Data interchange formats

An introduction to XML and JSON

Kalan MacRow
CPSC 317, Winter 2012
Department of Computer Science
The University of British Columbia

Outline

- XML is new to a lot of us

- A bit of history

- Why you should care

- Extensible Markup Language

- JavaScript Object Notation

- Connect all the things

Data interchange formats: an introduction to XML and JSON. Kalan MacRow, Jan. 2013.

XML what?

* Quite a few questions about XML...

* What is it?

* Where does it come from?

* Why are we using it?

* What is this `stream:stream`, `xmlns`, `/>` stuff anyway?

XML Origins

* Developed by the W3C in the late 1990s

* Descendent of the much older (S)GML (1960s)

* Influenced XHTML, RSS, Atom, ODF, others

* Designed for simplicity, interoperability

* Kind of a sibling of HTML (mid 1990s)

Why you should care...

* You need it for Assignment 1!

* Web services, RESTful APIs, RPCs speak XML

* It is one of two data interchange formats on the web*

* **Tons** of stable, open source code for processing it

*The other is JSON

Extensible Markup Language

Reminder

David, don't forget me this weekend!

-Victoria

```xml
<?xml version="1.0"?>
<note>
    <to>David</to>
    <from>Victoria</from>
    <heading>Reminder</heading>
    <body>Don't forget me this weekend!</body>
</note>
```

http://www.w3schools.com/xml/

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Extensible Markup Language

```
var parser, note;

parser = new window.DOMParser();
note   = parser.parseFromString(xmlStr, "text/xml");

console.log(note.getElementsByTagName("to")[0].childNodes[0]);
```

Outputs "David"

Extensible Markup Language

core.xml (Word Document)

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<cp:coreProperties xmlns:cp=
    "http://schemas.openxmlformats.org/package/2006/metadata/core-properties"
    xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:dcterms="http://purl.org/dc/terms/"
    xmlns:dcmitype="http://purl.org/dc/dcmitype/" xmlns:xsi=
    "http://www.w3.org/2001/XMLSchema-instance">
    <dc:title></dc:title>
    <dc:subject></dc:subject>
    <dc:creator>Your name</dc:creator>
    <cp:keywords></cp:keywords>
    <dc:description></dc:description>
    <cp:lastModifiedBy>Your name</cp:lastModifiedBy>
    <cp:revision>2</cp:revision>
    <dcterms:created xsi:type="dcterms:W3CDTF">2006-05-03T01:13:00Z</dcterms:created>
    <dcterms:modified xsi:type="dcterms:W3CDTF">2006-05-03T01:14:00Z</dcterms:modified>
</cp:coreProperties>
```
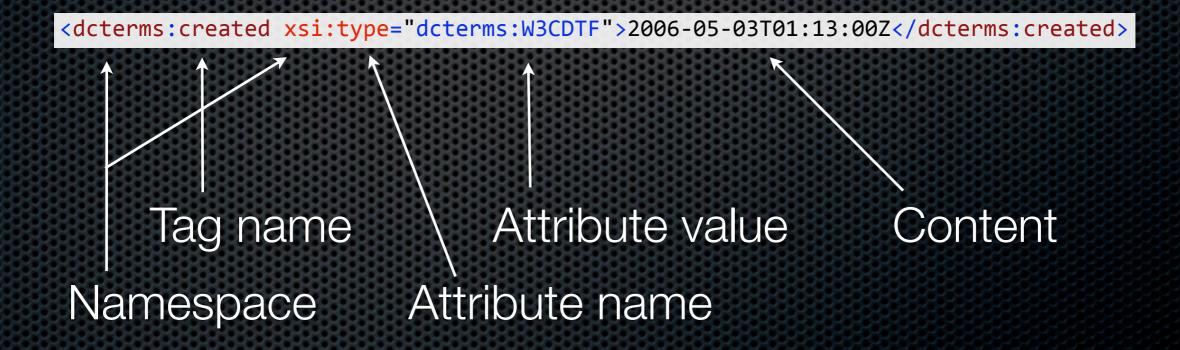
http://msdn.microsoft.com/en-us/library/office/bb264572(v=office.12).aspx

Extensible Markup Language

Anatomy of a tag

```
<dcterms:created xsi:type="dcterms:W3CDTF">2006-05-03T01:13:00Z</dcterms:created>
```

Tag name

Attribute value

Content

Namespace

Attribute name

Extensible Markup Language

Self-closing tags

```
<dcterms:created xsi:type="dcterms:W3CDTF"></dcterms:created>
```

```
<dcterms:created xsi:type="dcterms:W3CDTF" />
```

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JavaScript Object Notation

- A terse alternative to XML

- Based on JavaScript syntax, but language agnostic

- Web services, RESTful APIs, RPCs speak JSON!

- **Tons** of stable, open source code for processing it

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JavaScript Object Notation

Reminder

David, don't forget me this weekend!

-Victoria

```
{"note":{
      "to": "David",
    "from": "Victoria",
"heading": "Reminder",
    "body": "Don't forget me this weekend!"
}}
```
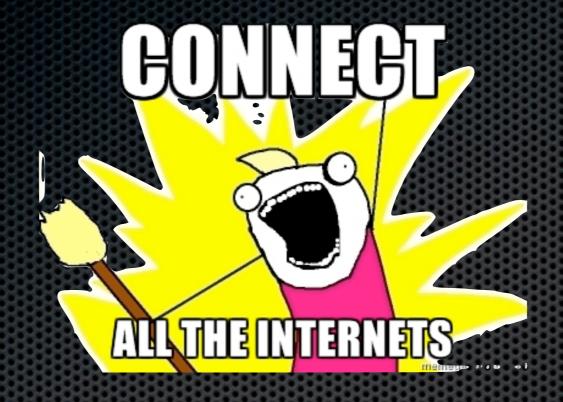
JavaScript Object Notation

```
var note;

note = JSON.parse(jsonStr);

console.log(note["to"]);
```

Outputs "David"

- Apps and services communicate over the Internet

- Often over HTTP(S) with XML or JSON

- Other protocols (XMPP) based on XML or JSON

- Documents, Graphics, Spreadsheets, Databases based on XML and JSON

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