

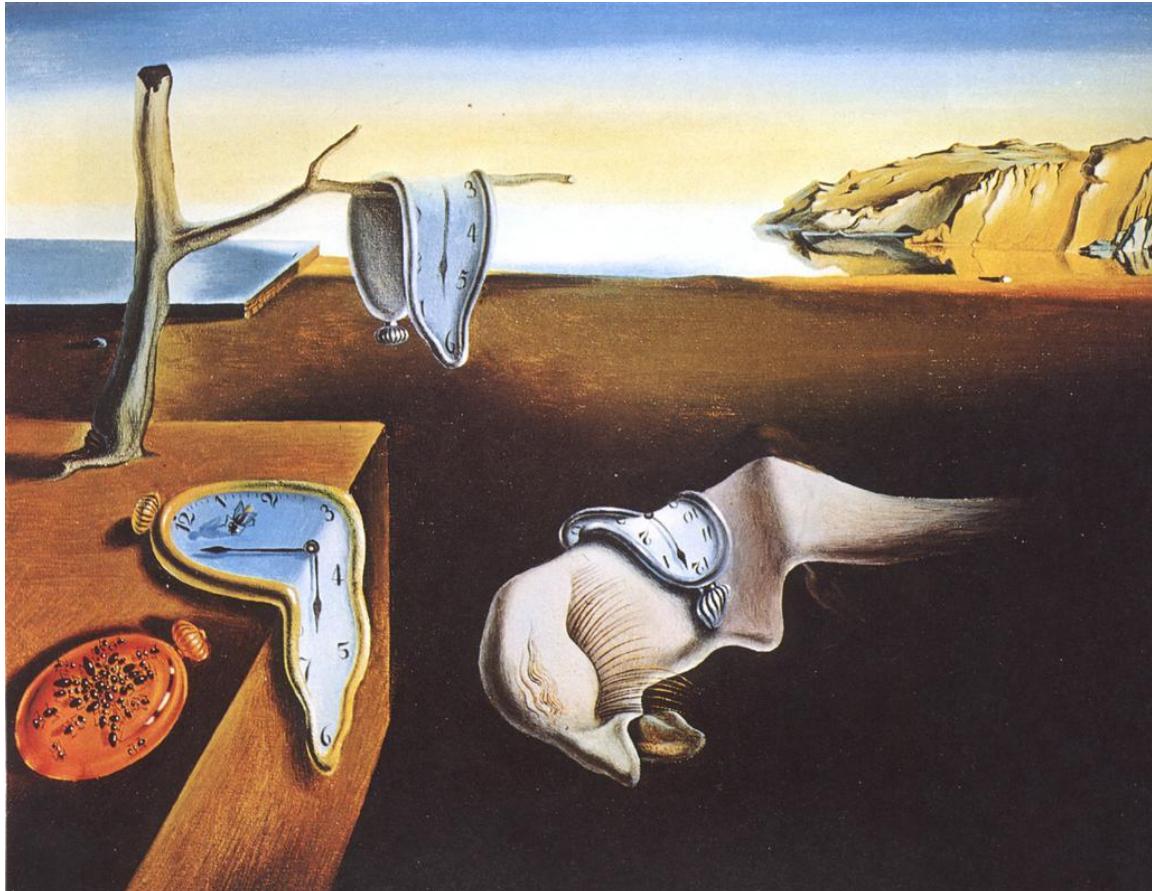
Persistence

An Introduction to XML and Serialization

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Persistence

“the continued existence of something”



Dali – “Persistence of memory”

Persistence – lack of (volatility - volatile)



Persistence - Topic List

1. Introduction to XML:

- XML versus HTML
- Example of XML
- XML does not “do” anything

2. Object Serialization.

XML versus HTML

- XML was designed to **describe data**,
 - focus on **what** the data is.
- XML is about carrying information.

```
<note>
    <to>Donald Duck</to>
    <from>Minnie Mouse</from>
    <heading>Reminder</heading>
    <body>Meeting at 10am today</body>
</note>
```

