Announcements

- Instructor: Nelson Padua-Perez (nelson@cs.umd.edu)
- Class Web Site:
- http://www.cs.umd.edu/class/fall2010/cmsc122/
- No posting of code in the forum
- Check class announcements daily

Syndications Feed Formats

- **RSS 2.0**
  - Defines 30 elements
- **Atom 1.0**
  - Defines 21 elements
- Example of information using both formats
  - Search for "**Sample RSS and Atom Feeds"** in
    - http://www.intertwingly.net/wiki/pie/Rss20AndAtom10Compared
- Element Comparison Table
  - Search for "**Element Comparison Table"** in
    - http://www.intertwingly.net/wiki/pie/Rss20AndAtom10Compared

Semantic Web

- From:
  - http://www.cs.umd.edu/~golbeck/LBSC690/SemanticWeb.html
- Semantic web
  - Adds structure to the meaningful content of web pages
  - Information is given well-defined meaning
  - It will enable computers to be able to understand the data, instead of just displaying it
  - Most data in the web is for human consumption, rather than data that can be processed automatically by computers
- Allows for complex queries. For example:
  - How many stores are open when I am not at work or traveling in June?
- It is not a separate web, but an extension of our present web
- Semantic web – Term coined by Tim Berners-Lee

Semantic Web

- Semantic web needs
  - Access to structured collections of information
  - Sets of inference rules to conduct automated reasoning
  - Previous two referred to as knowledge representation
- Semantic Web Challenge
  - Provide a language that expresses both data and rules for reasoning about data
  - Allowing rules from knowledge-representation system to be exported to the web
- Technologies for developing the semantic web
  - XML
  - RDF (Resource Description Framework)

Semantic Web: Ontology

- Document that formally defines relations among terms
- Typical ontology for the web has
  - Taxonomy
  - Inference rules
- Example of page marked up for ontology use:
  - http://www.cs.rpi.edu/~hendler/
  - Notice the <USE-ONTOLOGY> tag
  - Using ontology's concepts, information about where Dr. Hendler obtained his PhD is provided
  - Allow us to answer question: "Where Dr. Hendler received his degree?"

Semantic Web

- Impact of semantic web will be seen when:
  - Programs are created that combine information from different sources, process the information and exchange results with other programs
- Providing web-based services with semantics will
  - Allow for service discovery
  - Understanding of functions offered and how to take advantage of such functionality

Web Videos

- Introduction
  - http://www.youtube.com/watch?v=OGg8A2zfWKg
- Demo of Semantic Web Portal
  - http://www.youtube.com/watch?v=X6WcpG5EEeI&feature=related
- Semantic Web of Data, Tim Berners-Lee
  - http://www.youtube.com/watch?v=HeUrEh-nqtU&feature=related
- Tim Berners-Lee: The next Web of open, linked data
  - http://www.youtube.com/watch?v=OM6XIICm_qo&feature=related

HTTP Protocol

- HTTP → Hypertext Transfer Protocol
  - Request-Response Networking Protocol based on a client-server computing model
  - A client submits a request to a server and the server provides resources. A response is sent by the server that includes status information and may include content requested by the client
  - Resources
    - Files (HTML, images)
    - Dynamically generated contents
    - Perform a specify task
- Clients → referred to as User Agents
  - Browsers
  - Spiders
- HTTP Resources are identified by Uniform Resource Identifiers
- Original version: HTTP/1.0, Revised: HTTP/1.1
- HTTP is a stateless protocol
- Standard way to of transferring information across the WWW (World Wide Web)

HTTP Protocol

- HTTP session
  - Sequence of network request-response transactions
- HTTP defines methods (verbs) that indicate the action to be performed on a specific resource
- Methods
  - **GET** → Requests a particular resource (e.g., a file)
  - **POST** → Submits data to be processed by a particular resource (e.g. inputting data into a database)
  - **HEAD** → Returns what GET returns, but without the actual resource (just headers)
  - **PUT** → Sends a representation of a particular resource
  - **DELETE** → Deletes the specified resource
  - TRACE → Echoes received request so client can check if any changes have been made
  - OPTIONS → HTTP method supported by the server for the specified URL
  - CONNECT → Converts request connection to TCP/IP tunnel
  - PATCH → To apply partial modifications to a resource
- HTTP servers must implement GET and HEAD and whenever possible OPTIONS
- Response status codes

HTTP Protocol

- Response status codes (five classes)
  - 1xx Informational
  - 2xx Success
    - 200 → OK
  - 3xx Redirection
  - 4xx Client Error
    - 401→ Unauthorized
    - 404 → Not found
  - 5xx Server Error
- Full listing at:
  - http://en.wikipedia.org/wiki/List_of_HTTP_status_codes
- Example (using telnet)
  - http://www.cs.umd.edu/class/fall2005/cmsc433/HowWebServersWork.html