COEN280 - Database Systems
Winter 2015
Homework Assignment 4
Due: Fri, March 13 @11:59 PM

The goal of this assignment is to design an XML Schema, validate XML file against schema, and convert a XML to JSON.
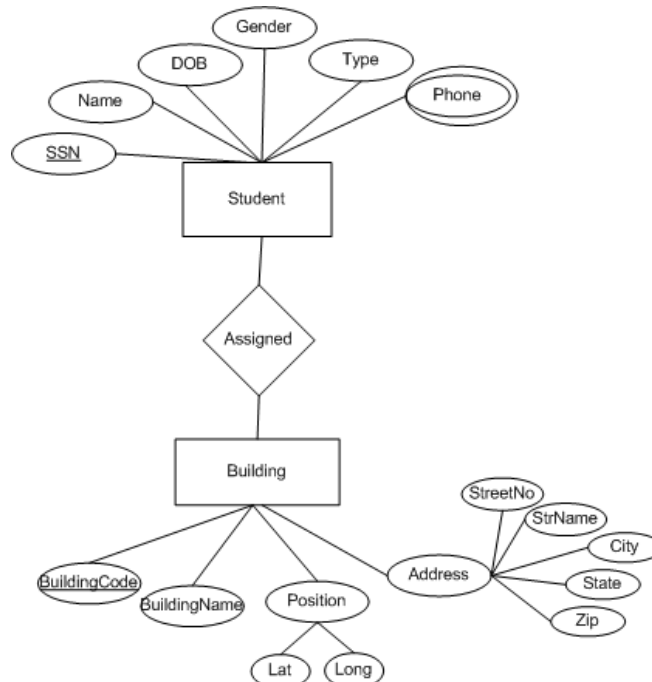
Part 1: Design an XML Schema to represent the following data specification (30 points).

For each Building:
- BuildingCode (1 occurrence; 3 character text; required)
- BuildingName (1 occurrence; required)
- Position (1 occurrence; required)
- Address (0 or 1 occurrence; optional)

For each Student:
- SSN (1 occurrence; required; format: "ddd-dd-dddd")
- Name (1 occurrence; required)
- DOB (1 occurrence; required; format: "CCYY-MM-DD")
- Gender (1 occurrence; required)
- Type (1 occurrence; required)
- Phone Number (1 or more occurrences; required; between 10 to 14 characters and the first three ones must be character-digits)

Part 2: Considering the following data and the XML Schema you designed in Part 1, create a valid XML data file (15 points).

Student Information:

SSN	Name	DOB	Gender	Type	BuildingCode	Phone
111-00-1111	Rylan	1-Apr-68	M	Both	CFX,JEP	213-740-1111,213-740-1112
111-00-2222	Joshua	1-Apr-70	M	Both	RTH,OHE	213-740-2222
111-00-3333	Allen	1-Apr-69	F	Both	RTH	213-740-3333
111-00-4444	Aidan	1-Apr-85	M	Both	JHH,REG	213-740-4444,213-740-4445
111-00-5555	Aiden	1-Apr-82	M	Both	LVY,VKC,WPH,KOH	213-740-5555
111-00-6666	Barak	1-Apr-79	F	Master		213-740-6666
111-00-7777	Basil	1-Apr-78	M	Master	LVY,VKC,WPH	213-740-7777
111-00-8888	Cayden	1-Apr-75	F	Master	RTH,SAL,OHE	213-740-8888,213-740-8889
111-00-9999	Brendon	1-Apr-72	M	Master	RTH,SAL	213-740-9999
111-00-0000	Nate	1-Apr-73	M	Master		213-740-0000
111-11-1111	Hannah	1-Apr-65	F	Master	RTH,SAL,OHE	213-741-1111
111-11-2222	Zoe	1-Apr-62	F	Master	CFX,STU,BKS	213-741-2222
111-11-3333	Alexis	1-Apr-63	M	Phd		213-741-3333
111-11-4444	Madison	1-Apr-75	F	Phd	KOH,CFX,SAL	213-741-4444
111-11-5555	Adalgisa	1-Apr-76	M	Phd	CFX	213-741-5555
111-11-6666	Cora	1-Apr-77	M	Phd	CFX,KOH	213-741-6666,213-741-6667
111-11-7777	Adalia	1-Apr-82	F	Phd		213-741-7777
111-11-8888	Ava	1-Apr-83	F	Phd	RTH,OHE	213-741-8888,213-741-8889
111-11-9999	Celia	1-Apr-86	M	Phd	RTH	213-741-9999
111-11-0000	Zaida	1-Apr-83	F	Phd	SAL,EEB	213-741-0000

Building Information:

Building Code	BuildingName	Latitude	Longitude	StreetNo	StrName	City	State	Zip
KOH	King Olympic Hall	34.024547	-118.288	1027	W 34th St	Los Angeles	CA	90007
CFX	Cromwell Field	34.021631	-118.289	1026	W 34th St	Los Angeles	CA	90089
JEP	JEP House	34.022947	-118.284	801	W 34th St	Los Angeles	CA	90089
SHC	Student Health Center	34.023303	-118.285	849	W 34th St	Los Angeles	CA	90089
LVY	Leavey Library	34.021595	-118.282	651	W 35th St	Los Angeles	CA	90089
VKC	Von KleinSmid Center	34.021649	-118.284	3518	Trousdale	Los Angeles	CA	90089
WPH	Waite Phillips Hall	34.022289	-118.284	3550	Trousdale	Los Angeles	CA	90089
JHH	John Hubbard Hall	34.020101	-118.284	615	Childs Way	Los Angeles	CA	90089
REG	Registration Builing	34.019603	-118.282	611	Childs Way	Los Angeles	CA	90089
STU	Student Union	34.020226	-118.286	3551	Trousdale	Los Angeles	CA	90089
BKS	Bookstore	34.020635	-118.286	840	Childs Way	Los Angeles	CA	90089
RTH	Ronald Tutor Hall	34.020137	-118.29	3710	McClintock	Los Angeles	CA	90089
SAL	Salvatori Com. Center	34.01955	-118.289	941	W 37th Place	Los Angeles	CA	90089
EEB	Electrical Engr Center	34.019728	-118.29	3715	McClintock	Los Angeles	CA	90089
OHE	Olin Hall Engineering	34.020493	-118.29	3650	McClintock	Los Angeles	CA	90089

Note: Make sure that the XML files are validated against the XML Schema you designed. You can use the online validator: http://www.corefiling.com/opensource/schemaValidate.html

Part 3: Write a Java program to covert the XML file into JSON (15 points).

- Use org.json.XML to convert xml file to json (http://www.json.org/javadoc/org/json/XML.html)
- More information on JSON in Java: http://www.json.org/java/

Note: You can validate your XML to JSON conversion through the following convertor: http://www.utilities-online.info/xmltojson/#.VG7vbsmtqOQ

Submission Instructions:

- You need to submit the following files (the filenames should be EXACTLY the same as mentioned below):

  1. The Readme.txt file that contains your full name, SCU ID and the list of the submitted files. There is a 10 points penalty if this file or some of the required information is missing from your submission.
  2. The XML Schema files students.xsd, buildings.xsd (30 points)
  3. The XML data files students.xml, buildings.xml (15 points)
  4. The XML-JSON Java conversion program and JSON files students.json, buildings.json (15 points)

- You must make one .zip file that includes all these files (e.g., hw4.zip)
- You need to submit your homework electronically through Camino.
- You can do this homework on any machine you wish.
- Start working on your assignment early.