

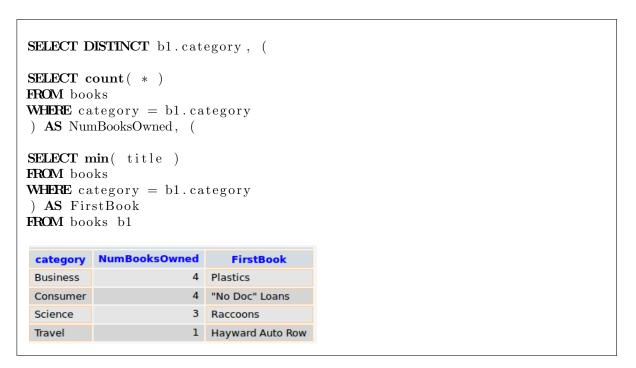
California State University, East Bay

DATABASE ARCHITECTURE

Libraries DB project2

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1. For each category, list the category name, the number of books owned in that category, and the first alphabetical title of books owned in that category. (Hint: use the min function.) Use table headings: Category, NumBooksOwned, FirstBook.



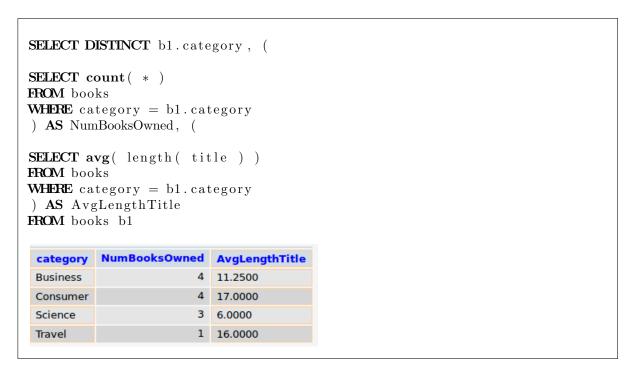
2. For each branch, list the branch name, the number of books owned at that branch in the Consumer category, the first alphabetical title of books owned at that branch in the Consumer category, and the length of the longest name of cardholders who have checked out a book owned at that branch in the Consumer category. Use column headings: Branch, NumBooksOwned, FirstBook, LongestCardholderNameLength.

```
SELECT DISTINCT b1. branch, (
SELECT count(*)
FROM books
WHERE branch = b1.branch
AND category = 'Consumer'
) AS NumBooksOwned, (
SELECT min( title )
FROM books
WHERE branch = b1.branch
AND category = 'Consumer'
) AS FirstBook, (
SELECT max( length( cardholder ) )
FROM books
WHERE branch = b1.branch
AND category = 'Consumer'
) AS LongestCardholderNameLength
FROM books b1
  branch
          NumBooksOwned
                              FirstBook
                                           LongestCardholderNameLength
                        1 Same as Cash
 Bayfair
                                                                 NULL
 Cal State
                        1 Living in State Parks
                                                                   10
                        2 "No Doc" Loans
 Downtown
                                                                   15
```

3. For each branch, list the branch name, the number of books checked out at that branch, the first alphabetical title of books checked out at that branch, and the length of the longest name of cardholders who have checked out a book at that branch. Use column headings: Branch, NumBooksCheckedOut, FirstBook, LongestCardholderNameLength.

```
SELECT DISTINCT b1.branch, (
SELECT count(*)
FROM books
WHERE branch = b1.branch
AND cardholder IS NOT NULL
) AS NumBooksCheckedOut, (
SELECT min( title )
FROM books
WHERE branch = b1.branch
AND cardholder IS NOT NULL
) AS FirstBook, (
SELECT max( length( cardholder ) )
FROM books
WHERE branch = b1.branch
AND cardholder IS NOT NULL
) AS LongestCardholderNameLength
FROM books b1
                                 FirstBook
  branch
          NumBooksCheckedOut
                                             LongestCardholderNameLength
                           2 Hayward Auto Row
 Bayfair
                                                                    10
                           4 Living in State Parks
 Cal State
                                                                    15
                           3 "No Doc" Loans
                                                                    15
 Downtown
```

4. For each category, list the category name, the number of books owned in that category, and the average length of titles of the books owned in that category. List only categories for which more than one book is owned. Use category headings Category, NumBooksOwned, AvgLengthTitle.



5. Make a table of the number of books checked out by each cardholder. Include a row showing the number of books not currently checked out by anyone. Use column headings: Cardholder, NumCheckedOutBy.

```
SELECT DISTINCT b1.cardholder, (
SELECT count ( * )
FROM books
WHERE cardholder = b1.cardholder
) AS NumCheckedOutBy
FROM books b1
WHERE b1. cardholder IS NOT NULL
UNION (
SELECT cardholder, (
SELECT count( * )
FROM books
WHERE cardholder IS NULL
FROM books
WHERE cardholder IS NULL
                 NumCheckedOutBy
   cardholder
                                   3
 Bev Costco
                                   1
 Raul Felix
                                   2
 Sashoon Nusrat
 Swanny Pottkins
                                   2
 Trin Prawn
                                   1
                                   3
 NULL
```

6. Repeat the previous problem, but order the table in order of decreasing number of books. Use column headings: Cardholder, NumCheckedOutBy.

```
SELECT DISTINCT b1.cardholder, (
SELECT count ( * )
FROM books
WHERE cardholder = b1.cardholder
) AS NumCheckedOutBy
FROM books b1
WHERE b1. cardholder IS NOT NULL
UNION (
SELECT cardholder, (
SELECT count( * )
FROM books
WHERE cardholder IS NULL
) AS NumCheckedOutBy
FROM books
WHERE cardholder IS NULL
ORDER BY 2 DESC
   cardholder
                 NumCheckedOutBy
                                   3
 NULL
                                   3
 Bev Costco
                                   2
 Sashoon Nusrat
                                   2
 Swanny Pottkins
                                   1
 Raul Felix
                                   1
 Trin Prawn
```

