LECTURE-4

- XML
- JavaScript Object Notation – JSON
- Cookies
- Miscellaneous – What Javascript can't do.

XML – EXTENDED MARKUP LANGUAGE

- XML is a markup language, like HTML
- Designed to carry data
  - Not to display data
- XML tags are NOT predefined.
  - Unlike HTML
  - You must define your own tags
- Self-descriptive
- Represented in plain text.

A SIMPLE EXAMPLE

```
<note>
    <to>Tove</to>
    <from>Jani</from>
    <heading>Reminder</heading>
    <body>Let's meet tomorrow!</body>
</note>
```

Note:

1. User defined tags.
2. Self descriptive

JSON

- Text based
  - Very useful in transferring text data over the web
  - Language independent
    - Used in JS, Java, PHP, etc.
- Provides easy means to
  - Define JS objects
  - Can convert JS objects to strings and vice-versa
  - Different languages have functions for conversion.

JSON EXAMPLE

- var person =

```
{
"firstname":  "John",
"lastname": "Doe";
"age": 50,
"address":  {
        "street":"11 Broadway",
        "city":"New York City"
        }
};
```

- Can access data of individual fields
  - person.firstName (or) person[firstName]
  - person.lastName (or) person[lastName]
  - person.address.street(or) person.address[street]

JSON DATA TYPES

- A JSON object member can be of type
  - Number
  - String
  - Boolean
  - Null
  - Array
  - Another JSON object
    - Nested JSON objects

- Values of objects' members can be
  - Modified.
    - E.g., person.address[street] = "2 Columbia Way"
  - Deleted
    - E.g., delete person.age;

JSON DATA CONVERSION TO STRING

- JSON object to string conversion
  - var personString = JSON.stringify(person)
- JSON string to an JSON object
  - var person = JSON.parse(personString);
- Useful in sending JS objects over HTTP as strings.

JSON VS. XML

- Similarities
  - Self describing and text based.
  - Have user defined "tags" (unlike HTML)
  - Nested
  - Can be parsed in many languages
  - Can be fetched using XMLHTTPResponse (AJAX).

- Differences
  - JSON can be parsed by JS, XML can be parsed by XML parser
  - JSON does not have an end tag (e.g., NO </firstName>)
  - JSON can use arrays
  - JSON is less verbose

COOKIES

- Small amount of information a web server stores on a browser.
- Cookie structure – <name, value> pairs
- Typically used to
  - Remember login and password
  - User preferences
  - Web sites visited
  - Personalization
- Location where cookies are stored –
  - Different for each browser.
- Cookies have an expiration time
- Cookies can be removed

COOKIES … CONTD.

- Cookies <name, value> pairs store
  - Name of the cookie
  - Value of the cookie
  - Server name and path
    - If the path is "/", cookie is valid in the entire domain
  - Expiry Monday, October 1, 2018
- Each web server
  - Can read its OWN cookies when the web page is loaded.
  - NOT cookies of some other web server
  - Can load multiple (up to a finite limit) cookies on each browser.

COOKIES … CONTD.

- Cookies
  - Are plain text files.
  - Can't be used to read other data on the computer.
  - Are not executable files
  - Cannot erase data on computer
- A site can open ONLY cookies it owns
- Cookies are set using "Set-Cookie" attribute in HTTP.

WHAT JAVASCRIPT CANNOT DO

- Javascript cannot
  - Read or write files on client
    - (Other than cookies).
  - Close a window it did not open.
  - Access information (cookies or web content) of other web pages.
  - Access databases, without the use of AJAX and a server side script
  - Cannot write files to servers without the help of server side script.