

CS 345B Homework 3: XML and Databases

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INSTRUCTIONS

Hand-out: 03/02/207

Hand-in: 03/10/2007

Please email your homework assignment to **anishds@stanford.edu** by 11:59PM on the hand-in date. **Late submissions will not receive any credit for the homework.** You may use text, doc, or pdf format.

EXERCISE 1: XQUERY FULLTEXT

Consider the following Library XML data from your midterm, which resides in a document “books.xml”. Perform the following actions using XQuery (and it’s fulltext extensions):

- a. Find all section or chapter titles that contain the word “Web”, regardless of the level of nesting.
- b. Return the title of all books that have, either some chapter with “database” in the title, or are edited by “Bob”.
- c. Given the search keyword “XML, Databases”, rank all sections of all books. Return the section titles, and their score, in order of their score.

```
<library>
<book>
  <title>Data on the Web</title>
  <editor>A</editor>
  <chapter id="intro" difficulty="easy" >
    <author>B</author>
    <title>Introduction</title>
    <p>Text ... </p>...
    <section>
      <title>Audience</title>
      <p>Text ... </p>
    </section>
    <section>
      <title>Web Data and the Two Cultures</title>
      <author>S</author>
      <p>Text ... </p>
      <figure height="400" width="400">
        <title>Traditional client/server architecture</title>
        <image source="csarch.gif"/>
      </figure>
      <p>Text ... </p>
    <section> ... </section>
```

```

        </section>
    </chapter>
<chapter id="syntax" difficulty="medium" >
    <title>A Syntax For Data</title>
    <author>B</author>
</chapter>
</book>
<book>
...
</book>
...

```

EXERCISE 2: XQUERY UPDATE

Consider the same XML document, as in Exercise 1. Perform the following:

- Return all chapters of all books, but without their titles.
- Delete all books edited by “Harry”.
- Add a new attribute `importance` with value ‘‘normal’’ to every chapter.
- Update the importance attribute of every section to ‘‘high’’ if it’s difficulty is “medium”.

EXERCISE 3: XQUERYP

- Let’s suppose, in our library example, each section element has a “pages” sub-element giving the number of pages. Write a program block that returns the average number of pages, over all sections of all book chapters.
- What is the difference between a “block” and an “atomic block”? Give an example scenario where the result of a block and an atomic block is different. [Extra Credit]

EXERCISE 4: XSLT

Continuing with the library example, write a single XSLT program that performs all the following changes:

- Replaces all setion’s title elements with empty “`section-title`” elements
- Replaces all chapter’s title elements with empty “`chapter-title`” elements
- Removes all figures from all books.