

PROBLEM 1: More Aggregate Queries

- 1) List authors who wrote the most books (including ties).

Answer: Author id and name

Query:

```
SELECT a.name, a.id, bookcount
FROM
(
    SELECT a.name, a.aid, count(aid) AS bookcount
    FROM wrote w, book b, author a
    WHERE w.publication = b.pubid AND a.aid = w.author
    GROUP BY a.aid, a.name
)
WHERE bookcount in
(
    SELECT MAX(bookcount)
    FROM
    (
        SELECT a.name, a.aid, count(aid) AS bookcount
        FROM wrote w, book b, author a
        WHERE w.publication = b.pubid
            AND a.aid = w.author
        GROUP BY a.aid, a.name
    )
)
```

- 2) Find authors who wrote the longest article.

Answer: Author id and name

Query 1 (max aggregate):

```
SELECT a.name, a.id
FROM wrote w, article b, author a
WHERE a.aid = w.author AND
    w.publication = b.pubid AND
    b.endpage - b.startpage IN
    (
        SELECT MAX (endpage-startpage)
        FROM article
    )
```

Query 2 (subqueries):

```
SELECT a.name, a.id
FROM wrote w, article b, author a
WHERE a.aid = w.author AND
      w.publication = b.pubid AND
      NOT EXISTS
      (
        SELECT *
        FROM article b2
        WHERE (b.endpage - b.startpage) < (b2.endpage - b2.startpage)
      )
```

PROBLEM 2: Duplicates and NULLs

A) No.

B) $\forall x, y, z. \text{book}(x, y, z) \rightarrow \neg(\exists a, b, c. \text{article}(x, a, b, c))$

C) Answer:

```
(SELECT R.a, R.b, S.c
FROM R, S
WHERE R.b = S.b)
UNION ALL
(SELECT R.a, R.b, Null
FROM R
WHERE R.b NOT IN
      (SELECT S.b
       FROM S)
)
UNION ALL
(SELECT Null, S.b, S.c
FROM S
WHERE S.b NOT IN
      (SELECT R.b
       FROM R)
)
```



