CSC343 Worksheet 9

June 26, 2020

1. **Exercise 11.1.1:** Since there is no schema to design in the semistructured-data model, we cannot ask you design schemas to describe different situations. Rahter, in the following exercises we shall ask you to suggest how particular data might be organized to reflect certan facts.

   a) Add to Fig. 1 the facts that *Star Wars* was directed by George Lucas and produced by Gary Kurtz

   b) Add to Fig. 1 information about *Empire Strikes Back* and *Return of the Jedi*, including the factds that Carrie Fisher and Mark Hamill appeared in these movies

   c) Add to (b) information about the studio (Fox) for these movies and the address of the studio (Hollywood).

2. **Exercise 11.1.2:** Suggest how typical data about banks and customers, as in Exercise 4.1.1, could be represented in the semistructured model

3. **Exercise 11.1.4:** Suggest how typical data about genealogy, as was described in Exercise 4.1.6, could be represented in the semistructured model

4. **Exercise 11.1.5:** UML and the semistructured-data model are both "graphical" in nature, in the sense that they use nodes, labels, and connections among nodes as the medium of expression. Yet there is an essential difference between the two models. What is it?

5. **Exercise 11.2.1:** Repeat Exercise 1.1 using XML

6. **Exercise 11.2.2:** Show that any relation can be represented by an XML document. *Hint:* Create an element for each tuple with a subelement for each component of that tuple.

7. **Exercise 11.2.3:** How would you represent an empty element (one that had neither text nor subelements) in the database schema of Section 2.7?

8. **Exercise 11.2.4:** In section 2.7, we gave a database schema for representing documents that do not have mixed content - elements that contain a mixture of text (*#PCDATA*) and subelements. Show how to modify the schema when elements can have mixed content.