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Advanced Databases and Information Systems
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2. Sheet: XPath & XQuery

Exercise 1 (Evaluation of XQuery expressions)

You are given the following XML document, referred to as “book.xml”:

```
<book>
  <title>Data on the Web</title>
  <author>Serge Abiteboul</author>
  <author>Peter Buneman</author>
  <author>Dan Suciu</author>
  <section id="intro" difficulty="easy" >
    <title>Introduction</title>
    <p>T1</p>
    <section>
      <title>Audience</title>
      <p>T1</p>
    </section>
    <section>
      <title>Web Data and the Two Cultures</title>
      <p>T2</p>
      <figure height="400" width="400">
        <title>Traditional client/server architecture</title>
        <image source="csarch.gif"/>
      </figure>
      <p>T2</p>
    </section>
  </section>
  <section id="syntax" difficulty="medium">
    <title>A Syntax For Data</title>
    <p>T1</p>
    <figure height="200" width="500">
      <title>Graph representations of structures</title>
      <image source="graphs.gif"/>
    </figure>
    <p>T1</p>
    <section>
      <title>Base Types</title>
      <p>T1</p>
    </section>
  </section>
</book>
```

- a) Return the results for the following XQuery expressions. Explain in detail what the expressions are calculating.

```

(a) <result> {
    for $x1 in doc("book.xml")//p
    where $x1/text()="T2"
    return
        for $x2 in doc("book.xml")//section
        where (some $x3 in $x2//p satisfies $x3/text()=$x1/text())
        return <x/>
} </result>

(b) <results> {
    for $x1 in doc("book.xml")//section
    where $x1//p/text()="T2"
    return
        <result> {
            for $x2 in $x1//p return $x2
        } </result>
} </results>

```

Exercise 2 (Specifying XQuery expressions)

You are given XML document “bib.xml” which can be downloaded from ILIAS site under EX2. At the Oracle server (<https://dbissql.informatik.uni-freiburg.de/dbis/dpod/sql.php>) the XML file is stored in the table BIB. Specify XQuery expressions for the following goals.

- Return all books for which the lastname of one of the authors matches with the lastname of the publisher. Assume that a publisher is always referred to by their lastname.
- For each book of author Peter Buneman, return the title and number of authors. If the book price is above 20 then also return the former.
- Return all pairs of different books of a publisher. The result must not contain duplicates. You can, however, assume that all book titles are different.
- For each author, return the lastname, name and the sum of all their (co-authored) books’ prices.
- For each author, return a list of his/or book titles (ordered by price). An element of the list has to contain name and lastname of an author, and constrained to three books. In addition, add a tag “minprice” with the price of the cheapest book of the author.