Mohamed Khider University – Biskra.	3rd year License
Faculty of Exact Sciences	Semi-structured data
Computer Science department	Academic year: 2024/2025

Lab 02

Exercise 01:

Create a well-formed XML document containing details of a car like: id, company name, model, engine, and mileage. The file must contain at least three records.

Exercise 02:

Write an XML document describing the *exercises* in this document: the root element is <exercises>. The root has an attribute number that has the value 1. The root element has three child elements; <date> that contains as text the date of the exercise, and two <item> elements for the first two exercises (1--2). Write some text in the <item> elements.

Exercise 03: Here's an example of a bibtex-formatted library:

```
@InProceedings{BelkSanto-07,
author ={Belkhir, Walid and Santocanale, Luigi},
title = {Undirected Graphs of Entanglement 2},
booktitle = {Annual Conference on Foundations of Software Technology and Theoretical Computer Science},
year={2007},
pages = {508-519},
volume = {4855},
series = {LNCS},
publisher = {Springer}, }
@Article{BelkSanto-08,
author = {Belkhir, Walid and Santocanale, Luigi},
title = {The variable hierarchy for the games mu-calculus},
journal = {Annals of Pure and Applied Logic},
volume = {161},
year = {2010},
pages = {690-707}, }
```

Each line starting with an @ introduces a new bibliographic reference, then you have the type of publication (InProceedings, Article or Book), then the unique identifier of the publication. Then you have a series of attribute/value pairs, each pair being coded on one line. The essential fields are: author, title, year, the others are optional. The order of the fields is not important.
Propose a Well-formed XML document that corresponds to the bibtex library.

Exercise 04:

Create an XML file for a student's program of study form called **programOfStudy.xml**. It should capture the following data:

- In the Fall 2008 semester the student plans to take two classes to satisfy her General Education requirements, PHIL 101 to satisfy Goal 8 and ECON 201 to satisfy Goal 11. She also has to take one core course, MGT 217, and two major courses, CIS 120 and CIS 403.

- In the Spring 2009 semester she plans to take two additional core courses, MGT 261 and MKTG 325, as well as three major courses, CIS 220, CIS 407, and CIS 490.

Exercise 05:

We want to represent the regulatory documents of construction. The regulatory documents are differentiated by the topicality (new or modified). They are grouped in the database of documents by the theme (e.g. accessibility for the disabled, acoustics, ventilation, asbestos, elevators, construction insurance, fire safety). Each document has a complex title which consists of a number, a date, a name, sometimes an acronym and is related to one or more specific areas. The date is required; it includes the date of the creation of a document and the date of its publication in an Official Journal.

Exercise 06:

This involves structuring, in the form of an XML file, the following text:

A 150 cl bottle of Cristaline water contains 71 mg of positive calcium ions per liter and 5.5 mg of positive magnesium ions. There are also negative ions like chlorides at 20 mg per liter and nitrates at 1 mg per liter. It is collected from Source St-Cyr, in the Loiret department. Its barcode is 3274080005003 and its pH is 7.45. As the bottle is dirty, some other materials like iron are suspended in it. A second bottle of Cristaline water was collected at the Aurèle spring in the Alpes Maritimes. The concentration of calcium ions is 98 mg/l, and of magnesium ions 4 mg/l. There are 3.6 mg/l of chloride ions and 2 mg/l of nitrates, for a pH of 7.4. The barcode for this 50 cl bottle is 3268840001008. A bottle of the same capacity is of the Volvic brand, and was drawn from... Volvic, well known for its springs giving a neutral pH of 7. It includes 11.5 mg/l of calcium ions, 8.0 mg/ l of magnesium ions, 13.5 mg/l of chloride ions and 6.3 mg/l of nitrate ions. It also contains silica particles. Its barcode is 3057640117008.

Note: Volvic is in Puy-de-Dôme...