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Data Models and Query Languages Summer 12

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5. Sheet: XQuery

Exercise 1 (XQuery - Understand given queries)

The XML document (named “book.xml”) describes an excerpt of the book “Data on the Web”

```
<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>
```

Provide the evaluation results for the following XQuery expressions. Also express the semantics/evaluation steps with your own words.

```

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>

c) <results> {
    (
        <stars>{ fn:count(doc("book.xml")//*) }</stars>,
        <nodes>{ fn:count(doc("book.xml")//node()) }</nodes>,
        <text>{ fn:count(doc("book.xml")//text()) }</text>
    )
} </results>

```

Exercise 2 (XQuery - Writing queries)

Given is the XML document “bib.xml” from W3C XML use cases (available on the course web site). Express the following queries in XQuery 1.0 (or 3.0, where suitable) and check them on the example document. If necessary, modify the sample document to test complex queries.

- Output all books on which the last name of the author is the same as the last name of the publisher (e.g. O'Reilly)
- For each book of the author Peter Buneman output the title and the number of authors. If the price is above 20, it should also be shown.
- Output all pairs of different books of the same publisher. The result must not contain duplicates. You may assume that all book title are unique.
- For each author, output the his last name, first name and the sum of prices of those books he/she (co-)authored. Order this list by this price sum.