Questions

CSC230 Database Technologies for Analytics

22 October 2019

Questions for discussion

1. Draw a diagram that shows how these words are related. Which words are synonyms? Which things are parts of which other things? Label the diagram with definitions of the words.

   - attribute
   - Cartesian product of sets
   - column
   - record
   - relation
   - row
   - schema
   - set
   - table
   - tuple
   - type

2. Use the following words to reconstruct Jennifer Widom's description of what a database management system can do for us.

   - access
   - convenient
   - data
   - efficient
   - massive
   - multi-user
   - persistent

- reliable
- safe
- storage

3. Select a word from the list of the words given in the previous question. Be creative. Be bold. What do you think the word means? Why do think that this quality if important? How do you think that we might measure this quality?
4. What is concurrency control?
5. Physical data independence means that we can work without knowing what?
6. Will our queries to databases answer questions that begin with the word "what" or will they answer questions that begin with the word "how?"
7. Imagine that your employer has asked you to develop a product. A database is an important part of this product. You work for months to create this product. Your clients use the product for years. Is the schema or the data likely to change more during this time?
8. Professor Jennifer Widom mentioned the Ruby on Rails and Django frameworks. Find the Web sites for these projects. Read a little about these frameworks. What is a framework?
9. What is middleware?
10. To which of these roles will we give the least attention in this course?
    - database implementer
    - database designer
    - application developer
    - database administrator
    - database user
11. The inputs to our database queries are relations. What are the outputs?
12. What does Professor Widom mean by "compositionality?"

Exercise

During the years 1961 to 1975, NASA flew three series of manned spaceflights. These were the Mercury, Gemini, and Apollo (including Skylab and Apollo-Soyuz) programs. We want to create a Website that will help students learn about this part of history. Design a schema for a database that will be a key component of this software.

- How many tables will you create?
- What kinds of information will your tables hold?
- Where will you find the data that you use to fill these tables?
- How might you copy data from the Web and enter it into your database?