

User Interaction: XML and JSON

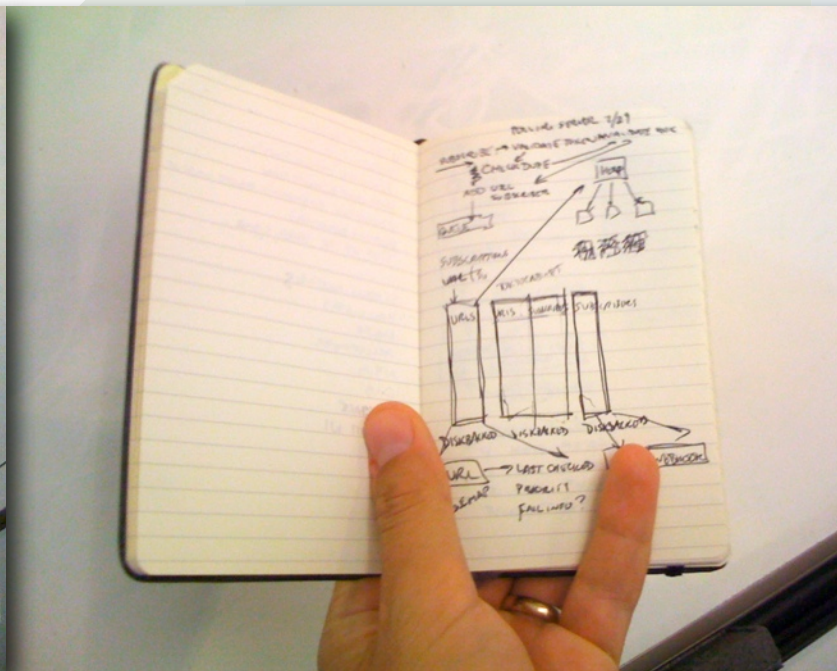
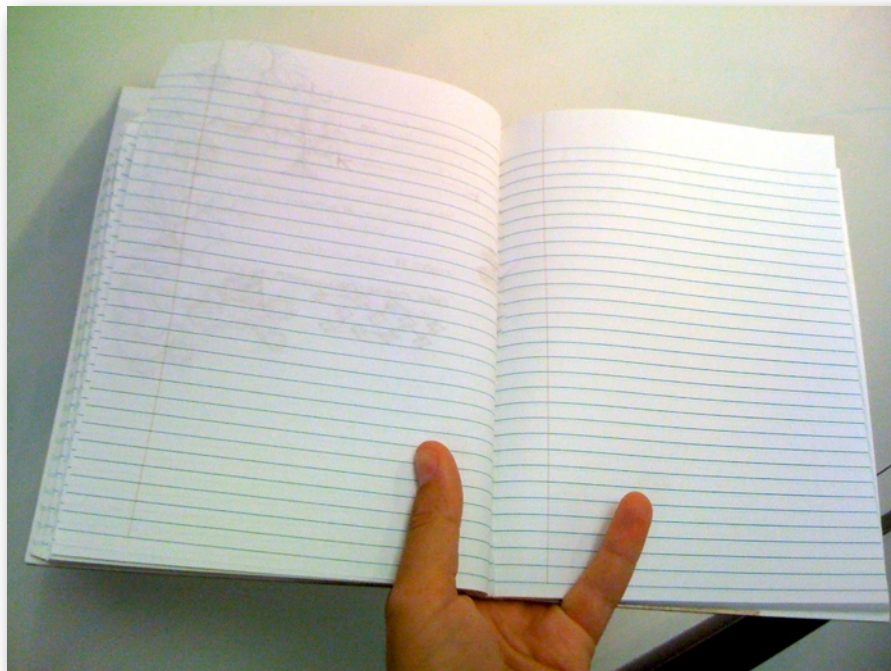
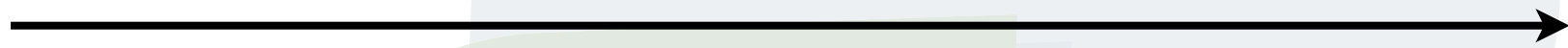
Asst. Professor Donald J. Patterson
INF 133 Fall 2010



