9. Exercise Sheet

Exercise 22 (XML: DTD and Schema)  
(6+(6)=12 Points)

We consider XML documents of the form below, where

- every section–element must have exactly one headline–sub–element, and
- every ul–element must have between 2 and 3 li–sub–elements.

```html
<html>
<section>
<headline size="2">XML Data Modelling</headline>
<ul>
<li> data model for semi-structured data </li>
<li> standardised data exchange format
    between different applications </li>
</ul>
</section>
<section>
<headline size="3">XML Document:</headline>
<ul>
<li> optional preamble (contains the XML version) </li>
<li> optional schema (DTD or XML Schema) </li>
<li> a single root element
    (with arbitrarily many sub–elements) </li>
</ul>
</section>
</html>
```

a) Give a suitable DTD for the XML documents of the form above.

b) Give a suitable XML Schema for the XML documents of the form above.
Exercise 23 (XML and XQuery) (14 Points)

We consider the XML documents of the form of Exercise 21.

a) Determine all ul-lists with 2 li-items.

b) Determine all sections, such that the headline is contained in an li-element of a list at the same level as the headline.

c) Determine all sections with identical headlines.

d) Determine the headlines and their sizes, and return the result as an XML document. Give a suitable DTD for the result document.

Deadline: in the lecture on Friday, January 29, 2010
Presentation: in the labs on February, 01 and 03, 2010