XML versus HTML

- HTML was designed to **display data**,
 - focus on **how** the data looks.
- HTML is about displaying information.

```
<html>

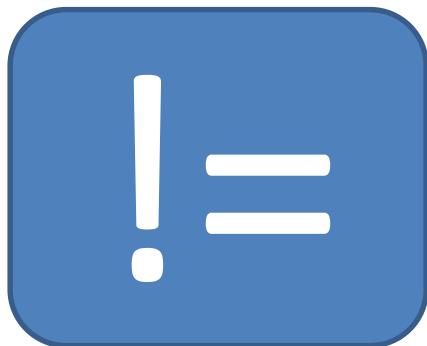
  <head>
    <title>My First Web Page</title>
  </head>

  <body>
    <h1>My First Web Page</h1>
    <p><b>Hello World Wide Web!</b></p>
    <p><i>Hello World Wide Web!</i></p>
    <p><u>Hello World Wide Web!</u></p>
    <p>This is my first web page.</p>
    <p>HTML tags can give <b><i>various</i></b>
       looks and format</u> to the content of this web page.</p>
  </body>

</html>
```

XML is NOT a replacement for HTML

```
<note>
  <to>Donald Duck</to>
  <from>Minnie Mouse</from>
  <heading>Reminder</heading>
  <body>Meeting at 10am today</body>
</note>
```



```
<html>
  <head>
    <title>My First Web Page</title>
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  <body>
    <h1>My First Web Page</h1>
    <p><b>Hello World Wide Web!</b></p>
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    <p>This is my first web page.</p>
    <p>HTML tags can give <b><i>various</i></b>
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  </body>

</html>
```

XML...

- Extensible
 - Extensible markup language
- Markup
 - Like HTML
- Describes Data
 - Not for displaying data HTML
- Define your own tags
 - Not predefined
- Self Descriptive



Persistence - Topic List

1. Introduction to XML:

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- Example of XML
- XML does not “do” anything



2. Object Serialization.

XML example



```
<note>
    <to>Donald Duck</to>
    <from>Minnie Mouse</from>
    <heading>Reminder</heading>
    <body>Meeting at 10am today</body>
</note>
```

A **note** to Donald Duck, from Minnie Mouse, stored as XML

It has sender **<to>** and receiver **<from>** information

It also has a **heading** and a message **body**.

The XML is self descriptive.

Persistence - Topic List

1. Introduction to **XML**:

- XML versus HTML
- Example of XML
- XML does not “do” anything



2. Object **Serialization**.

Our Shop App



Shop V4.0
implemented the **CRUD** process



Problem: All entered **data is lost** if we **close our application**

Shop V5.0
use XML to make our **data persistent**
beyond the life of our app



Solution: Store our objects from memory to **XML files**.

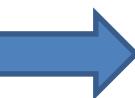
XML does not “do” anything

- XML is just information wrapped in <tags>.
- Someone must write a piece of software to send, receive or display it.
- We will write Java code to:
 - SEND objects TO an **XML file** on the hard disk.
 - READ objects FROM an **XML file** on the hard disk.
- This is called **Object Serialization**