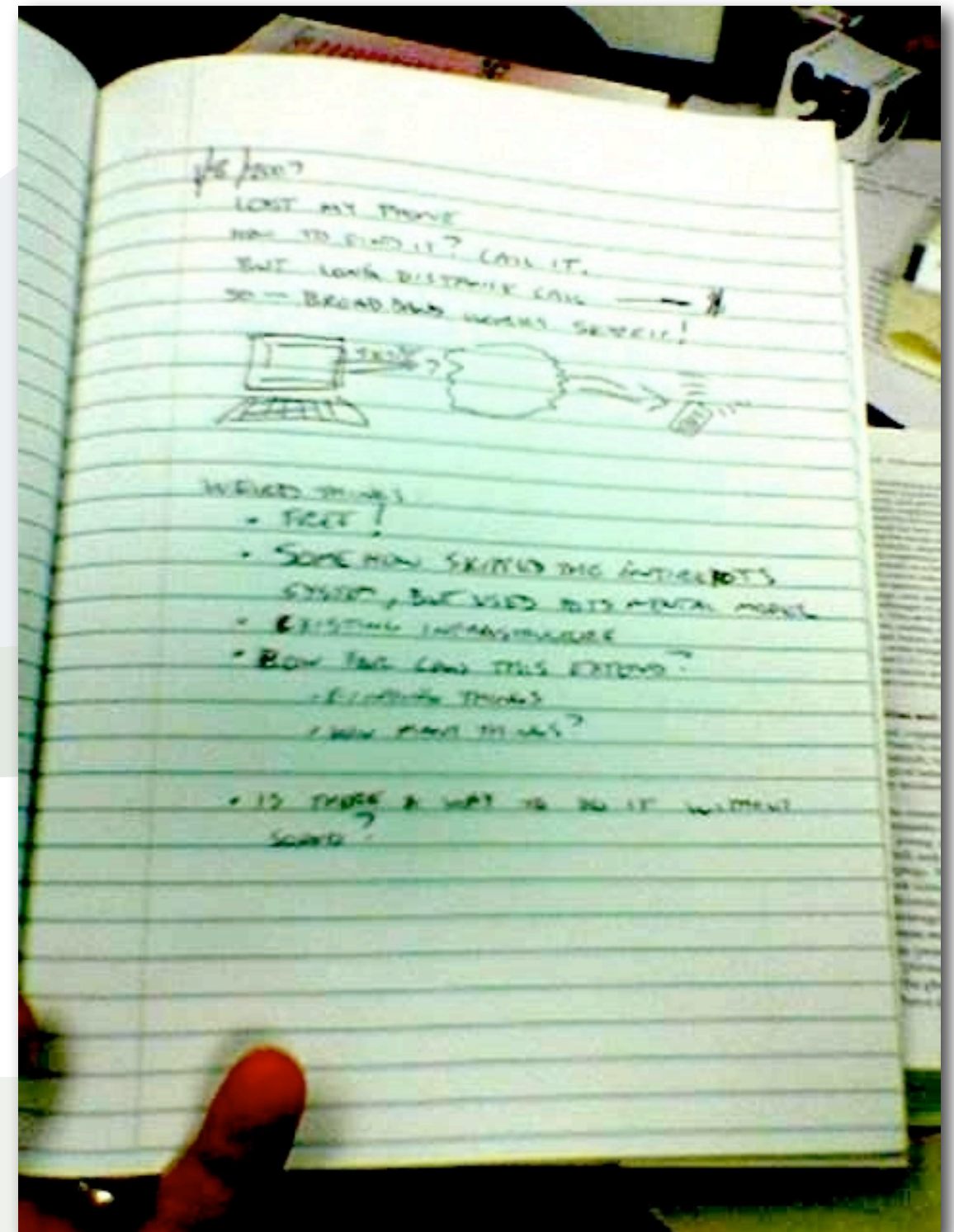
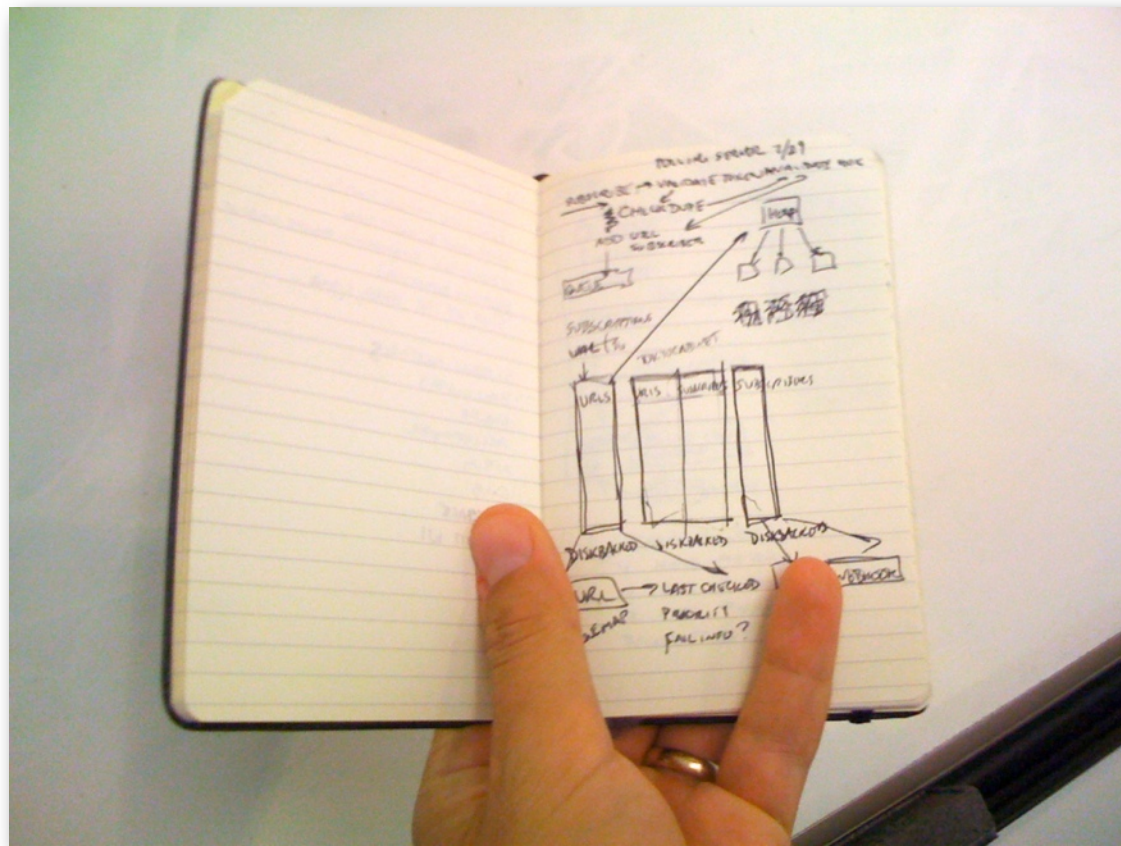
What might a design notebook be like?



