Homework 3 for CSC 513: E-Commerce Technologies

Collaborative Work

You may form teams of 1-4 members (of students in this class) to cooperate on this problem set. After discussing the problem, please write up your answers individually. Indicate the names of the other members in your team, if any.

1 XML Keys

1.1. (15 points) Write an XML key constraint to specify that songs of a given title can have at most one entry for each singer (but allow that the same title may be sung by multiple singers).

2 XML and Relational Databases

2.1. (10 points) Show a relational schema corresponding to Listing 2 under the shallow representation approach. Identify the columns of each relation that you propose along with the keys of each relation.

2.2. (15 points) Write an SQL/XML query in the Oracle 9i style (as discussed in class) to answer the request:

Find the genres of all the singers who sang a song called 'Day O'.

3 XQuery

General remark. Don’t over-do the use of fancy constructs. You should be able to get a lot done with FLWOR expressions and element and attribute constructors. It may help to use distinct-values for some of the queries. It is a good idea to define local functions to improve the readability of your query.

Consider the XML document in Listing 1.

Listing 1: XML input

© March 20, 2005 Munindar P. Singh

Listing 2: XML output for Problem 3.1

3.1. (25 points) Write an XQuery query stylesheet that reads in Listing 1 and produces a list of songs in which Sgr is a subelement of Song and certain attributes are converted to text (see Listing 2). Document your answer.
Homework 3 for CSC 513: E-Commerce Technologies

Independent Work

You must solve this problem set individually without any assistance from anyone.

4 XML Keys

4.1. (15 points) Write an XML key constraint to specify that songs of a given title can have at most one entry for each singer and each genre (but allow that the same title may be sung by multiple singers). For example, Harry Belafonte may sing *Jamaica Farewell* in each of the genres of reggae, a cappella, and madrigal, but no more than once in any genre.

5 XML and Relational Databases

5.1. (15 points) Write an SQL/XML query in the Oracle 9i style (as discussed in class) to answer the request:

Find the genres of all the singers whose convictions include freedom.

6 XQuery

6.1. (25 points) Write an XQuery query that reads in Listing 1 and produces a list of songs in which Sgr is a subelement of Song and the genre attribute of Sgr are placed as an attribute on Song (see Listing 3). Document your answer.