Persistence - Topic List

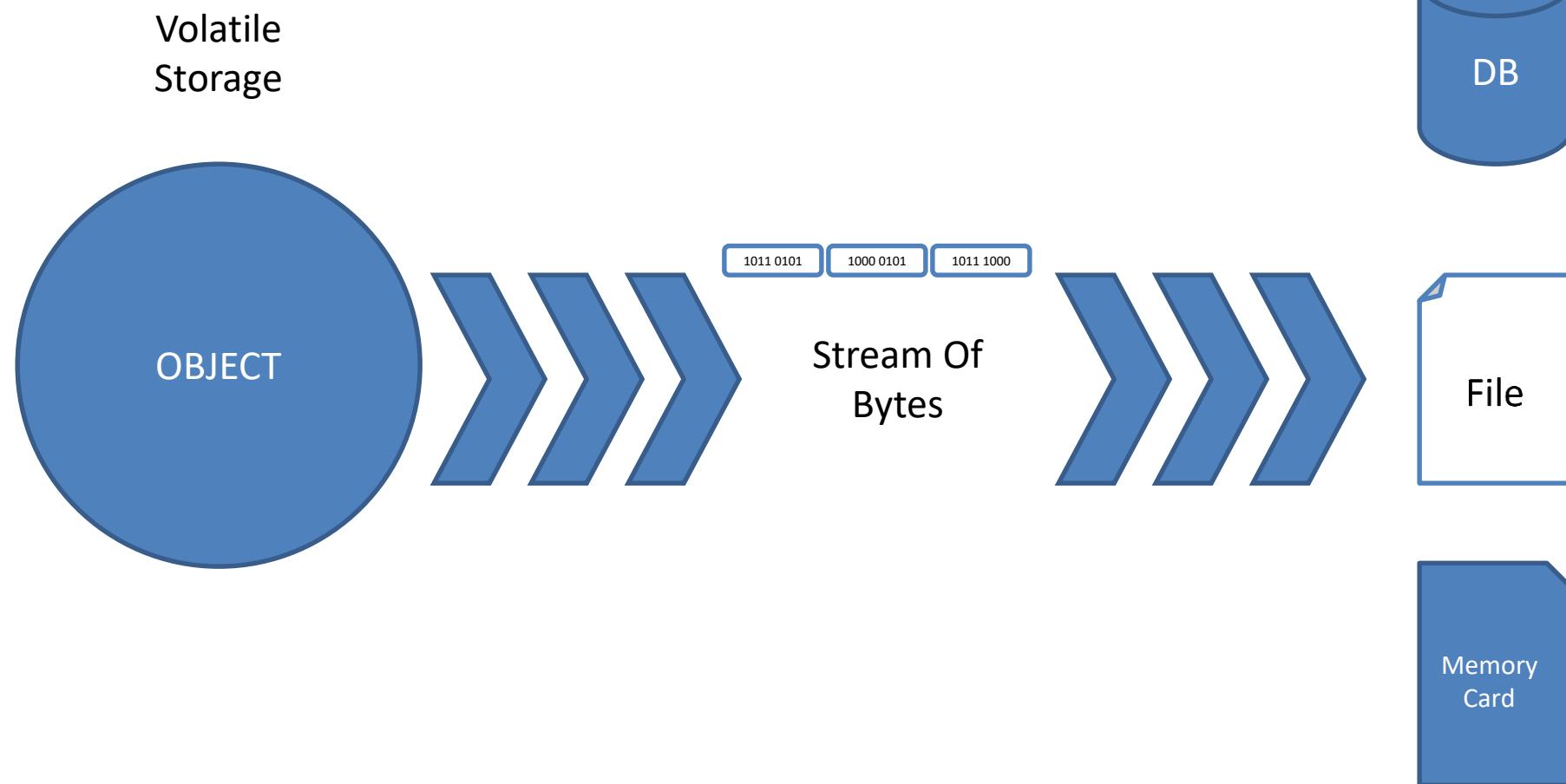
1. Introduction to XML:

