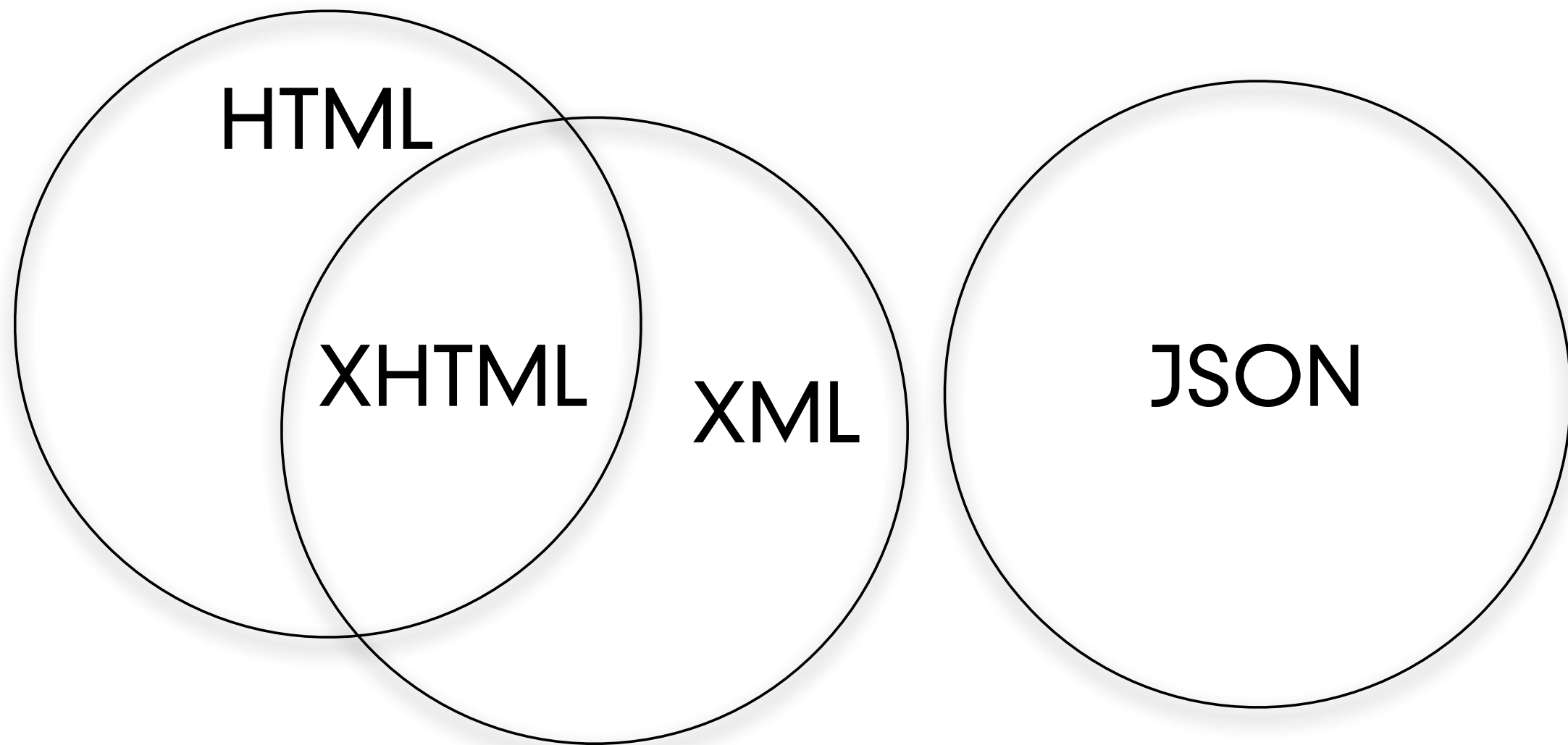# User Interaction: XML and JSON

Asst. Professor Donald J. Patterson
INF 133 Fall 2010

1

Web-based Data Exchange Formats

HTML

XHTML

XML

JSON

XML vs JSON

- XML is like a Ferrari
- JSON is like a good bicycle
    - A Ferrari will get you to Las Vegas faster
    - A bicycle can go off-road

- XML is beautiful and powerful
- XML is well-engineered and well-researched

- JSON is much lighter weight
- JSON is easier to just get going fast

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- JSON is like XML
    - They are both human-readable text
    - They are both hierarchical/ tree-structured
    - Both can be parsed and used in many languages
    - Both can be passed in AJAX requests
        - (despite the X in AJAX)
    - Both have matching opening and closing symbols

