2. The DOM Interface in Java

The Java API for XML Processing (JAXP) contains a Java version of the DOM interface for XML. The goal of this lab is to try out DOM to

- navigate in XML documents,

- print documents,

- create documents.

1. Flat Navigation in an XML document

Write a class that reads an XML file and counts the number of children of the top level element. Follow the example of the class `DOMTest` on the course page. Test your code with the document `recipes.xml`.

2. Printing Documents

Add a method `printDocument(Document doc)` to your class that takes as input a DOM document and prints it onto standard ouput. Print the document. Use the Transformer interface. (You may rely on the code on the course page.)

3. Modifying Documents

Take an XML document of your choice. Write a class that

1. clones a top-level child and adds it to the root element,

2. changes an attribute value of that new child.

Test your code with the `printDocument` Method.

4. Generating XML Documents

A "family" document has the following structure:

- the top level element is tagged "family"

- the top level element has several children tagged "person"

- each person element has an attribute "role" and text content, standing for the name of the person.

Create an XML document with two persons whose roles are "father" and "mother". Test your code with the `printDocument` Method.

4. Deep Navigation in an XML document

Write a class that reads an XML document and reports

1. the number of element nodes

2. the number of attribute nodes

3. the number of text nodes.

You may find some inspiration in the `DOMTest` example.