

## Discussion: XML and the Semantic Web

- Do XML tags (meta data) have any **meaning**?
  - for humans?
  - for machines?
  
- What is the meaning of nesting tags?

“What’s in a name? That which we call a rose  
By any other word would smell as sweet.”

From *Romeo and Juliet* (II, ii, 1-2)

In the next few slides we will represent some data in XML,  
query them using XPath and write down XML Schemas for them.

## Lecturers and Modules (1)

- Michael Zakharyashev is a lecturer of the Semantic Web module
- Alex Poulouvassilis is a lecturer of the Advances in Data Management module

```
<lecturer name="Michael Zakharyashev">  
  <module name="Semantic Web" />  
</lecturer>  
<lecturer name="Alex Poulouvassilis">  
  <module name="Advances in Data Management" />  
</lecturer>
```

or

```
<module name="Semantic Web">  
  <lecturer name="Michael Zakharyashev" />  
</module>  
<module name="Advances in Data Management">  
  <lecturer name="Alex Poulouvassilis" />  
</module>
```

Or...

XPath queries: list all lecturers

```
//lecturer
```

list all modules

```
//module
```

## Lecturers and Modules: XML Schema (1)

```
<schema xmlns="http://www.w3.org/2001/XMLSchema" version="1.0">
  <element name="lecturer" type="lecturerType" />
  <complexType name="lecturerType">
    <attribute name="name" type="string" />
    <sequence>
      <element name="module" type="moduleType" />
    </sequence>
  </complexType>
  <complexType name="moduleType">
    <attribute name="name" type="string" />
    <sequence>
      ...
    </sequence>
  </complexType>
  ...
</schema>
```

## Lecturers and Modules (2)

- Michael Zakharyashev is a lecturer of the Semantic Web module **at Birkbeck**
- Alex Poulouvassilis is a lecturer of the Advances in Data Management module **at Birkbeck**
- Mark Harman is a lecturer of the Software Measurement and Testing module **at King's**

```
<college name="Birkbeck">  
  <lecturer name="Michael Zakharyashev">  
    <module name="Semantic Web" />  
  </lecturer>  
  <lecturer name="Alex Poulouvassilis">  
    <module name="Advances in Data Management" />  
  </lecturer>  
</college>  
<college name="King's">  
  <lecturer name="Mark Harman">  
    <module name="Software Measurement and Testing" />  
  </lecturer>  
</college>
```

XPath: list all modules at Birkbeck `/college[@name="Birkbeck"]//module`

## Lecturers and Modules (3)

- Michael Zakharyashev is a lecturer of the Semantic Web module
- Alex Poulouvasilis is a lecturer of the Advances in Data Management module
- George Magoulas, Nigel Martin and Alex Poulouvasilis are lecturers of the Advanced Applications module

```
<lecturer name="...">  
  <module name="..." />  
</lecturer>
```

modules are duplicated

or

```
<module name="...">  
  <lecturer name="..." />  
</module>
```

lecturers are duplicated

Or...

## Lecturers and Modules (4)

- Michael Zakharyashev is a lecturer of the Semantic Web module
- Alex Poulovassilis is a lecturer of the Advances in Data Management module
- George Magoulas, Nigel Martin and Alex Poulovassilis are lecturers of the Advanced Applications module

```
<lecturer_name ID="MZ">Michael Zakharyashev</lecturer_name>
```

```
<lecturer_name ID="AP">Alex Poulovassilis</lecturer_name>
```

...

```
<module_name ID="SW">Semantic Web</module_name>
```

```
<module_name ID="ADM">Advances in Data Management</module_name>
```

```
<module_name ID="AA">Advanced Applications</module_name>
```

...

```
<lectures subj="#MZ" value="#SW" />
```

```
<lectures subj="#AP" value="#ADM" />
```

```
<lectures subj="#AP" value="#AA" />
```

...

**RDF triples: next lecture...**

## Summary: why meta data is not enough

- The nesting of tags has **no standard meaning**.
- The **semantics** of XML documents **is not accessible** to machines,  
only to people
- Collaboration and exchange are supported if there is an underlying shared understanding of the vocabulary. XML is well-suited for close collaboration, where domain- or community-based vocabularies are used. It is not so well-suited for **global communication**
- XML was not designed to represent knowledge (or to build ontologies). It is much more powerful than HTML,  
but not powerful enough to be 'the language' of the Semantic Web.
- Yet, it provides a **universal syntax**  
upon which more useful formalisms can be built