Tutorial 7
SQL

Classroom Exercise

Question 1

(a)

(i)

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

(ii)

```
SELECT   Sid, Sname, GPA
FROM     STUDENT S
WHERE    NOT EXISTS
           (SELECT   C.CID
           FROM      COURSE C
           WHERE     Dname = 'Civil Engineering'
           EXCEPT
           SELECT    E.CID
           FROM      ENROLL E
           WHERE     Dname = 'Civil Engineering'
                     AND E.Sid = S.Sid);
```

(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)

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

(b)

```
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)

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

(d)

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

Question 3

(i)

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

(ii) 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;
```

Question 4

Find all drinkers that frequent some bar that does not serve any beer they like

```
SELECT  DISTINCT F.Drinker
FROM    Frequent AS F
WHERE NOT EXIST
        (SELECT  *
         FROM Serves as S, Likes as L
         WHERE  L.Beer = S.Beer
                AND F.Drinker  = L.Drinker
                    AND F.Bar = S.Bar)
```