FAKULTÄT
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dbai

Semi-structured Data

3 - Namespaces

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Outline

- The Need for Namespaces
- Namespace Syntax
- Default Namespace
- Multiple Namespaces

A Common Problem

- Merging of XML documents often leads to conflicts

```
<!-- Students’ Evaluation -->
<course>
    <title> SSD </title>
    <assessment> Fair </assessment >
</course>
```

```
<!-- University’s Evaluation -->
<course>
    <title> SSD </title>
    <assessment> Elective </assessment >
</course>
```

- The two assessment elements are semantically different
- How we distinguish these two elements?

Solution 1 - Renaming

- Simply rename the assessment elements

```
<studassessment> Fair </studassessment >

<univassessment> Elective </univassessment >
```

- … but there are some weaknesses:
  - The new element names are not transparent
  - We may get new conflicts in the future

Solution 2 - Refined Renaming

- Rename the elements, but use a separator

```
<stud:assessment> Fair </stud:assessment >
<univ:assessment> Elective </univ:assessment >
```

- … but still:
  - Although the new element names are transparent
  - We may get new conflicts in the future

Solution 3 - Unique Names

- We can exploit URIs (Uniform Resource Identifier)
  - http://www.oeh.ac.at - Austrian Students’ Union
  - http://www.tuwien.ac.at - TU Wien

```
<http://www.oeh.ac.at:assessment> Fair </http://www.oeh.ac.at:assessment >

<http://www.tuwien.ac.at:assessment> Elective </http://www.tuwien.ac.at:assessment >
```

- Transparent and unique element names

- But, the new document is not well-formed - not valid XML names

Final Solution - Namespaces

- Combination of solutions 2 and 3 - Namespaces
- Mechanism to associate the prefixes stud and univ with the URIs

```
<!-- Students’ and University’s Evaluation -->
<course
                xmlns:stud=“http://www.oeh.ac.at”
                xmlns:univ=  “http://www.tuwien.ac.at”>
      <title> SSD </title>
      <stud:assessment>  Fair </stud:assessment >
      <univ:assessment>  Elective </univ:assessment >
</course>
```

ATTENTION: Namespace URIs are simply identifiers, they are not followed as links

The Need for Namespaces

Namespaces have two purposes in XML:

- Disambiguating elements and attributes

  Distinguish between elements and attributes from different vocabularies that share the same name but are semantically different

- Grouping elements

  Group related elements and attributes together so that programs can easily recognize them

Namespace Syntax

- A namespace declaration is of the form:

```
xmlns:prefix=“name”
```

where prefix is an XML name, and name is a URI

- It appears as an attribute in an element

```
<course
    xmlns:stud=“http://www.oeh.ac.at”
    xmlns:univ= “http://www.tuwien.ac.at”>
```

Namespace Syntax

- For elements and attributes qualified names are used of the form

prefix:local-name

where both prefix and local-name are XML names

```
<stud:assessment> Fair </stud:assessment >

<univ:assessment> Elective </univ:assessment >
```

Default Namespace

- We can have a default namespace declared as xmlns=“name”
- We simply remove the prefix

```
<!-- Students’ and University’s Evaluation -->
<course
            xmlns=“http://www.oeh.ac.at”
            xmlns:univ=  “http://www.tuwien.ac.at”>
    <title> SSD </title>
    <assessment> Fair </assessment >
    <univ:assessment>  Elective </univ:assessment  >
</course>
```

ATTENTION: Default namespace applies only to unprefixed elements, not attributes

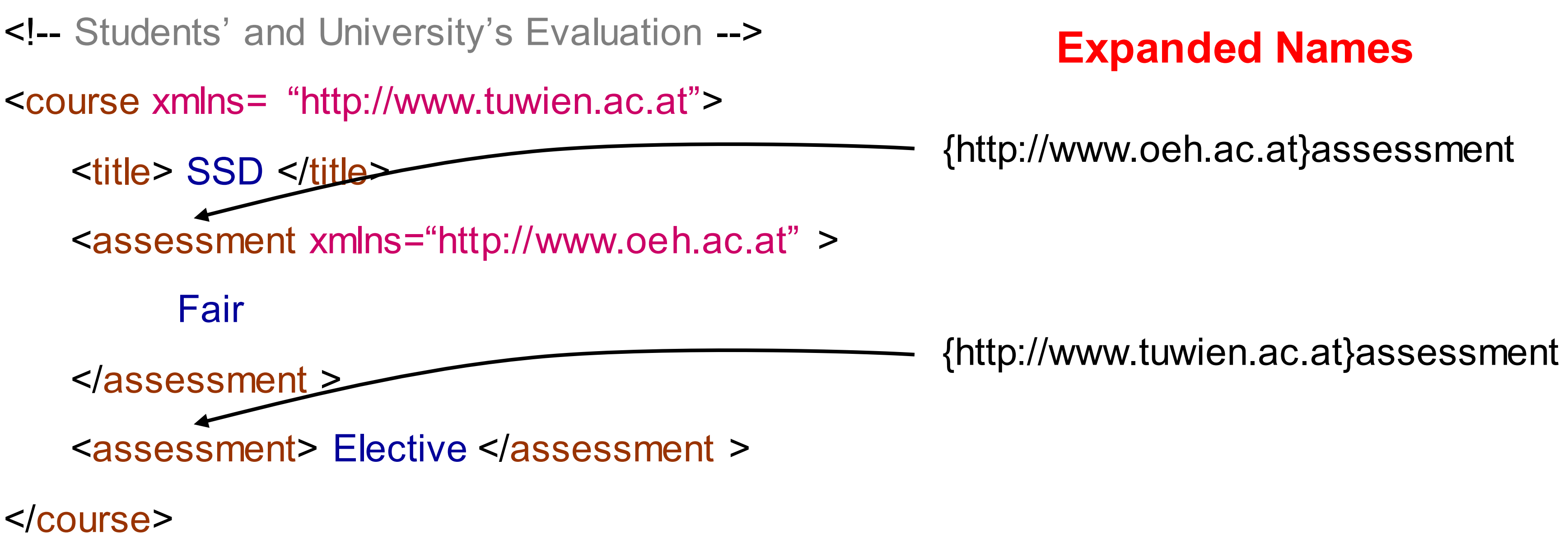
Multiple Namespaces

- We can redefine a prefix or the default namespace

```
<!-- Students’ and University’s Evaluation -->
<course xmlns=  “http://www.tuwien.ac.at”>
     <title> SSD </title>
     <assessment xmlns=“http://www.oeh.ac.at”  >
          Fair
     </assessment >
     <assessment> Elective </assessment >
</course>
```

multiple definitions of
the default namespace

Multiple Namespaces



```
<!-- Students’ and University’s Evaluation -->
<course xmlns= “http://www.tuwien.ac.at”>
    <title> SSD </title>
    <assessment xmlns=“http://www.oeh.ac.at” >
        Fair
    </assessment >
    <assessment> Elective </assessment >
</course>
```

Expanded Names

{http://www.oeh.ac.at}assessment

{http://www.tuwien.ac.at}assessment

- The closest ancestor with a namespace declaration takes precedence
- If there is no declaration among the ancestors:
    - For the default namespace the empty namespace is used
    - For a prefix we get an error (when the prefix us used)