PB138 - Modern Markup Languages and Their Applications

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Week 01 - XML, DOM, XML Schema and Validation

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Course info: Organisation

- Lecture 2h/weekly
- Seminar 2h/weekly
- Bonus materials

Course info: Evaluation

- Up to **33 points from iterations** (for completing assignments of the semestral project with the best effort and clean code).
- Up to **42 points for your team project** (for creating a complex solution, dividing work, and collaborating with others).
- Up to **25 points for exams** (the final ROPOT contains all the topics from the semester)
- **Final Exam is a ROPOT (Odpovedník)**
- *Weekly ROPOTS to test the knowledge from seminars and lectures (Voluntary)*

Grade	Points
A	100-94
B	93-88
C	87-82
D	81-76
E	75-70
Z	100-60
F	0-69
N	0-59

Course info: Iterations

- Merge requests on Gitlab
- Published weekly except 7th, 14th week
- 11 Iterations in total

Course info: Team project

- 3-4 Members across seminar groups
- Presented by the team at the end of the semester (10 min)
- Application with frontend and backend
- Peer review by other groups
- Additional information will be published during the semester

Outline

- What are Markup languages?
- Introduction to XML, Basics, Standards and Usage
- DOM: Document Object Model
- XML Schema and Validation

What are Markup languages?

Formal (computer) languages that allow to use in addition to the normal text in natural languages also syntactically distinguishable constructs. Specifying the structure of the text, the meaning of parts, etc. That allows the text to store its metadata (information about the origin, content, authorship, dating, rights used …)

- Markdown, AsciiDoc, Mediawiki format, TeX…
- Languages for the web: HTML, XML, XHTML, …
- Languages for page description for printing and presentation, namely PostScript or PDF have similar characteristics (text + markup or commands)
- Formatting tools for the UNIX-like systems nroff, troff.

Example of Markup languages

```
## Hello World
This is text
```

```xml
<?xml version="1.0"?>
<catalog>
    <book id="bk101">
        <author>Gambardella, Matthew</author>
        <title>XML Developer's Guide</title>
        <genre>Computer</genre>
        <price>44.95</price>
        <publish_date>2000-10-01</publish_date>
        <description>An in-depth look at creating applications
        with XML.</description>
    </book>
    <book id="bk102">
        <author>Ralls, Kim</author>
        <title>Midnight Rain</title>
        <genre>Fantasy</genre>
        <price>5.95</price>
        <publish_date>2000-12-16</publish_date>
        <description>A former architect battles corporate zombies,
        an evil sorceress, and her own childhood to become queen
        of the world.</description>
    </book>
</catalog>
```

What is XML?

- XML is a standard by the W3C ([World Wide Web Consortium](#)) consortium prescribing how to create markup languages.

- It is, therefore, a *metalanguage*.

- It is ideologically based on older standards (SGML *Structure Generalized Markup Language*) — XML can be seen almost as a subset of SGML.

- There are several other standards closely related to XML, such as XML Namespaces, XInclude, XML Base, XML Infoset.

- These standards, together with others (XSLT, XSL-FO, XHTML, CSS, …), form a "family" of XML standards.

Why XML?

XML Basics

DOM - Document Object Model

XML Elements

XML – examples

XML Schema

XML Validation