

# Databases: Assignment #2

CS 338 Fall 2015

Solutions on October 13 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 INTEGER, NAME CHAR(22), URL CHAR(42))
wrote(AUTHOR INTEGER, PUBLICATION CHAR(8))
publication(PUBID CHAR(8), TITLE CHAR(70))
book(PUBID CHAR(8), PUBLISHER CHAR(50), YEAR INTEGER)
journal(PUBID CHAR(8), VOLUME INTEGER, NO INTEGER, YEAR INTEGER)
proceedings(PUBID CHAR(8), YEAR INTEGER)
article(PUBID CHAR(8), CROSSREF CHAR(8), STARTPAGE INTEGER,
        ENDPAGE INTEGER)
```

Note that queries 1-15 coincide with Assignment 1 (so it is sufficient to transliterate your *relational calculus* solutions to SQL).

## Queries:

Write the following queries in SQL:

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, title of the article, and 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 than 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 than 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.

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Aggregate Queries:

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16. How many authors have written a book?

Answer: Number of authors (name of output attribute A#)

17. How many articles are there with at least 4 authors?

Answer: Number of articles (name of output attribute A#)

18. For all proceedings find the number of articles that have appeared in the proceedings.

Answer: Proceedings id and title, and the number of articles (name of output attributes pubid, title, and A#)

19. For all authors list the number of conference papers, the number of journal articles, the number of other articles, and the total of all articles.

Answer: author id, author name, #conference, #journal, #other, and #total of papers (name the output attributes "ID", "NAME", "C#", "J#", "O#", and "T#", respectively).

20. For every author list how many times he/she published with exactly k coauthors (for all k for which there is at least one publication with this many coauthors).

Answer: Author id and name, number of coauthors ("C#"), number of publications ("P#")