Tutorial 7
SQL

Classroom Exercise

Question 1

(a)

(i)

```
SELECT   Sname
FROM     STUDENT
WHERE    GPA IN
           (SELECT MIN(GPA) FROM STUDENT);
```

(b)

This query will report error. The reason is the subquery returns a scalar, and therefore cannot be compared against a single data value. You would need to add "ANY" or "ALL" before the subquery for the query to run.

Question2

(a) Which categories do not have any subcategories?

Solution:

```
SELECT C1.CategoryName
FROM Category C1
WHERE NOT EXISTS
(SELECT CategoryName
FROM Category C2
WHERE C2.BelongsTo = C1.CategoryName);
```

(b) For which of the books there is at least one copy available?

Solution:

```
SELECT Title
FROM Book
WHERE ISBN IN
(SELECT ISBN FROM
((SELECT CopyNumber, ISBN FROM Copy)
EXCEPT
(SELECT Copy, ISBN FROM Loan)));
```

An assumption here is that loan table only records books that are on loan; once returned, the record is removed from Loan table.

(c) Which books have more pages than twice the average of the number of pages of all books?

Solution:

```
SELECT ISBN
FROM Book
WHERE NumberOfPages>= 2* (SELECT AVG(NumberOfPages)
                          FROM Book);
```

(d) What are the surnames of the readers from the city "New York"?

Solution:

```
SELECT DISTINCT Surname
FROM Reader
WHERE City = 'New York'
```

Question 3

(a) Find the names of all employees who earn more than the average salary of all employees of their company. Assume that all people work for at most one company.

Solution:

```
SELECT employee-name
FROM works t
WHERE salary > (SELECT AVG(salary)
                FROM works s
                WHERE t.company-name = s.company-name);
```

Question 4

```
SELECT      citedIssueID, citedArticleID
FROM        Citation
GROUP BY    citedIssueID, citedArticleID
HAVING COUNT(*) >= ALL
                    (SELECT     COUNT(*)
                    FROM        Citation
                    GROUP BY    citedArticleID, citedIssueID)
```

(iii) return author and number of references/citations

```
SELECT      a.author, COUNT(*)
FROM        Article a, Citation c
WHERE       a.issueID = c.citedIssueID AND a.articleID = c.citedArticleID
AND EXISTS
                (SELECT     *
                FROM        Article a2, Issue i
                WHERE       a2.issueID = i.issueID AND
                            a2.author = a.author AND
                            Year(getDate()) – Year(i.date) >= 10)
GROUP BY a.author;
```