Web Markup Languages

Definitions and examples

http://www.w3schools.com

What is HTML?

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage
- An HTML file is a text file containing small **markup tags**
- The markup tags tell the Web browser **how to display** the page
- An HTML file must have an **htm** or **html** file extension
- An HTML file can be created using a **simple text editor**

HTML example

```
<html>
  <head>
      <title>Title of page</title>
  </head>
  <body> This is my first homepage.
      <b>This text is bold</b>
  </body>
</html>
```

What is XML?

- XML stands for E**X**tensible **M**arkup **L**anguage
- XML is a **markup language** much like HTML
- XML was designed to **describe data**
- XML tags are not predefined. You must **define your own tags**
- XML uses a **Document Type Definition** (DTD) or an **XML Schema** to describe the data
- XML with a DTD or XML Schema is designed to be **self-descriptive**

The main difference between XML and HTML

- **XML was designed to carry data.**
- XML is not a replacement for HTML.
  They were designed with different goals:
- XML was designed to describe data and to focus on what data is. HTML was designed to display data and to focus on how data looks.
- HTML is about displaying information, while XML is about describing information.

XML example

```
<?xml version="1.0"?>
<!DOCTYPE note SYSTEM "note.dtd">
 <note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!
  </body>
</note>
```

More on XML

- **XML is free and extensible. XML tags are not predefined. You must "invent" your own tags.**
- **XML is a complement to HTML, not a replacement.**

  In future Web development it is most likely that XML will be used to describe the data, while HTML will be used to format and display the same data.
- **XML is a cross-platform, software and hardware independent tool for transmitting information.**
- **XML is going to be everywhere.**

XML DTD

The purpose of a **Document Type Definition** is to define the legal building blocks of an XML document. It defines the document structure with a list of legal elements.

The file note.dtd :

<!ELEMENT note (to,from,heading,body)>

<!ELEMENT to (#PCDATA)>

<!ELEMENT from (#PCDATA)>

<!ELEMENT heading (#PCDATA)>

<!ELEMENT body (#PCDATA)>

Why use a DTD?

- With DTD, each of your XML files can carry a description of its own format with it.
- With a DTD, independent groups of people can agree to use a common DTD for interchanging data.
- Your application can use a standard DTD to verify that the data you receive from the outside world is valid.
- You can also use a DTD to verify your own data.

What Is XHTML?

- XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage
- XHTML is aimed to **replace** HTML
- XHTML is almost **identical** to HTML 4.01
- XHTML is a **stricter and cleaner** version of HTML
- XHTML is HTML defined as an **XML application**

The Most Important Differences between XHTML and HTML:

- XHTML elements must be **properly nested**
- XHTML documents must be **well-formed**
- Tag names must be in **lowercase**
- All XHTML elements must be **closed**

What is RDF?

- RDF stands for **R**esource **D**escription **F**ramework
- RDF is a framework for describing resources on the web
- RDF provides a model for data, and a syntax so that independent parties can exchange and use it
- RDF is designed to be read and understood by computers
- RDF is not designed for being displayed to people
- RDF is written in XML
- RDF is a part of the W3C's Semantic Web Activity
- RDF is a W3C Recommendation

RDF - Examples of Use

- Describing properties for shopping items, such as price and availability
- Describing time schedules for web events
- Describing information about web pages, such as content, author, created and modified date
- Describing content and rating for web pictures
- Describing content for search engines
- Describing electronic libraries

RDF

- RDF uses Web identifiers (URIs) to identify resources.
- RDF describes **resources** with **properties** and **property values**.
- A **Resource** is anything that can have a URI, such as "http://www.w3schools.com/RDF"
- A **Property** is a Resource that has a name, such as "author" or "homepage"
- A **Property value** is the value of a Property, such as "Jan Egil Refsnes" or "http://www.w3schools.com" (note that a property value can be another resource)

RDF example

```
<?xml version="1.0"?>
<RDF>
  <Description
    about="http://www.w3schools.com/RDF">
        <author>Jan Egil Refsnes</author>
        <homepage>http://www.w3schools.com
        </homepage>
</Description>
</RDF>
```

RDF - The Dublin Core

- The Dublin Core Metadata Initiative (DCMI) provides properties for describing network objects, suitable for use by network search engines.
- RDF is metadata (data about data).
- RDF is used to describe information resources.
- The Dublin Core is a set of predefined properties for describing documents

What is OWL?

- OWL stands for Web Ontology Language
- OWL is built on top of RDF
- OWL is for processing information on the web
- OWL was designed to be interpreted by computers
- OWL was not designed for being read by people
- OWL is written in XML
- OWL has three sublanguages
- OWL is a web standard

OWL

- **What is Ontology?**
  - Ontology is about the exact description of things and their relationships.
  - For the web, ontology is about the exact description of web information and relationships between web information.
- **OWL** is a part of the "**Semantic Web** Vision" **-** a future where:
  - Web information has exact meaning
  - Web information can be processed by computers
  - Computers can integrate information from the web
- **OWL is written in XML**

OWL

- **OWL was Designed for Processing Information**
  - OWL was designed to provide a common way to process the content of web information (instead of displaying it).
  - OWL was designed to be read by computer applications.
- **OWL is Different from RDF**
  - OWL and RDF are much of the same thing, but OWL is a stronger language with greater machine interpretability than RDF.
  - OWL comes with a larger vocabulary and stronger syntax than RDF.
- **OWL Example (Airport). OWL Resource:** http://www.daml.org/2001/10/html/airport-ont