- XML versus HTML
- Example of XML
- XML does not “do” anything

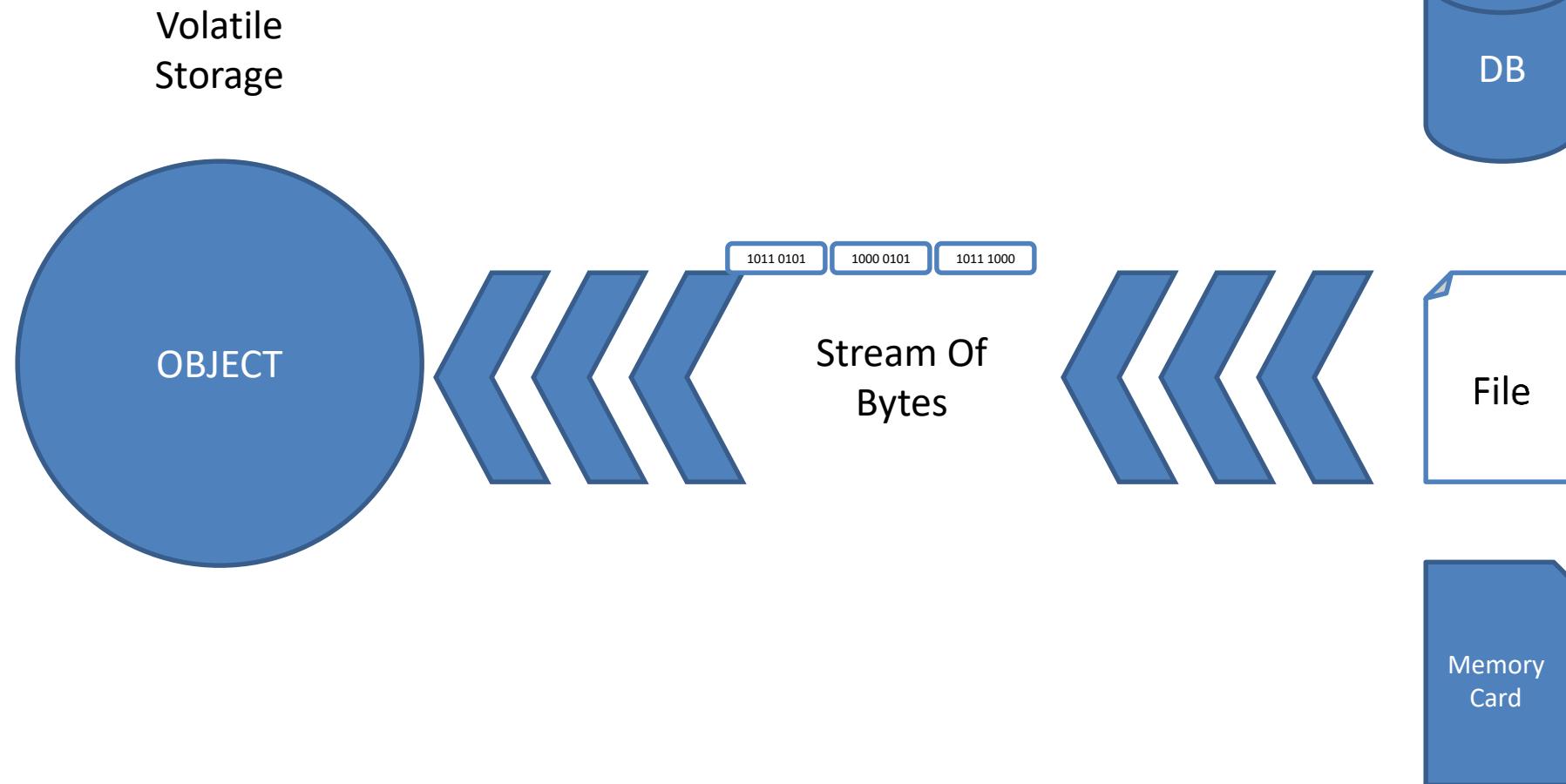


2. Object Serialization.

Java Serialization



Java De-Serialization



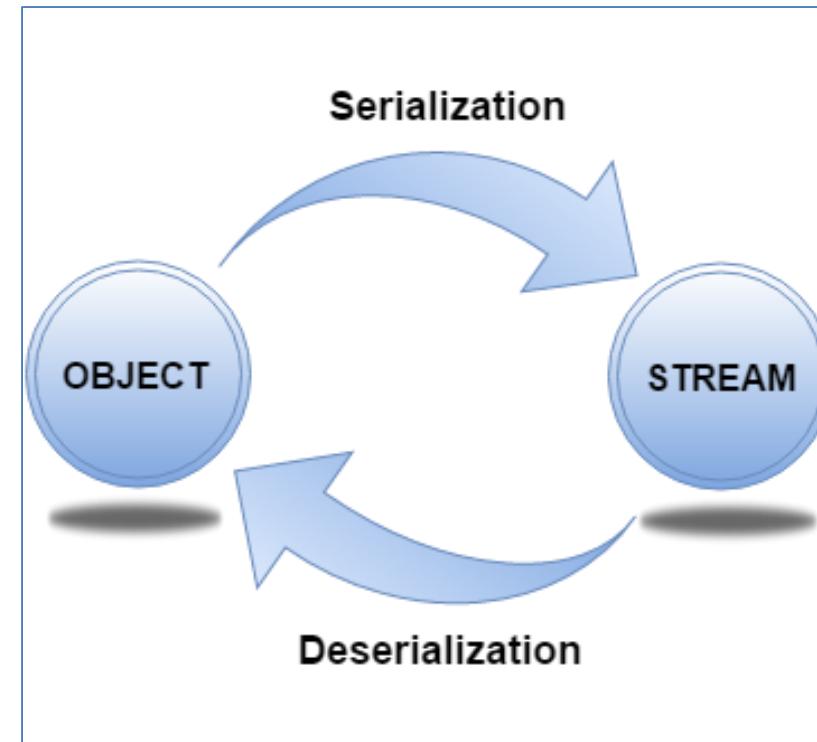
