Advanced data manipulations

Sample database

```
CREATE TABLE Department(
name              VARCHAR2(50),
code              CHAR(5),
total_staff_number NUMBER(2)            NOT NULL,
chair             VARCHAR2(50),
budget            NUMBER(9,1)           NULL,
CONSTRAINT dept_pkey PRIMARY KEY(name),
CONSTRAINT dept_ckey1 UNIQUE(code),
CONSTRAINT dept_ckey2 UNIQUE(chair),
CONSTRAINT dept_check1
CHECK (total_staff_number BETWEEN 1 AND 50)  );
```

```
CREATE TABLE Course(
c#               CHAR(7),
title            VARCHAR2(200)          NOT NULL,
credits          NUMBER(1)              NOT NULL,
offered_by       VARCHAR2(50)           NULL,
CONSTRAINT course_pkey PRIMARY KEY(c#),
CONSTRAINT course_check1
        CHECK (credits IN (6, 12) ),
CONSTRAINT course_fkey1 FOREIGN KEY(offered_by)
        REFERENCES Department(name) );
```

Advanced DELETE statement

Delete all courses offered by a department chaired by `Peter`

> **Department**
>
> | name | code | total staff number | chair | budget |
>
> **Course**
>
> | c# | title | credits | offered by |

```
DELETE FROM Course
WHERE offered_by =
            ( SELECT name
              FROM Department
              WHERE chair = 'Peter' );
```

Advanced DELETE statement

Delete all departments that offer no courses

```
DELETE FROM Department
WHERE NOT EXISTS
            ( SELECT *
              FROM Course
              WHERE Course.offered_by =
                    Department.name );
```

Advanced UPDATE statement

Increase the total number of staff members by 5 in all departments that offer more than 20 courses

```
UPDATE Department
SET total_staff_number =
    total_staff_number + 5
WHERE name IN
            ( SELECT offered_by
              FROM Course
              GROUP BY offered_by
              HAVING count(c#) > 20
            );
```

Advanced UPDATE statement

Add to table `Department` a column that contains the total number of courses offered by each department and insert the correct values into the column

```
ALTER TABLE Department
        ADD (total_courses NUMBER(2) );
```

```
UPDATE Department
SET total_courses =
    ( SELECT count(title)
      FROM Course
      WHERE Course.offered_by = Department.name );
```

Advanced `CREATE TABLE` statement

Create a table that contains the names of departments together with the total number of courses offered by each department and insert correct data into the table

```
CREATE TABLE DCNT AS
        ( SELECT name, COUNT(c#) TOTC
          FROM Department LEFT OUTER JOIN Course
          ON Department.name = Course.offered_by
          GROUP BY name );
```

Advanced `INSETRT` statement

Create a table that contains the names of departments together with the total number of courses offered by each department and insert correct data into the table

```
CREATE TABLE DCNT(
name            VARCHAR2(50),
total_courses   NUMBER(2)    NOT NULL )
      CONSTRAINT DCNT_pkey PRIMARY KEY(name),
      CONSTRAINT DCNT_fkey1 FOREIGN KEY (name)
           REFERENCES Department(name);
```

```
INSERT INTO DCNT
      ( SELECT name,count(c#)
        FROM Department LEFT OUTER JOIN Course
        ON Department.dname = Course.offered_by
        GROUP BY dname );
```

References

https://sai.uow.edu.au/oradocs/
SQL Reference `DELETE` statement

https://sai.uow.edu.au/oradocs/
SQL Reference `UPDATE` statements