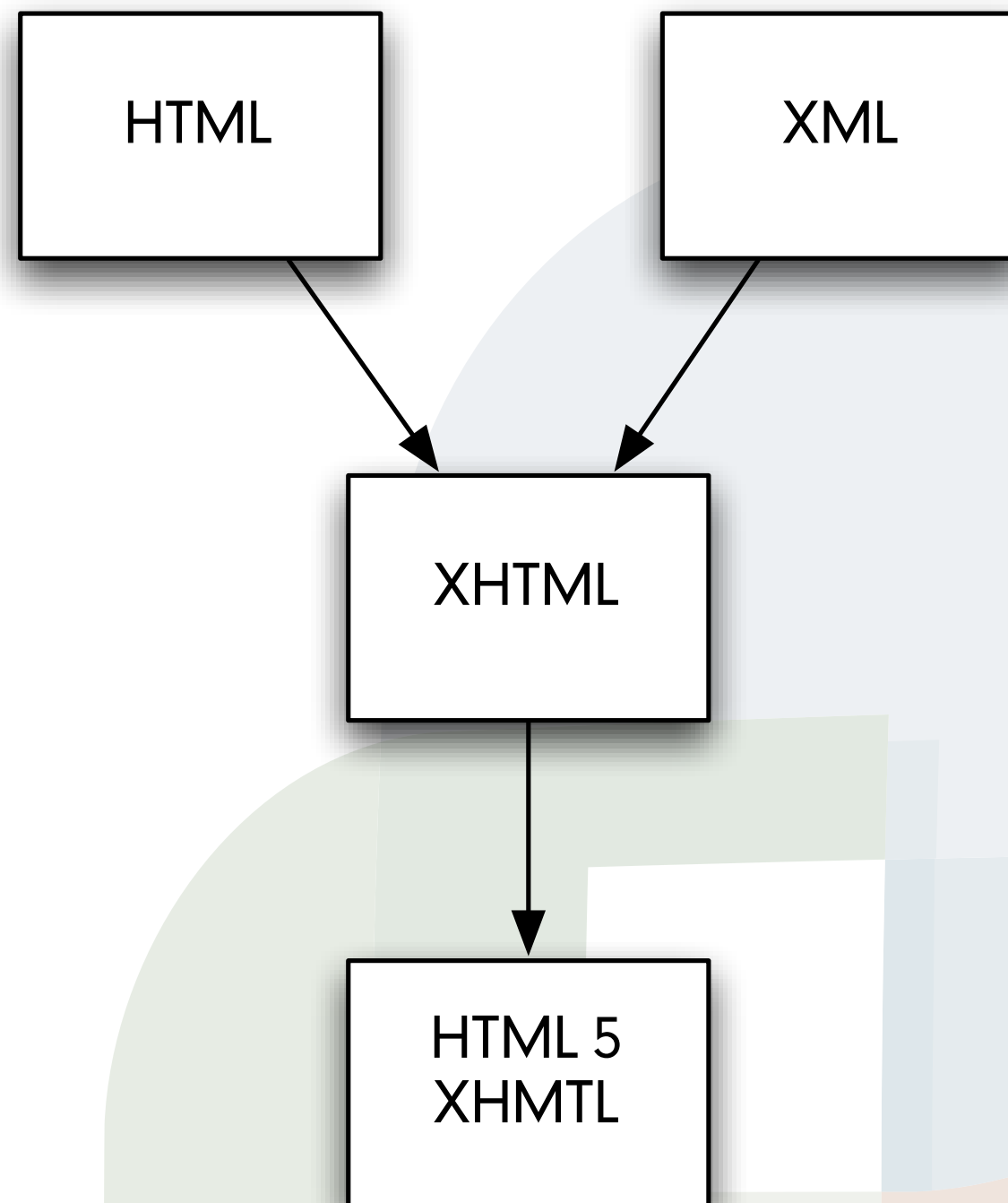
Cooler

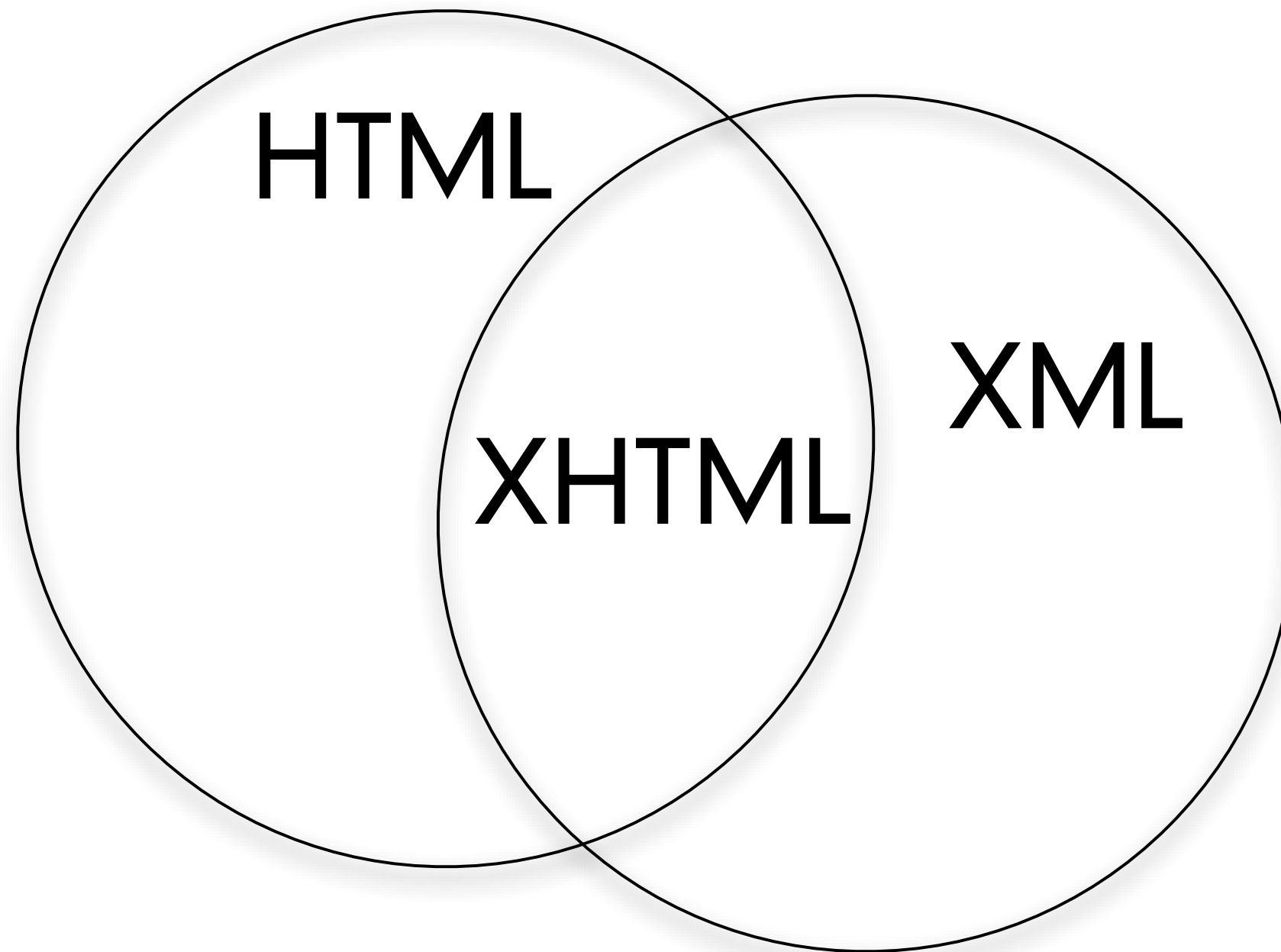


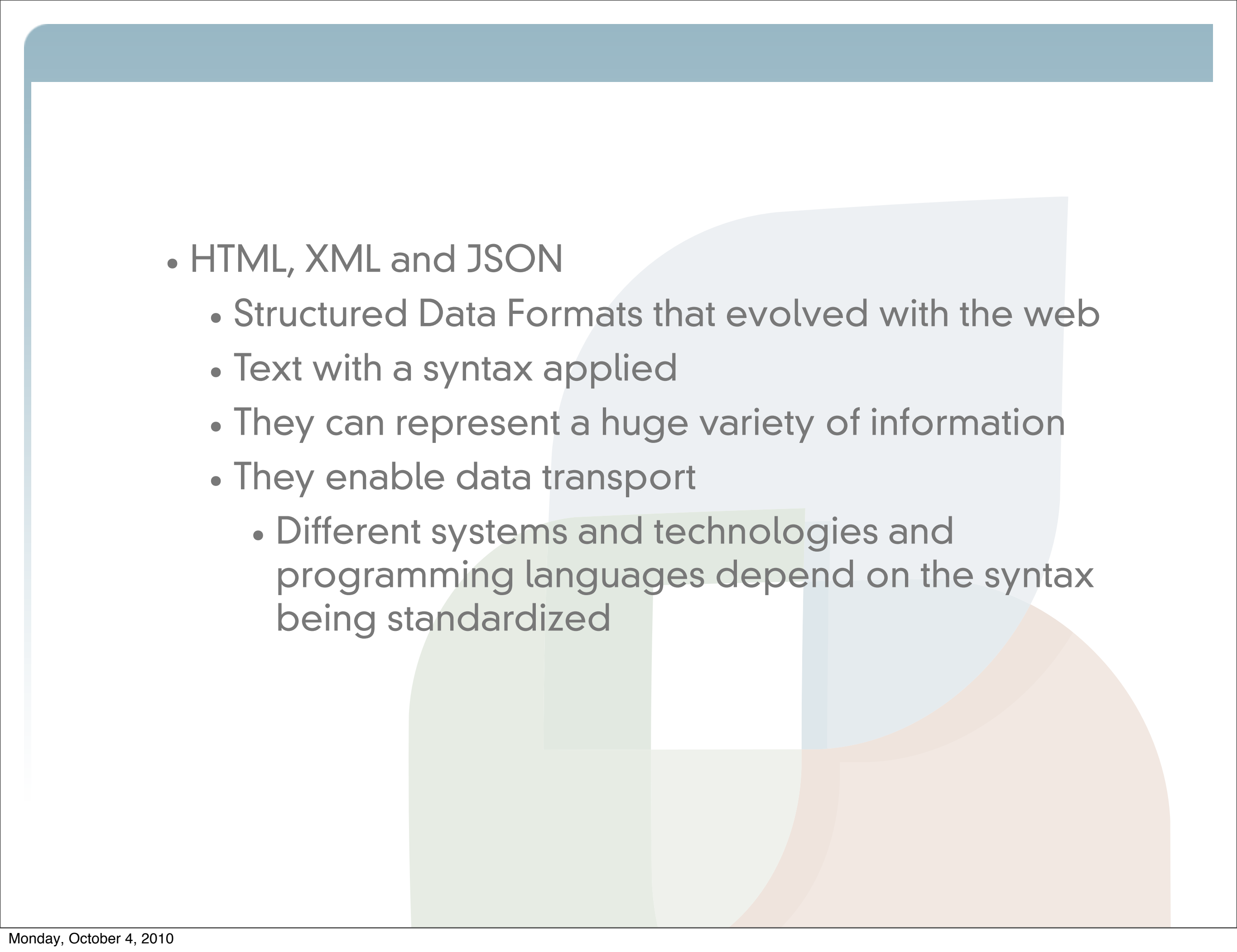
What does a design notebook entry look like?



- 1989: Tim Berners-Lee invents the Web with HTML as its publishing language
- Based on SGML
 - Separates data from presentation
 - No hypertext
- 1993: Mosaic browser is released
- 1994: World Wide Web Consortium is formed
- 1995: HTML 2.0 published IETF
- 1997: HTML 3.2 published by W3C
- 1995: Internet Explorer is released
- 1999: HTML 4.01 standardized and released
- 2000: XHTML standard released
- 2010: HTML 5 Draft Standard Released





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- HTML, XML and JSON
 - Structured Data Formats that evolved with the web
 - Text with a syntax applied
 - They can represent a huge variety of information
 - They enable data transport
 - Different systems and technologies and programming languages depend on the syntax being standardized

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


- What is XML?
 - XML stands for “eXtensible Markup Language”
 - XML was designed to in the context of separating
 - data from display
 - XML tags are not predefined
 - You define your own tags
 - XML is designed to be self-descriptive

- The Difference Between XML and HTML
- XML
 - designed to transport and store data
 - It looks like HTML
 - The focus is on what the data is
- HTML
 - designed to display data
 - it typically is “broken-XML”
 - XHTML is
 - HTML that conforms to XML standard
 - The focus is on how data looks

- XML Does not DO Anything
 - It is a data format
 - A program must be written to manipulate the data
 - To search the data
 - To display the data
 - To change the data
 - Even though the data seems to be associated with a task it is still just data.

