JAXP and JAXB

CSE 486/586
Sept 14, 2004

References:
http://java.sun.com/developer/technicalArticles/Webservices/jaxb/

JAXP: Java API for XML Processing
- Accessing XML documents from code
- Generally more lightweight
- JAXP using:
  - Callback driven: SAX
  - Tree-based: DOM
- Requires complete knowledge of XML schema

SAX: Simple API for XML
- Very lightweight
- Difficult to program
- Supports only serial event-based access.
- Hence, no in-memory manipulation of data provided for.
- Package: org.xml.sax

SAX: Simple API for XML
- ContentHandler is called when "events" occur
- The following "callback" methods are implemented by ContentHandler object:
  - startDocument() throws SAXException
    Executed when any starting tag is encountered
  - endDocument() throws SAXException
    Executed when any ending tag is encountered
  - characters(char c[], int start, int end) throws SAXException
    Executed when any "text" is encountered
- Try out example RSSReader. Will post link in the newsgroup.

DOM: Document Object Model
- Package: org.w3c.dom
- The document must be built and populated in the memory.
- The document is represented as a tree of objects.

DOM: Document Object Model
- So your code must first create a org.w3c.dom.Document object.
- Then it must create an org.w3c.dom.Element object for every element in the hierarchy of the XML document.
- Each element is then added to the object by using the Element.appendChild(Element) method.
- Text in the XML documents are represented as Text objects. They are appended to the elements that contain them using the Element.appendChild(Text) method.
- Once you have built the tree, you can use DOM methods to navigate the tree.
DOM: Document Object Model
- You can transform this tree to and from XML files using the java.xml.transform.Transformer Class.
- DOM provides for non-sequential access, although the tree has to be navigated through.
- Try out example UsingDOM. Will post link in the newsgroup.
- Java 1.4.2 also has option to verify the XML file using a schema (.xsd) file.

JAXB: Java Architecture for XML Binding
- JAXB allows access to XML documents without having to know their schema and XML parsing in general.

JAXB: Java Architecture for XML Binding
- Steps involved:
  - Binding
    - The first step is to bind the schema (.xsd) file into a set of Java classes that represent the schema.
    - This is done by using a binding compiler (xjc):
      - xjc.sh -p test books.xsd
    - The compiler generates a set of interfaces and a set of classes that implement these interfaces.
  - Compile these classes
- Now you are ready to use JAXB API in your program

JAXB: Java Architecture for XML Binding
- Unmarshalling:
  - Unmarshalling a document means creating a tree of content objects that represent the content and organization of the document.
  - These content objects are instances of classes provided by the binding compiler.
  - Methods in these objects are used to get and set data for each element and attribute in the schema.
- Marshalling:
  - Marshalling a document means converting the content objects into an XML document.