Announcements

- Instructor: Nelson Padua-Perez (nelson@cs.umd.edu)
- No posting of code in the forum
- Check class announcements daily
Anonymous Functions

- Dynamically declared at run time without having to provide a name
- **Example:** AnonymousFunc.html
- You can pass the anonymous function as a parameter
- Can be used as a callback function
- What is callback function?
JQuery User Interfaces

- JavaScript library based on Jquery
- **Example:** DatePicker.html
- **Example:** JQueryFadeToOneFile.html
- **Example:** JQueryFadeTo.html
XML

- XML → eXtensible Markup Language
- XML
  - An XML document is a text-based document
  - XML is a language for describing data or for creating markup languages
  - Allows data to be structured, stored and transmitted in a hierarchical fashion
  - XML tags (element type names) provide a reader an idea of what data means
    - XML is human-readable
- Example (Providing information about a course)
  ```xml
  <?xml version="1.0" encoding="ISO-8859-1"?>
  <semester>
    <course courseNum="bio101">
      <name>Intro to Biology</name>
      <instructor>Prof Cell</instructor>
    </course>
  </semester>
  ```
XML

- Can have any number of tag names, so data from any domain can be represented
- Allow us to provide information about a document
- XML documents are intended for storage or exchange of data
- You can store data like letters, manuals, etc. and data you might find in databases
- It is a software and hardware independent tool for carrying information
- Contains no information about how data should be presented
  - An XML document is styled using CSS style sheets or XSLT
XML

- XML is a meta language
  - Defines a set of grammar rules
- Unlike binary formats, XML documents are less affected by data corruption
  - If one character is damaged we can make sense of the information
- Advantages
  - It is text-based
    - Space efficient so it can be transmitted easily
    - No special tool is needed to write them
  - You can generate different types of document from an XML document (through a process call Transformation)
    - HTML
    - CD, DVD
    - Video
    - Another XML document
XML

- Markup elements (tags) enclosed in `< >`
- **XML element** → everything from the start tag to the end tag (including both tags)

**General Structure**
- **Prolog** → Optionally empty
  - XML declaration
    - If present must be the first line and must not have any characters before it (includes whitespaces)
  - Processing instructions/comments
  - Document Type Declaration (DOCTYPE)
- **At least one element (root/document element)** (**REQUIRED**)
- Optional content after

**Example:**
```xml
<?xml version="1.0" ?>
<!DOCTYPE article >
<article>
<title>The Universe</title>
<author>John Smith</author>
</article>
```
XML

- XML tags can be defined to describe any kind of data
- XML elements can have attributes in the start tag which provide additional information about an element
- Attribute values must be quoted (single or double)
- Comments as in HTML
- No predefined tags
- Tags defined by author of the XML document
- XML documents form a tree structure
  - [http://www.w3schools.com/xml/xml_tree.asp](http://www.w3schools.com/xml/xml_tree.asp)
- Tags are case sensitive
- Tags may not contain ‘&’ or ‘<’
- Tags that do not have end-tags must be terminated by a ‘/’
  - `<hr />` is an html example
- XML names
  - Initial character must be a letter, colon (:) or underscore (__)
XML

- Multiple spaces are respected (not reduced to a single space as in HTML)
- Tags elements must be properly nested
  - `<address><zipcode></zipcode></address>` → valid
  - `<address><zipcode></address></zipcode>` → not allowed
- DOCTYPE declaration (Document Type Declaration) components
  - Name of the root element
  - DTD → Document Type Definition → Defines the allowed structure of a class of XML documents
    - In it you declare elements, attributes, allowed in the structure
  - **Note:** DOCTYPE is not the same a DTD
  - **Note:** W3C supports an XML-based alternative to DTD, named XML Schema
XML vs. HTML

- XML and HTML derive from a meta language called SGML (Standard Generalized Markup Language)
- XML → Uses a subset of syntax rules allowed in SGML
- XML tags are specific to applications and users know what they mean, while HTML tags have fixed meaning and browsers know what they are
- HTML tags are used for display purposes while XML tags are used to describe data and documents
Well-Formed XML Documents

- An XML document that follows the XML syntax rules is said to be well-formed
- XML Parser/XML Processor → allow us to detect whether a document is Well-Formed
- Two types of Parsers
  - **Non-validating XML Parser** → checks whether document satisfies XML syntax rules (well-formed), but does not check for any specific structure of elements/attributes
  - **Validating XML Parser** → checks whether document is well-formed and also verifies it satisfies the specific structure of elements/attributes
XSLT

- Used with XML documents to transform data into a particular context (e.g., HTML, word, pdf, etc.) or another XML document
- In order to define the transformation an XSLT stylesheet is defined
  - The stylesheet is an XML document
Languages based on XML

- XML is a language for describing data or for creating markup languages
- Some languages based on XML
  - XHTML
  - SVG
    - XML application language that replaces many uses of bitmap graphics
  - RSS
    - Rich Site Summary or Really Simple Syndication
    - Format for delivering changing web content
      - News-related sites, weblogs, etc. provide their content as an RSS Feed
      - Allows you to stay informed without visiting sites
  - RSS Feed Readers and New Aggregators allow you to grab feeds
  - MathML
    - Used to describe mathematical notations
  - WAP and WML
    - For handheld devices
References

- http://www.xml.com/
- XML in 10 Minutes (ISBN: 0-672-32471-7)
- http://www.xmlhack.com/
- http://www.w3.org/XML/
- http://www.w3schools.com/xml/xml_whatis.asp
- http://blogspace.com/rss/readers
- http://www.w3.org/TR/REC-xml/
- http://cyber.law.harvard.edu/rss/rss.html