Schema

Tags

Characters

- XML is Just Plain Text
 - There is nothing fancy about the storage
 - A program that can read and write text can read and write XML
 - an XML-aware application
 - Expects a valid tag structure
 - Interprets the tags in a particular way

Schema

Tags

Characters

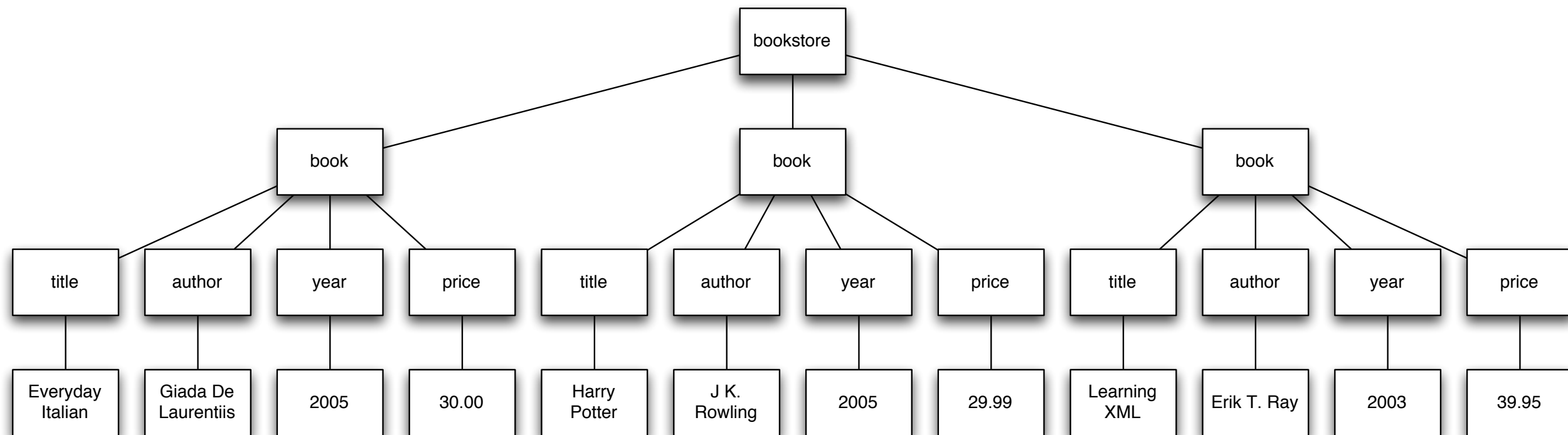
- With XML You Invent Your Own Tags
 - `<from>` and `<to>`
 - are not defined anywhere official
 - they are invented by the author
 - There are no predefined tags
- In contrast, HTML has predefined tags
 - `<p>` `<href>` etc.,
- In XML the author defines the tags and the structure
 - within the bounds of a “valid XML document”

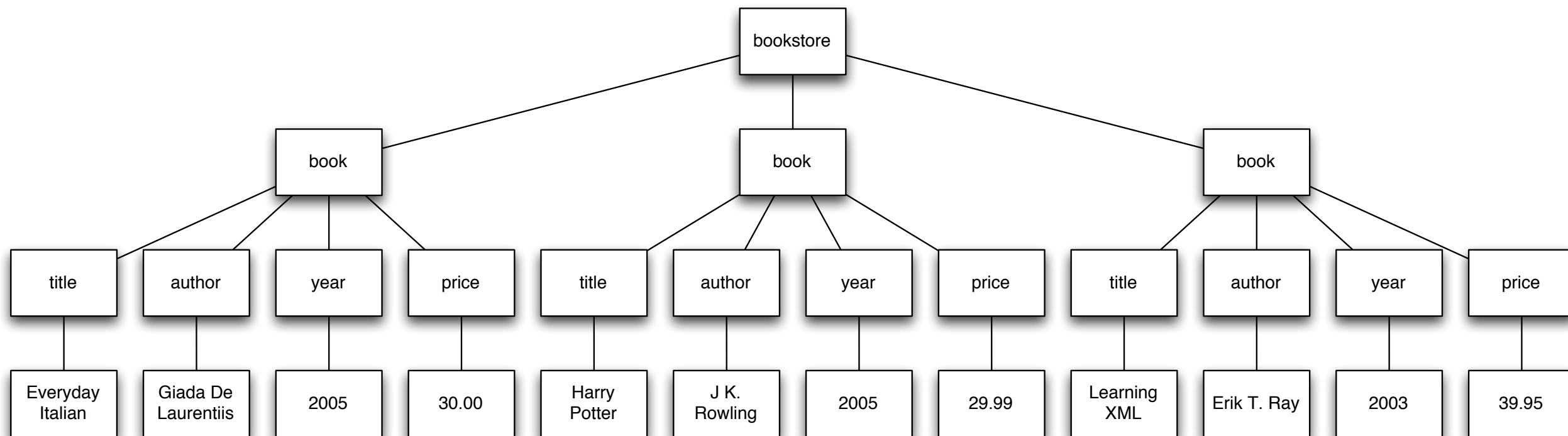
- XML is Not a Replacement for HTML
 - XML complements HTML
 - XHTML is an XML syntax compliant version of HTML
 - It has tags defined by a standards body