- JSON is different than XML
  - JSON does not have tags
  - JSON is less verbose
    - quicker to write
    - quicker to read
    - quicker to transport
  - JSON can be parsed trivially using the eval() procedure in Javascript
  - JSON has arrays, XML does not
  - XML is extensible JSON usually isn't
    - new versions can coexist with legacy versions

- Using either works like this:
  - get the JSON/XML string
  - convert it to a data structure
    - JSON -> eval()
    - XML -> some parse function (lib dependent)
  - use the data
- Do not process either type of data by "hand".
  - input: Use a library to parse the data
  - output:
    - Create the data in native data structures
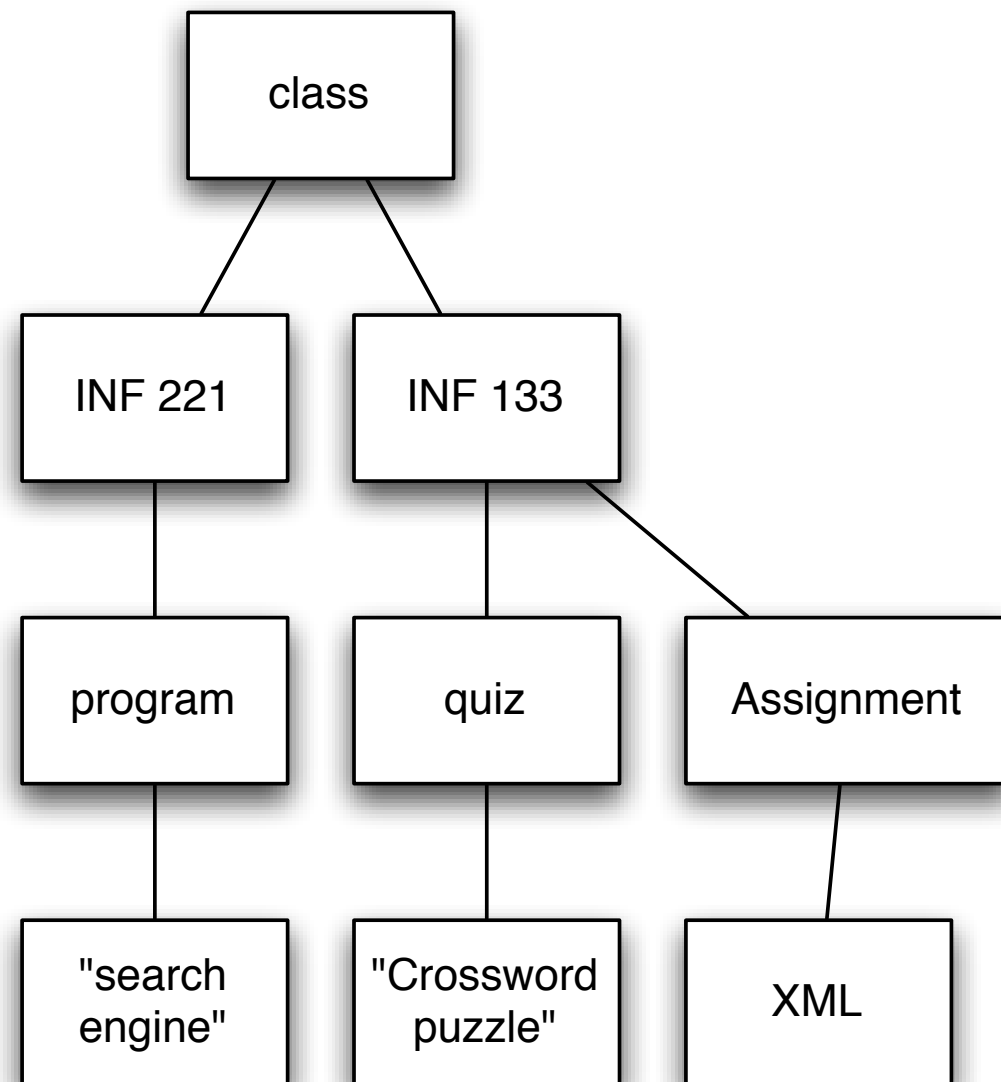   - Use a program or method to output the data structure in JSON/XML
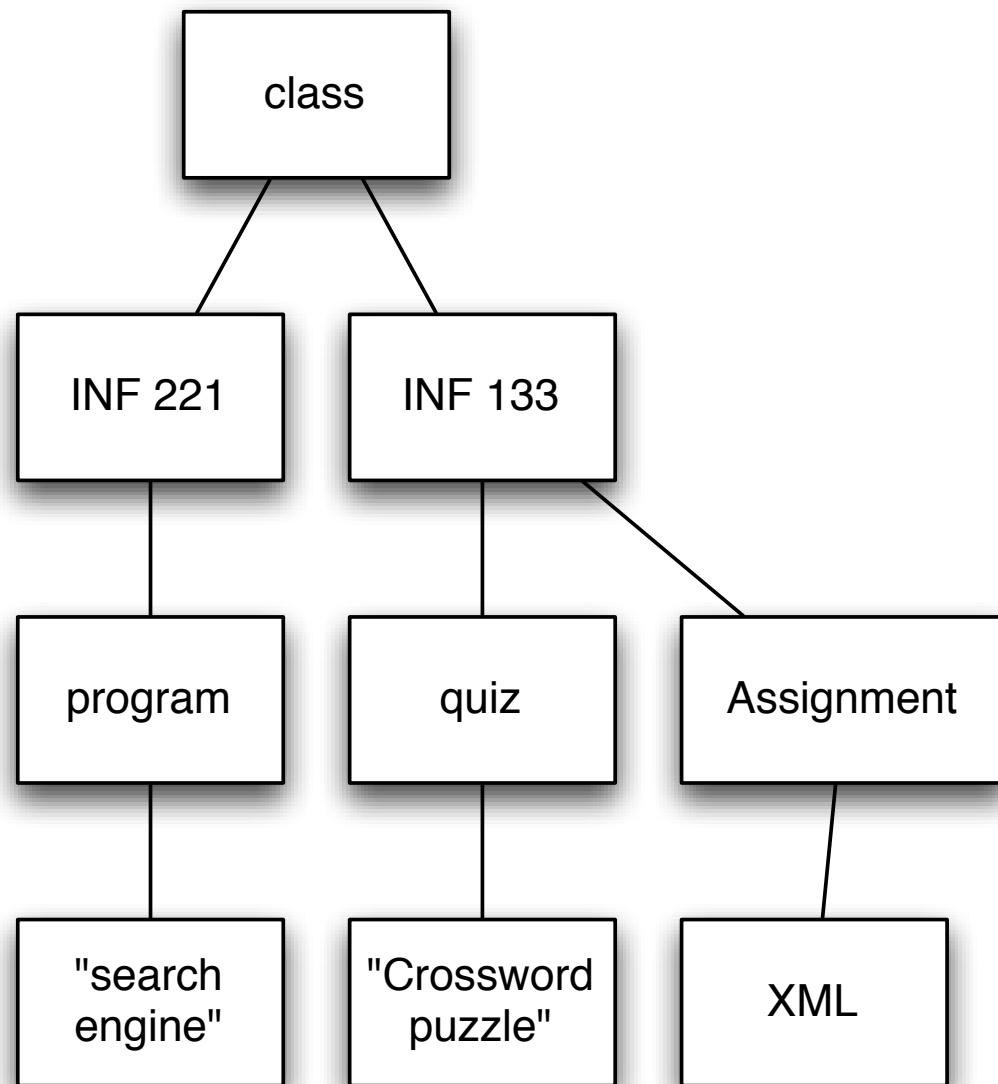
Example
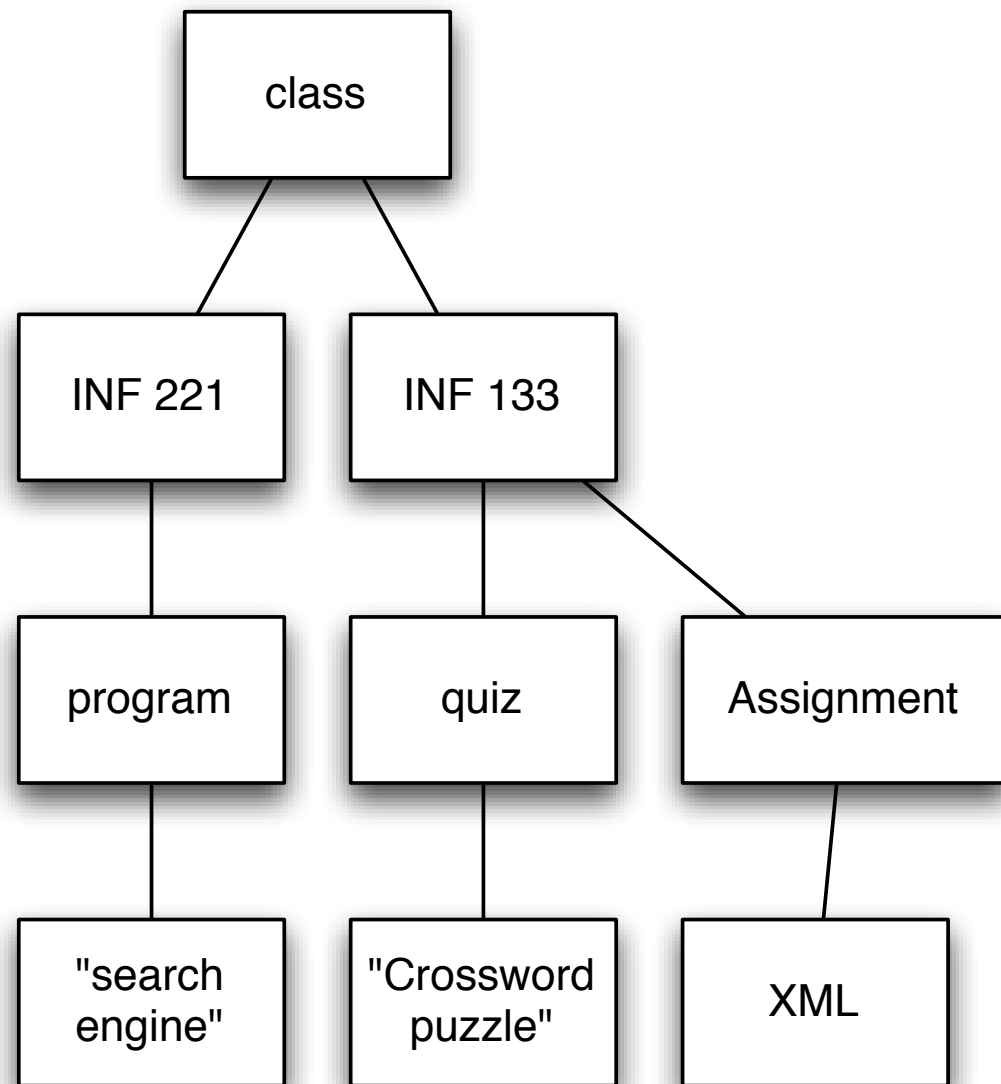
- Represent this as
  - XML
  - JSON
- There is not an absolutely correct answer to how to interpret this tree in the respective languages.
  - There are multiple ways to interpret what this tree means.

