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Assignment

Follow the instructions in the Student Activity document to create a Microsoft Visual Studio® project that reads and writes text to a file.