

CS 4700/6700 Project P2

This project is concerned with a database application involving the three relations described below. Students need to create relation schemas for the database, initialize the database with the relation instances given below, code Q1-Q8 in SQL, and test the SQL queries for all the eight queries.

Students will submit reports containing

- **SQL statements for schema creation**
- **SQL statements for data insertions**
- **SQL queries and their answers** produced by the DBMS. For each Qi, provide the query with the query answer immediately below the query; include "Qi" (e.g. "Q1") above the SQL query for identification.

The report will be written as a txt file named as P2yourlastname.txt. The report will be used to evaluate your work, in addition to the testing of (some or all of) your queries by the grader.

The report must be organized into three sections, using the words in bold fonts in the three bullets above as section titles.

Correctness, quality/elegance, and readability (of the SQL queries and the report) will be the main factors used in the marking process.

Three relations

AUTHORS(ANAME: VARCHAR(22), ANO: VARCHAR(8))
It stores the names and identification numbers of a number of authors. ANO is the p.k.

BOOKS(BTITLE: VARCHAR(28), BID: VARCHAR(6))
It stores the titles and identification numbers of books. BID is the p.k.

EARNING(ANO, BID, Payment: INTEGER)
It stores the amount of pay earned by authors for their contributions to books in (in some units such as 1000) dollars. {ANO,BID} is the p.k. and ANO and BID are f.k.s. A book can have many authors.

If there is no tuple of the form (x, b, p) in EARNING involving an author x for a book b, then x is not a co-author of book b.

Queries

Q1 Find the names of authors who did not co-author any book that has 'K Rooty' as a co-author.
Q2 Find the names of books having both 'K Rooty' and 'T Branch' as co-authors.
Q3 Find the names of authors who co-authored all of the books that have 'K Rooty' as a co-author.

Q4 Find the names of authors who earned more money than 'K Rooty' in every book that has 'K Rooty' as a co-author.

Q5 For each book, list the book title, BID, the average payment for all co-authors of the book and the total number of co-authors of the book.

Q6 Extend Q5 by also including the number of co-authors whose payment is below the average payment of the co-authors of the book.

Q7 For each author, list the author's name and his/her average payment in all books he/she is a co-author (according to the database).

Q8 Find the names of authors who have the highest average payment over the books they co-authored in. This cannot be done using "Order By".

For all queries given above, the query results should not include duplicate tuples.

Relation instances

AUTHORS(ANAME, ANO)

L Grassy, A1
D Flower, A2
M Trunk, A3
K Rooty, A4
T Branch, A5
L Leafy, A6
X Bark, A7

EARNING(ANO, BID, Payment)

A1, B1, 78
A1, B2, 80
A2, B2, 83
A2, B3, 88
A2, B4, 86
A3, B2, 74
A3, B3, 89
A4, B2, 75
A4, B3, 85
A4, B4, 55
A5, B1, 58
A5, B3, 56
A5, B4, 55
A6, B2, 77
A6, B3, 88
A6, B4, 54

BOOKS(BTITLE, BID)

Long walk, B1
Longest day, B2
Love the fun, B3
Laugh and cry, B4
Laugh all the way, B5

DBMS to Use

Students will use the Oracle personal database, XE, to test SQL queries/programs. They will access the database using the Oracle SQL Developer Software. Info on downloading and installation of these software systems was already distributed earlier.