Example


```xml
<?xml version="1.0"?>
<class>
   <INF_221>
      <program>
         search engine
      </program>
   </INF_221>
   <INF_133>
      <quiz>
         crossword puzzle
      </quiz>
      <Assignment>
        <XML/>
      </Assignment>
   </INF_133>
</class>
```

Example

class

INF 221   INF 133

program   quiz   Assignment

"search engine"   "Crossword puzzle"   XML

```
{
    "class" : {
            "INF 221" : {
                        "program": {
                                "search engine" : null
                                }
                    },
            "INF 133" : {
                        "quiz" : {
                                "Crossword puzzle" : null
                            },
                        "Assignment" : {
                                "XML" : null
                                }
                        }
                }
}
```
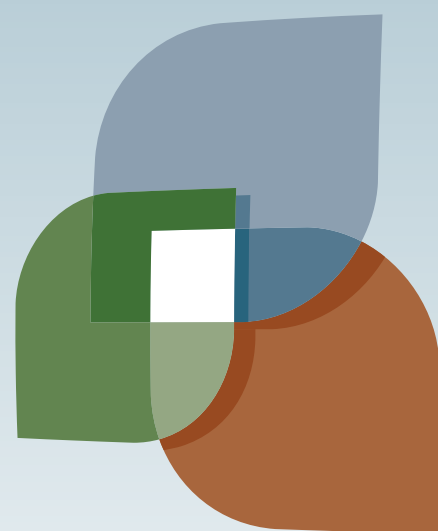
```
[
    [
        [
            [
                "search engine"
            ]
        ]
    ],
    [
        [
            [
                "Crossword puzzle"
            ]
        ],
        [
            [
                [
                    null
                ]
            ]
        ]
    ]
]
```