Object Serialization

An object can be represented as a **sequence of bytes**

that includes the object's **data**

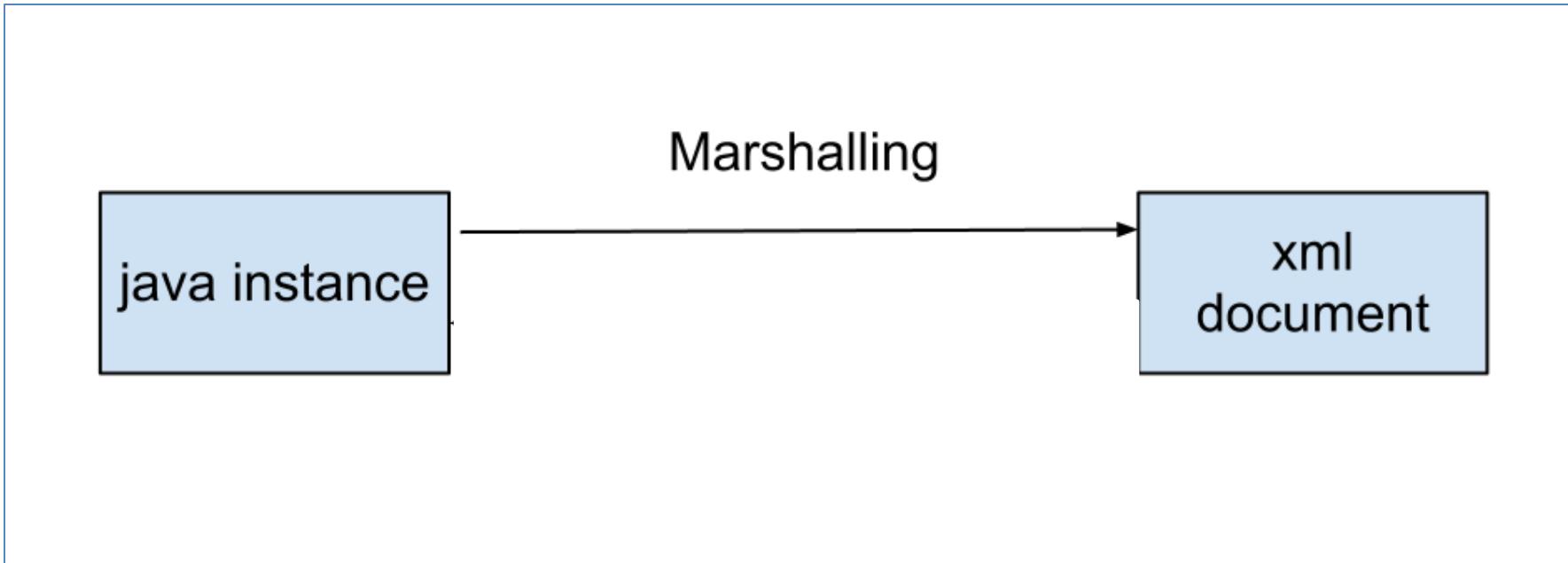
as well as information about the object's **type**

