

CS 435 –Database Systems, Assignment 3

This is an individual assignment (part 1 can be a group work, please write your partners name in the submission).

1. In this exercise we shall explore a simplified use case scenario for XML: storing medical information. Use an editor (jEdit for xml) to create the XML, and DTD. No hand-written submissions will be accepted.

We are interested in storing basic information about hospitals, doctors, patients and their illness. Each hospital houses several patients. Patients may be registered with multiple hospitals (possibly for different illnesses). Each doctor is employed by a hospital, and may attend to multiple patients in the hospital. We want to store some basic information about each of the entities involved. For instance, a hospital may be characterized by an id, name, and location, a patient may have an id, date of birth, information about illnesses, hospitals attending, with joining dates, etc.

- (a) Create a sample XML (Healthcare.xml) document respecting your DTD, and containing information about a few hospitals, patients, and doctors.
 - (b) Write (or generate) a simple DTD (Healthcare.dtd) for this application.
2. Consider an extendible hash structure where a bucket can hold up to three records. Initially the structure is empty and the global depth is 1. Sketch the extendible hash structure after the records given below (in the same order shown) have inserted.

Following are the search key values inserted to the extendible hash structure.

3,8,11,14,15,16,17,19,20,33,43,48,23,21,46

Your initial hash function is given by $h_1(x) = x \text{ mod } 7$

For example, for the search key 3, the hash value in binary is given by $h(3) = 3 = 00011$
Display the final global depth and final local depth of all the buckets after each insertion.