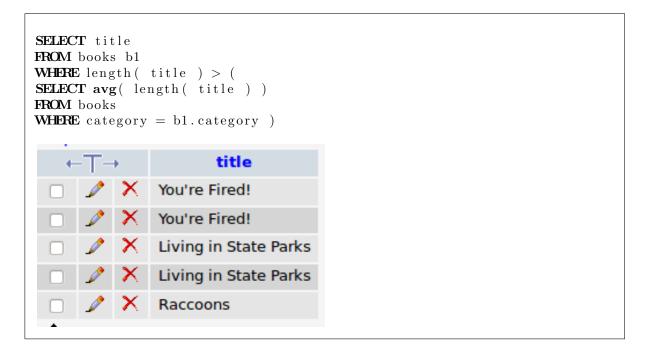
7. For each branch and category, list the name of the branch, name of the category, number of books that are checked out by that branch in that category, and alphabetically first such book. Use column headings: Branch, Category, NumBooks, FirstBook. In the answer, you can omit rows where the number of books checked out is 0.

```
SELECT DISTINCT branch, category, (
SELECT count ( cardholder )
FROM books
WHERE branch = b1.branch
AND category = b1.category
) AS NumBooks, (
SELECT min( title )
FROM books
WHERE branch = b1.branch
AND category = b1.category
AND cardholder IS NOT NULL
) AS FirstBook
FROM books b1
                   NumBooks
                                FirstBook
  branch
          category
 Downtown
                          2 "No Doc" Loans
          Consumer
 Bayfair
          Travel
                          1
                             Hayward Auto Row
 Cal State
                          1 Living in State Parks
          Consumer
 Cal State
                          2 Plastics
          Business
 Bayfair
          Science
                          1
                             Raccoons
 Bayfair
                             NULL
          Consumer
                          1 WD-40
 Downtown
          Science
                          1
                             WD-40
 Cal State
          Science
 Downtown
          Business
                          0 NULL
                          0 NULL
 Bayfair
          Business
```

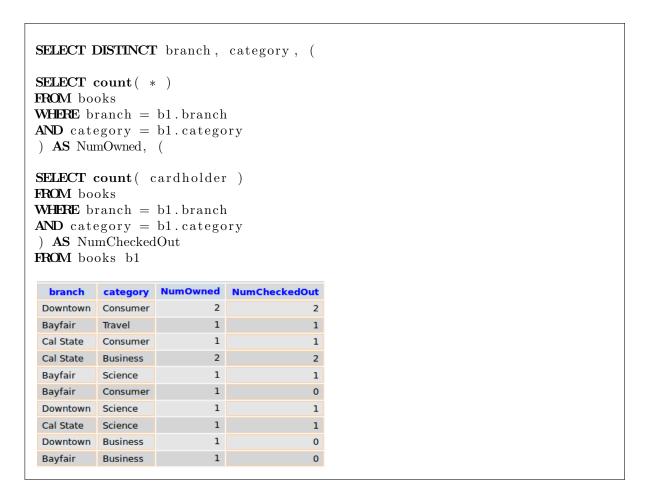
8. For each category, list the category name, expert for that category, number of books owned in that category, and average title length of books owned in that category. Use column headings: Category, Expert, NumOwned, AvgLength.

```
SELECT categoryname, expert, (
SELECT count ( * )
FROM books
WHERE category = categoryname
) AS NumOwned, (
SELECT avg( length( title ) )
FROM books
WHERE category = categoryname
) AS AvgLength
FROM categories
 categoryname
                expert
                         NumOwned AvgLength
             Myrtle Grimes
                                4 11.2500
 Business
             Ed Fezner
                                4 17.0000
 Consumer
             Meg Molly Unruh
                                  6.0000
 Science
             Meg Molly Unruh
                                1 16.0000
 Travel
```

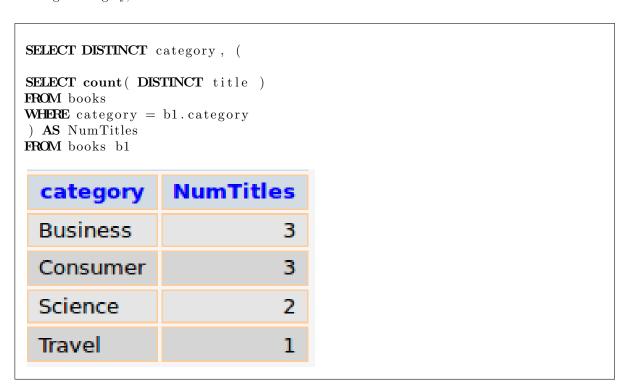
9. List the titles of books checked out whose titles are longer than the average for books owned in their category. Use column headings: Title.



10. For each branch and category, list the name of the branch, name of the category, number of books owned by the branch in that category, and the number of books checked out from the branch in that category. Use column headings: Branch, Category, NumOwned, NumCheckedOut. In the answer, you can omit rows where the number of books owned is 0.



11. For each category, list the number of different titles (not books) owned in that category. Use column headings: Category, NumTitles.



12. List the categories from which 3 or more books are checked out. Use column headings: Category.

