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.

```xml
<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>
    </chapter>
  </book>
</library>
```
Consider the same XML document, as in Exercise 1. Perform the following:

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

**Exercise 3: XQUERYP**

a. 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.
b. 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:

i. Replaces all section’s title elements with empty “section-title” elements
ii. Replaces all chapter’s title elements with empty “chapter-title” elements
iii. Removes all figures from all books.