

CSci 4131 -- Internet Programming (Fall 2015)
Department of Computer Science & Engineering
University of Minnesota Twin Cities
Assignment 8: XML Schema
Due Date: December 11, 2015
This assignment must be done individually

The goal of this assignment are to learn basic concepts in XML schema design.

Write an XML schema that describes a course catalog, describing various courses. The schema will have the following elements as described below:

Root element: with tag-name *courseCatalog* with content of type *CourseListType*, as described below.

CourseListType will have 0 or more elements each with tag-name *course* and type *CourseType*.

CourseType will have the following sequence of elements, with the tag-names and types as described below.

1. *title* - one element of type string, not exceeding 50 characters.
2. *instructor* - at least one or up to three elements of type *instructorType*, as described below
3. *number* - one element of type *courseNumberType*, as described below
4. *schedule* - one element of *scheduleType*, as described below
5. *semester* - one element of *semesterType*, as described below
6. *enrollment* - one element of type *enrollmentType*, as described below

instructorType will have the following sequence of elements, and attributes

firstname - one element of type string

lastname - one element of type string

One optional attribute called *title* of *personTitleType*, as described below.

personTitleType will be an enumeration of two strings: *Dr* and *Prof*

courseNumberType is defined as restriction on string type to contain 2 letters followed by 4 digits.

semesterType is define as an enumeration of three strings: *Fall*, *Spring*, *Summer*

lectureHourType is defined as a restriction on string to be of the form *hh:mm-hh:mm* where *h* and *m* are digits

scheduleType contains occurrences of 1 to 3 elements with tag-name *lecture* and type *DayTimeType*.

DayTimeType is defined as an extension of *lectureHourType* to add an attribute named ~~day or time of~~ *WeekdayType*. (Strikethrough correction made on 12/7/15)

WeekdayType is defined as enumeration of five strings: *Mon, Tue, Wed, Th, Fri*.

enrollmentType is defined as restriction on integer to be a number in the range 10 through 100 (inclusive).

Example: The following is an XML document describing a course catalog:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<courseCatalog xmlns="http://www.cs.umn.edu/4131/ns/catalog"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.cs.umn.edu/4131/ns/catalog Catalog.xsd" >
<course>
  <title> Internet Programming </title>
  <instructor title="Prof">
    <firstname> Sang </firstname>
    <lastname> Song </lastname>
  </instructor>
  <instructor>
    <firstname> Ping </firstname>
    <lastname> Pong </lastname>
  </instructor>
  <instructor>
    <firstname> Zhing </firstname>
    <lastname> Zhong </lastname>
  </instructor>
  <number>CS4131</number>
  <schedule>
    <lecture day="Tue">10:30-11:30</lecture>
    <lecture day="Th">10:30-11:30</lecture>
  </schedule>
  <semester>Fall</semester>
  <enrollment>50</enrollment>
</course>
</courseCatalog>
```

IMPORTANT NOTE: schemaLocation should contain only the relative URL for Catalog.xsd as shown above in boldface. It MUST NOT be pointing to your personal webpage location as full URL. This will help us in testing what you submit.

See examples: [Example1](#) [Example2](#) [Example3](#)

Schema and XML Validation:

There are several websites that you can use to validate your schema. You can use the following site.

<http://www.validome.org/>

Submission: Submit one tar or zip file containing the following items

- Submit your xsd file containing the schema
- Write and submit at least three examples of XML documents for course catalogs that you validated using your schema.
- One of the examples must contain at least three courses, and each with at least two instructors.

Grading:

30 points: Your **Catalog.xsd** file containing the schema should validate properly without any errors

15 points: Your XML example documents for course catalog, validated using your schema.

45 points: Correct validation of the XML documents provided to you and some additional documents selected by the TAs at the time of grading. In addition to valid documents, they may also include some incorrect documents which should fail to validate.

10 points: Proper structuring of your schema document and example documents.