

Nov 30, 2011

Web Technologies Assignment 4

Please hand in your homework by email to pgiarrusso@informatik. The deadline for this assignment is Dec 5.

If at all possible, please bring your laptop to the following exercises.

G4.1 Document Transformations

1. Discuss the shortcomings of CSS.
2. Describe the general structure of XSLT and how it operates.
3. Consider the following XML document.

```
<students>
  <student id="100026">
    <name>Joe Average</name>
    <age>21</age>
    <major>Biology</major>
    <results>
      <result course="Math 101" grade="C-"/>
      <result course="Biology 101" grade="C+"/>
      <result course="Statistics 101" grade="D"/>
    </results>
  </student>
  <student id="100078">
    <name>Jack Doe</name>
    <age>18</age>
    <major>Physics</major>
    <major>XML Science</major>
    <results>
      <result course="Math 101" grade="A"/>
      <result course="XML 101" grade="A-"/>
      <result course="Physics 101" grade="B+"/>
      <result course="XML 102" grade="A"/>
    </results>
  </student>
</students>
```

Write a XSL stylesheet for displaying the student data as an XHTML document.

4. Compare CSS and XSLT. What do they have in common? What are their differences?
5. We want to compare expressivity of CSS selectors and XSLT patterns. Consider the following CSS stylesheet, from the first exercise sheet with some changes:

please turn the page!

```

*.bar {color:white;}
b {color:red;}
b i {color:green;}
b i i {color:black;}
b b {color:blue;}
b.foo {color:yellow;}
b i.foo {color:purple;}

```

CSS stylesheets also apply to XHTML, exactly like to HTML. Try to write a XSLT stylesheet which adds inline style attributes to XHTML nodes, containing the appropriate CSS properties.

H4.1 CSS to XSLT

1. Complete the last part of the group exercise, basing your XSLT on the identity transform, and apply it to the following XHTML document¹ (also from the first exercise sheet with some changes), for instance using Kernow (<http://kernowforsaxon.sourceforge.net/>) or any other XSLT 2.0 processor (the task might be harder with XSLT 1.0). Is the result equivalent to applying the original CSS to this document? Compare with the expected result <http://www.informatik.uni-marburg.de/~pgiarrusso/Web/H4.1-result.html>.

```

<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Test</title>
  </head>
  <body>
    <b>
      A
      <b>
        B
        <b>C</b>
        <b class="foo">D</b>
        <i class="foo">E</i>
      </b>
      <b class="bar">F</b>
      <i>G</i>
      <i class="bar">
        <i>H</i>
        <b class="foo">I</b>
      </i>
      L
    </b>
  </body>
</html>

```

2. Can you fix the result by ensuring the proper priority is used?
3. Can you extend the procedure to all CSS selectors that we discussed? Try sketching a transformation and describing the cases which cannot be handled directly.

¹Available under <http://www.informatik.uni-marburg.de/~pgiarrusso/Web/H4.1-src.xml>

H4.2 Library Management Transformation

Define an XSLT transformation that transforms library management documents into XHTML code looking similar to your first week's hand-in, and try it out: the result needs to be valid XHTML and to contain all the information from the document.

H4.3 Library Management Schema and XSLT

Try out your DTD and schema from last hand-in (using Kernow, as above, for the Schema, or the command `xmllint` on Linux/Mac OS X for DTD and Schemas) and make sure that they are correct and the document validates with both of them.

To this end, and to practice with XSLT, define an XSLT transformation, derived from the identity transform, to remove the description column from your previous hand-in, and if possible to update it for any changes in your schema.

Please submit the original document, the XSLT, the transformed document, and the (possibly updated) DTD and schemas.