Databases: Assignment #1

CS 338 Fall 2015

Solutions on September 29 in class

Notes (please read carefully)

All the queries have to be formulated with respect to the bibliography database introduced in class; here is the schema of our database again:

```
author(AID, NAME, URL)
wrote(AUTHOR, PUBLICATION)
publication(PUBID, TITLE)
book(PUBID, PUBLISHER, YEAR)
journal(PUBID, VOLUME, NUMBER, YEAR)
proceedings(PUBID, YEAR)
article(PUBID, CROSSREF, STARTPAGE, ENDPAGE)
```

Queries:

Write the following queries in Relational Calculus:

1. Find all books.

   Answer: publication id, title, publisher, and year.

2. Find all articles that have appeared in proceedings entitled "LNCS 1234".

   Answer: publication id, title, and page numbers.

3. Is there any publication that is simultaneously a book and an article?

   Answer: publication id and title.

4. Find all articles that have appeared in two (or more) proceedings.

   Answer: publication id of the article, publication id of proceedings #1, and publication id of proceedings #2.

5. Find all articles and the year in which they appeared.

   Answer: pubid, title, and year.

6. Find all authors who have written a book or are editors of a journal.

   Answer: author id and title of the book or name of the journal (there may be multiple answers for a single author listing all her books/journals).

7. Find all articles that haven't appeared in a book.

   Answer: publication id and title.

8. Is every publication a book, journal, proceedings, or an article? Answer: yes/no

9. Find all authors who are editors of a journal and have an article appearing in that journal.

   Answer: author id and title of the article or name of the journal (again, there may be multiple answers)

10. Find all books that do not contain any articles.

    Answer: publication id and title.

11. Find all journals that do not contain an article with more that 50 pages

    Answer: journal name, volume, number, and year.

12. Find all articles that have appeared in conference proceedings and later in a journal.

    Answer: article title, proceedings title, journal name

    Note: you can compare years using "$<$", i.e., $x < y$ is true when the value assigned to x is smaller that the one assigned to y.

13. Find all authors whose publications are solely articles.

    Answer: author id and name.

14. Find proceedings that contain exactly one article.

    Answer: proceedings' publication id and title.

15. Find all pairs of authors who always publish together.

    Answer: author ids and names of both authors.