**2 Serialization methods in C#**

**Binary and XML Serialization**

The [System.Runtime.Serialization](https://learn.microsoft.com/en-us/dotnet/api/system.runtime.serialization) namespace contains classes for binary and XML serialization and deserialization.

**Binary serialization:** uses binary encoding to produce compact serialization for uses such as storage or socket-based network streams. In binary serialization, all members, even members that are read-only, are serialized, and performance is enhanced.

**XML serialization:** serializes the public fields and properties of an object, or the parameters and return values of methods, into an XML stream that conforms to a specific XML Schema definition language (XSD) document. XML serialization results in strongly typed classes with public properties and fields that are converted to XML. [System.Xml.Serialization](https://learn.microsoft.com/en-us/dotnet/api/system.xml.serialization) contains classes for serializing and deserializing XML. You apply attributes to classes and class members to control the way the [XmlSerializer](https://learn.microsoft.com/en-us/dotnet/api/system.xml.serialization.xmlserializer) serializes or deserializes an instance of the class.

**Making an object serializable:**

For binary or XML serialization, we need:

- The object to serialize

- A stream to contain the serialized object

- A [System.Runtime.Serialization.Formatter](https://learn.microsoft.com/en-us/dotnet/api/system.runtime.serialization.formatter) instance

Apply the [SerializableAttribute](https://learn.microsoft.com/en-us/dotnet/api/system.serializableattribute) attribute to a type to indicate that instances of the type can be serialized. An exception is thrown if you attempt to serialize but the type doesn't have the [SerializableAttribute](https://learn.microsoft.com/en-us/dotnet/api/system.serializableattribute) attribute.

To prevent a field from being serialized, apply the [NonSerializedAttribute](https://learn.microsoft.com/en-us/dotnet/api/system.nonserializedattribute) attribute.

If a serialized class contains references to objects of other classes that are marked [SerializableAttribute](https://learn.microsoft.com/en-us/dotnet/api/system.serializableattribute), those objects will also be serialized.

- Also, Binary and XML serialization can be performed in two ways, basic and custom.

Overview of Serialization:

<https://learn.microsoft.com/en-us/dotnet/csharp/programming-guide/concepts/serialization/>

How to write object data to an XML file (C#):

<https://learn.microsoft.com/en-us/dotnet/csharp/programming-guide/concepts/serialization/how-to-write-object-data-to-an-xml-file>

How to read object data to an XML file (C#):

<https://learn.microsoft.com/en-us/dotnet/csharp/programming-guide/concepts/serialization/how-to-read-object-data-from-an-xml-file>

Walkthrough: Persist an object using C#:

<https://learn.microsoft.com/en-us/dotnet/csharp/programming-guide/concepts/serialization/walkthrough-persisting-an-object-in-visual-studio>