

COMP30311: Advanced Databases – Tutorial Questions

Multimedia databases

1. You have been asked to design a solution to support access to multimedia information in a publishing company. The company manages huge numbers of multimedia objects. Briefly explain techniques that you would use to store, query and retrieve the objects. Discuss your answers by providing an example (in the context of the given problem). Discuss the main problems and issues that these applications could face.
2. Explain advantages and disadvantages of manual annotation of multimedia objects.
3. A city museum plans to develop a multimedia database that will store an art collection that includes music, films and videos, paintings, novels, stories etc. originated from local artists. The main aim of the database is to support content-based information retrieval. The database designer decided to support content descriptions through a short textual summary and an open i.e. uncontrolled set of keywords assigned to each piece of art in the database.
 - (a) Describe the main challenges in content-based information retrieval in the context of multimedia DBs. What is the role of meta-data?
 - (b) Explain the advantages of using XML for storing semi-structured and multimedia data. Using the XML Schema syntax, describe the two elements (*textSummary* and *keywords*) you would need to use to implement the suggested design. There should be at least one keyword, and each of them can have two optional attributes: the name of the person who added it and the date when this was done.
 - (c) Write an XQuery (or XPath) query that would retrieve all art objects that have been described using term "black_and_white". Assume that there is an XML schema that stores each object in an <art_object> element with the two elements as above, and that the entire database is stored in a <museum> element.
4. Explain the problems of ambiguity and variability in natural languages and how they affect text processing. Give examples to support your views.
5. Explain how information retrieval engines work. What is the role of indexing?
6. Explain what software agents would gain from the Semantic Web. Is a document encoded in XML enough for a software agent to "understand" it?