and the **types of data stored in the object.**



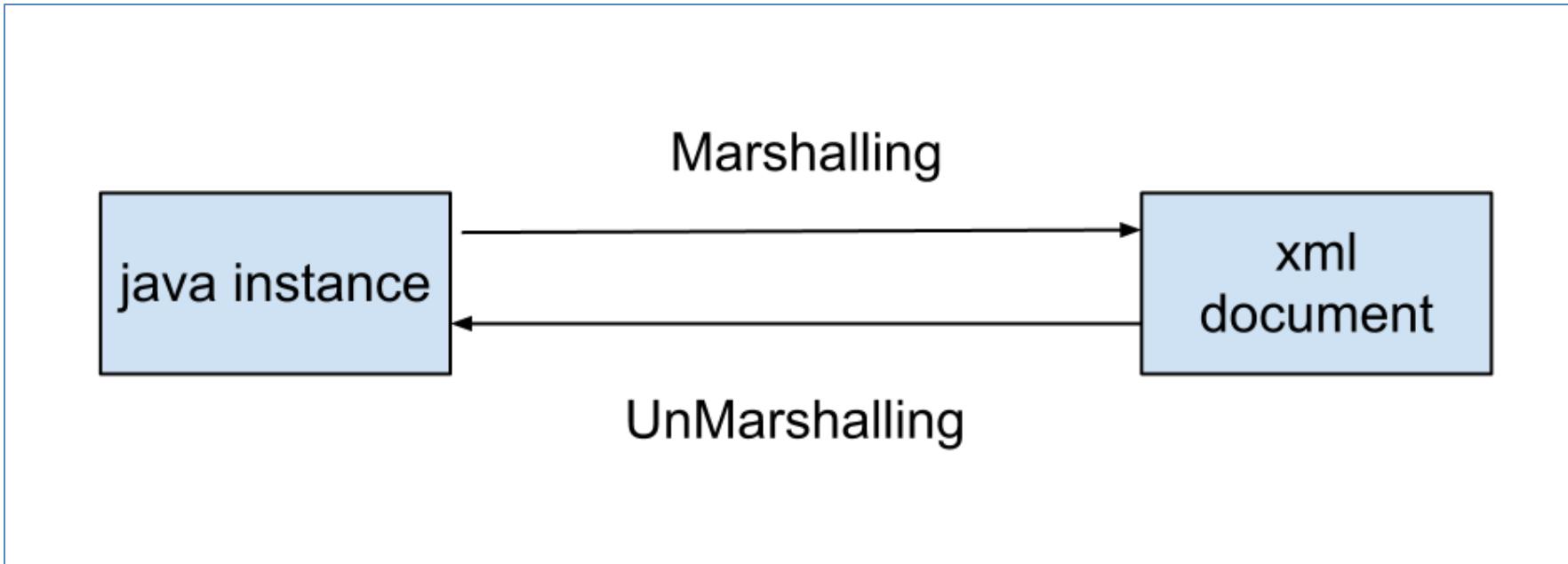
Serialization process involves **Marshalling**

Marshalling is the process of converting the objects & data into a stream.



Serialization process involves **Marshalling** and **unMarshalling**

Marshalling is the process of converting the objects & data into a stream.



UnMarshalling is the reverse process
of converting the stream back to their original objects & data.

Self Study Questions

1. What does Persistence mean?
2. We use HTML for carrying data (T/F)?
3. We use XML for displaying data (T/F)?
4. XML is a replacement for HTML (T/F)?
5. When power is lost the data in a program is lost.
What one word describes this?
6. Writing Java objects to a file is called?
7. Reading a file of data into Java objects is called?
8. Converting objects to a data stream is called?

Any
Questions?

