CS338—Computer Applications in Business: Databases
Assignment 2 (Fall 2003)
Due: October 30, 2003

Notes

All the queries and updates have to be formulated with respect to the bibliography database introduced in class; here is the schema 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)
```

Attributes `AID`, `AUTHOR`, `PUBLICATION`, `PUBID`, and `CROSSREF` do not contain NULLs.

Write the following queries in *relational calculus* and SQL:

1. List all authors who wrote a book.
   Answer: name.

2. List all articles that haven't appeared in a book.
   Answer: title.

3. List all books written by a single author.
   Answer: title.

4. List all articles and with the year in which they appeared.
   Answer: title and year.

5. List all pairs of authors who always publish together.
   Answer: names of both authors.

6. For every author list the number of articles she has written per year and the total number of articles.
   Answer: Name, year (use 'year=9999' for the total), number-or-articles ("Articles"). *Note: SQL solution suffices for this query.*

7. For every author list how many times he/she published with exactly k co-authors (for all applicable k).
   Answer: Author and name, number of co-authors ("Coauthors"), number of publications ("Publications"). *Note: SQL solution suffices for this query.*

Submit: Relational calculus formulation of the queries (on paper), and SQL source code for the queries (electronically using `submit`). The completed assignment must be cleanly accepted by DB2.