Assignment 10: XML - giving structure to data

The zip file for this assignment 10.zip: http://www.idi.ntnu.no/~michailg/IT2805/10.zip

1. Understanding basic XML concepts (30%)

Convert the data in the table below to an XML document. Choose how you want to represent the data in XML.

Country	Capital	Population	Area (km²)
Denmark	Copenhagen	5 602 628	43 561
Finland	Helsinki	5 426 674	338 534
Iceland	Reykjavik	321 857	103 440
Norway	Oslo	5 051 275	323 787
Sweden	Stockholm	9 555 893	447 420

(Source: Wikipedia)

Check your XML with a validator tool (e.g. http://validator.w3.org)

2. Formatting XML using CSS (30%)

The file `faq.txt` contains information about products by a company named Jackson Electronics. Jackson Electronics approached you to design a simple XML vocabulary to give structure to the FAQ page, and format it using the provided `faq.css` into a page that looks like this formatted FAQ page.

- Draw a document tree that starts with the root element on a piece of paper in order to help you to design an XML vocabulary.
- Have a look at the `faq.css` file first. The selectors will give you some clue on what the elements are.
- Then refer to the final formatted FAQ page organize them into nested tree structure.
- Create an XML document `faq.xml` using the data from `faq.txt` and the element structure you constructed.
- Insert the appropriate processing instruction to apply `faq.css` for formatting `faq.xml`.

Jackson Electronics Products
Frequently Asked Questions

The ScanMaster

- How do I scan slides?
  You can scan slides using the JE Transparency Adapter (part number STA8901) available from Jackson Electronics.

- Where can I find the latest drivers for my ScanMaster?
  You can download the latest software drivers from the Jackson Electronics Web page.

- What is the largest sheet that I can scan?
  8.5 x 14 inches (216 x 356 mm).

- How do I fax with my ScanMaster?
  You can turn your scanner into a fax machine by purchasing the FaxRight add-on component (part number STA4500) available from Jackson Electronics.

DigiCam

- What is the difference between optimal and digital zoom?
  With optical zoom, the Digicam's lens physically moves inside the camera; with digital zoom, the camera's processor zooms the image electronically. If you zoom too much, your image will become pixelated.

- What sort of batteries should I use with the DigiCam?
  Nickel Metal Hydride (NiMH) batteries work the best and having the longest lifetime. Nickel-Cadium batteries also work very well as do Alkaline batteries. Do not use Lithium batteries.

- What resolution should I use for 4x6-inch photos?
  We recommend 640x480 for 4x6-inch images, 1024x768 for 5x7-inch photos, and 1600x1200 for 8x10-inch photos.

- Can the DigiCam be harmed by airport X-ray machines?
  No, there is no evidence that X-ray machines can affect the performance or quality of DigiCam photos.

Figure 1:

3. Validating XML using DTD and XML schema (40%)

Write a DTD and an XML Schema for the provided file `bank.xml` satisfying the following requirements:

- There are two account types: checking and savings accounts
- Account balances must be greater than -5000.
- Use inheritance for checking and savings accounts by deriving from a common account type.
- For the DTD, use as specific content models for the elements as possible (don't use `any`). Include the DTD in the XML document.

Note: Not all requirements can be satisfied in the DTD. Try to satisfy as many as possible. All requirements can be satisfied with XML Schema.

The following XML Schema elements might be useful to solve this exercise: `schema`, `sequence`, `element`, `attribute`, `complexType`, `simpleType`, `restriction`, `minExclusive`.

Add the appropriate declarations to the XML file to attach the DTD and XML Schema to it. Check that the XML document is valid according to the DTD/XML Schema using a validator (e.g. http://validator.w3.org).

Resources:
http://www.xml.com/pub/a/2000/11/29/schemas/part1.html?page=1
http://www.w3.org/TR/xmlschema-0/

Submission

Submission can be posted in your course page under an appropriate sub-page (e.g., `assignment-10`) and also has to be uploaded as a zip file into It's Learning before the deadline.