- XML Separates Data from HTML
- XML Simplifies Data Sharing
- XML Simplifies Data Transport
- XML Simplifies Platform Changes
- XML Makes Your Data More Available

- XML is Used to Create New Internet Languages
 - XHTML the latest version of HTML
 - WSDL for describing available web services
 - WAP and WML as markup languages for handheld devices
 - RSS languages for news feeds
 - RDF and OWL for describing resources and ontology
 - SMIL for describing multimedia for the web

- XML uses a tree structure
 - with a root element
 - and child elements
- tags indicate the start and end of an element
- opening tag looks like this:
 - `<tag>`
- a closing tag looks like this:
 - `</tag>`
- A valid XML document has exactly one closing tag for every opening tag





```
<bookstore>
  <book category="COOKING">
    <title lang="en">Everyday Italian</title>
    <author>Giada De Laurentiis</author>
    <year>2005</year>
    <price>30.00</price>
  </book>
  <book category="CHILDREN">
    <title lang="en">Harry Potter</title>
    <author>J K. Rowling</author>
    <year>2005</year>
    <price>29.99</price>
  </book>
  <book category="WEB">
    <title lang="en">Learning XML</title>
    <author>Erik T. Ray</author>
    <year>2003</year>
    <price>39.95</price>
  </book>
</bookstore>
```

Schema

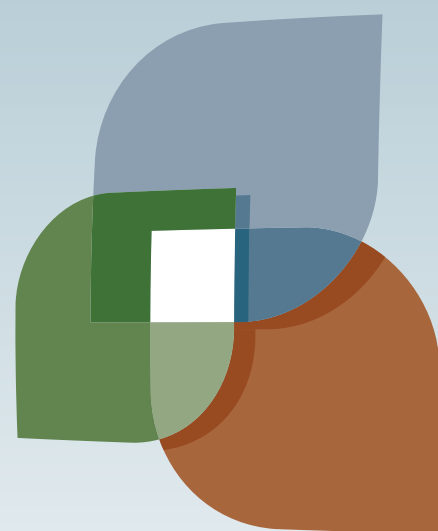
Tags

Characters

```
<!DOCTYPE bookstore [  
  
  <!ELEMENT bookstore (book+)>  
  <!ELEMENT book (title,author,year,(price)+)>  
  <!ELEMENT title (CDATA)>  
  <!ELEMENT author (CDATA)>  
  <!ELEMENT year (CDATA)>  
  <!ELEMENT price (CDATA)>  
  
  <!ATTLIST book category CDATA #REQUIRED>  
  <!ATTLIST title lang CDATA #IMPLIED>  
  

```

- Details
 - All XML Elements Must Have a Closing Tag
 - HTML
 - `<p>This is a paragraph`
 - `<p>This is another paragraph`
 - XML
 - `<p>This is a paragraph</p>`
 - `<p>This is another paragraph</p>`



L U C I

