Lecture 22
XML ADVANTAGES

- Extensible
  - Add your own tags

```
<color>
  <red></red>
  <green></green>
  <blue></blue>
</color>
```
XML ADVANTAGES

- Interoperable
  - XML has no dependencies on
    - Operating System
    - Language
    - Data source
XML ADVANTAGES

- Self Describing
  - Data describes itself
  - Structure is easily identified

  `<employee>
   <name>Jake</name>
   <salary>25000</salary>
   <region>Ohio</region>
  </employee>`
XML DISADVANTAGES

Main Disadvantage

- Well structured, but no ‘markup’ or manipulation
  - This is where XSL comes in
Each box in the flow chart is a container

- Containers are also known as ELEMENTS
  - What tags you are wrapping text in
  - What your data talks about

<name>Jake</name>
<invoice>
  <number>xxx</number>
  <customer>
    <name>yyy</name>
    <accountNum>ZZZ</accountNum>
  </customer>
  <items>
    <item>aaa</item>
    <item>bbb</item>
  </items>
</invoice>
For the CGT Dept., the XML structure between the faculty tags would repeat ~20 times.

Why?

• There are ~20 faculty members in CGT
Or maybe something like this →

```xml
<cgtemployee>
  <faculty>...
  </faculty>
  <faculty>...
  </faculty>
  <faculty>...
  </faculty>
  <staff>...
  </staff>
</cgtemployee>
```

```xml
<cgtemployee>
  <employee type="faculty">...
  </employee>
  <employee type="faculty">...
  </employee>
  <employee type="staff">...
  </employee>
  <employee type="staff">...
  </employee>
</cgtemployee>
```
Faculty vs Staff

- **Staff**
  - May not have as many elements as faculty
    - courses
    - links
    - May or may not have a bio
    - publications
Perhaps your root is technology:

```xml
<technology>
  <bcmEmployee>
    ...
  </bcmEmployee>
  <cgtEmployee>
    ...
  </cgtEmployee>
  <cptEmployee>
    ...
  </cptEmployee>
</technology>
```
HTML, CSS, XML, XSL

- HTML
  - Formatting without structure
- CSS
  - Added formatting without structure
- XML
  - Structure without formatting
- XSL
  - Add formatting to XML
FORMATTING XML WITH CSS

- XML can be formatted with
  - HTML
  - CSS
  - XSL (Extensible Stylesheet Language)
    - XSL is to XML what CSS is to HTML
      - Kind of…
  - CSS can be applied to an XML document

```xml
<?xml-stylesheet type="text/css" href="mystyles.css"?>
```
XML AND XSLT

- XML – Extensible Markup Language
- XSLT – Extensible Style Language Transformations

- Well-formed
  - Adheres to rules we described earlier
  - Same rules we have followed all semester

- Valid
  - Is well-formed, but adheres to something called a schema
XSL Transformation
XML and XSL

- XML CSS Example
- XSL Example 1
- XSL Example 2
- orgChart example