

Web Engineering Assignment 1

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Exercise 1: To which category or categories of the web applications belongs "Klips" <https://klips.uni-koblenz-landau.de/>. (1 points)

We have categorized KLIPS as:

- Informational: Because it provides information of general interest for students from Universität Koblenz.
- Interactive: Because it provides a login and gives every user personalized information.
- Workflow: Because it helps students to create their own schedules and choose courses they want to attend.

Exercise 2: What are the differences between Dom and SAX parsers? Please explain (2 differences). (2 points)

SAX	DOM
Event - based: Parsing XML triggers events and there is a need to handle those events. Only handles the events when it is needed so uses less memory overall.	Object tree - based: each node is an object representing a part of the document. The whole XML file has to be loaded in memory which results in high memory use.
Suitable for combing through potentially large amounts of data you receive with a specific "query" in mind, but no need to modify	Is more aimed at giving you full flexibility in changing structure and contents, at the expense of higher resource demand.

Exercise 3: Provide the sequence of events that would be handled when parsing the XML document below using a SAX parser. (3 points)

```
<?xml version="1.0"?>
<note id="1.0">
  <to>John</to>
  <from>Jenny</from>
  <heading>Reminder</heading>
  <body>Don't <b>forget</b> our meeting!</body>
</note>
```

- The XML element start with name **note** and it has an id value of "1.0"
- XML element start with name **to**
- XML Text node for **to** with data "John"
- XML **to** element ends
- XML element start with name **from**
- XML Text node for **from** with data "Jenny"
- XML **from** element ends
- XML element start with name **heading**
- XML Text node for **heading** with data "Reminder"
- XML **heading** element ends
- XML element start with name **body**
- XML Text node for **body** with data "Don't"
- XML **b** element start
- XML Text node for **b** forget
- XML **b** element ends
- XML Text node for **body** with data "our meeting!"
- XML **body** element ends
- XML **note** element ends

Exercise 4: Provide a DTD for a XML document, which describes a student semester plan. Express the following rules in DTD.

A student semester plan contains:

- The personal information of the student, namely name, family, birthday (provided as day, month, year), and address (provided as street, number, code, city).
- The educational information, namely semester (mandatory), and field of study (optional).
- The registered course(s) and their relevant information, namely name of the course, time, and room.

We recommend to use Notepad++ as the editor. However, you can use any other editor to write the XML description. As mentioned above, only the DTD is required. Please provide your solution as text contained in the PDF of your solutions, no .dtd file is required. (6 points)

```
<!DOCTYPE semester [  
    <!ELEMENT semester (student, education, courses+)>  
    <!ELEMENT student (name, family_name, birthday,address)>  
    <!ELEMENT name (#PCDATA)>  
    <!ELEMENT family_name (#PCDATA)>  
    <!ELEMENT birthday (day, month, year)>  
    <!ELEMENT day (#PCDATA)>  
    <!ELEMENT month (#PCDATA)>  
    <!ELEMENT year (#PCDATA)>  
    <!ELEMENT address (street, number, code, city)>  
    <!ELEMENT street (#PCDATA)>  
    <!ELEMENT number (#PCDATA)>  
    <!ELEMENT code (#PCDATA)>  
    <!ELEMENT city (#PCDATA)>  
    <!ELEMENT education (semester_info, field_of_study?)>  
    <!ELEMENT semester_info (#PCDATA)>  
    <!ELEMENT field_of_study (#PCDATA)>  
    <!ELEMENT courses (course_name, time, room)>  
    <!ELEMENT course_name (#PCDATA)>  
    <!ELEMENT time (#PCDATA)>  
    <!ELEMENT room (#PCDATA)>  
>
```