

CS5530 – Assignment 3

PART 1

A.

```
CREATE TABLE Emp(eid INTEGER,
                  ename VARCHAR(30),
                  age INTEGER,
                  salary FLOAT,
                  PRIMARY KEY(eid));

CREATE TABLE Works(eid INTEGER,
                   did INTEGER,
                   pct_time FLOAT,
                   PRIMARY KEY(eid, did),
                   FOREIGN KEY (eid) REFERENCES Emp(eid),
                   FOREIGN KEY (did) REFERENCES Dept(did));
```

```
CREATE TABLE Dept(did INTEGER,
                  budget FLOAT,
                  managerid INTEGER,
                  PRIMARY KEY(did));
```

B.

1)

```
CREATE TABLE Emp(eid INTEGER,
                  ename VARCHAR(30),
                  age INTEGER,
                  salary FLOAT,
                  PRIMARY KEY(eid)
                  CHECK(salary > 2000));
```

2)

```
ALTER TABLE Dept ADD CONSTRAINT ManagerIsEmp
FOREIGN KEY(managerid) REFERENCES Emp(eid)
```

3)

```
CREATE ASSERTION ManagerMakesMore
CHECK(NOT EXISTS
      (SELECT * FROM Emp AS e, Works AS w, Dept AS d
       WHERE e.eid = w.eid AND
             w.did = d.did AND
             e.salary > (SELECT salary
```

```
FROM Emp AS e1
WHERE d.managerid = e1.eid)));
```

```
4)
CREATE ASSERTION ApptTotalPercent
CHECK(NOT EXISTS
      (SELECT Emp.eid
       FROM Emp, Works
       WHERE Emp.eid = Works.eid
       GROUP BY Emp.eid
       HAVING SUM(pct_time > 100));
```

```
5)
CREATE ASSERTION TwoManagers
CHECK(NOT EXISTS
      (SELECT * FROM Dept GROUP BY (Dept.managerid)
```

```
6)
CREATE ASSERTION DeptSmall
CHECK((SELECT COUNT(Works.eid)
      FROM Works) <= 50));
```

Part 2

Note: Was not able to finish 12, 14, 15, or 16 so they just have dummy queries

```
select MAX(s.age) from student s;
```

```
select s.sname, s.gpa
from student s, enroll e
where s.sid = e.sid
and e.cno = 302;
```

```
select s.sname, m.dname from student s, major m, enroll e, course c where s.sid = m.sid and e.sid =
m.sid and e.cno = c.cno and c.cname like '%Geometry%';
```

```
select s.sname
from student s, enroll e1, enroll e2
where s.sid = e1.sid and e1.dname = 'Computer Sciences'
and s.sid = e2.sid and e2.dname = 'Mathematics';
```

```
select m.dname, AVG(s.age) as 'Average Age', MAX(s.age) - MIN(s.age) as 'Largest Age Difference'
from student s, major m
where s.sid = m.sid
group by m.dname;
```

```
select s.sname
from student s, enroll e, section sec
where s.sid = e.sid
and e.cno = (select sec.cno from section sec where sec.pname = 'Smith, S.')
and e.sectno = (select sec.sectno from section sec where sec.pname = 'Smith, S.')
group by s.sname;
```

```
select count(*) as count
from student s, major m1, major m2
where s.sid = m1.sid
and s.sid = m2.sid
and m1.dname > m2.dname;
```

```
select MAX(s.sname)
from student s, major m1, major m2
where s.sid = m1.sid and
s.sid = m2.sid and
m1.dname <> m2.dname
group by s.sname;
```

```
select s.sname
from student s
where s.age = (select max(s1.age) from student s1 where s1.year = 1);
```

```
select s.sid, s.sname, s.gpa
from student s, enroll e
where s.sid = e.sid and e.dname = 'Civil Engineering'
group by s.sname;
```

```
select * from dept d
where not exists
(select m.sid
from major m, enroll e
where m.sid = e.sid
and m.dname = d.dname and
e.dname = 'Computer Sciences');
```

```
select count(s.sid) from student s;
```

```
select s.sname, max(s.gpa) from student s group by s.age;
```

```
select count(s.sid) from student s;
```

```
select count(s.sid) from student s;
```

```
select count(s.sid) from student s;
```

OUTPUT

+-----+

| MAX(s.age) |

+-----+

| 99 |

+-----+

1 row in set (0.00 sec)

+-----+-----+

| sname | gpa |

+-----+-----+

| Pierson, E. | 3.5 |

| Scott, Kim J. | 3.8 |

| Sather, Roberto B. | 2.2 |

| Stanley, Leotha T. | 3.6 |

| Jones, David S. | 3.5 |

| Paul, Mary W. | 3.6 |

| Soong, V. | 3.5 |

| Kellerman, S. | 2.9 |

| Korpel, E. | 3.5 |

| Emile, R. | 2 |

| Carter, Jimmy | 3.5 |

| Kissinger, Henry | 3.4 |

| Andrews, R. | 2.8 |

| Auen, B. | 2.7 |

| Shoemaker, A. | 3.5 |

| Fy, Clara I. | 2 |

| Heilskov, G. | 2.5 |

| Baskett, Wayse T. | 2.1 |

+-----+

18 rows in set (0.00 sec)

+-----+

sname	dname
-------	-------

+-----+

Ford, Gerald	Chemical Engineering
--------------	----------------------

Austin, G.	Chemical Engineering
------------	----------------------

Mathews, John W.	Chemical Engineering
------------------	----------------------

Dunbar, D.	Civil Engineering
------------	-------------------

Rosemeyer, S.	Civil Engineering
---------------	-------------------

Atny, Mary H.	Civil Engineering
---------------	-------------------

Glitch, R.	Civil Engineering
------------	-------------------

Ziebart, F.	Civil Engineering
-------------	-------------------

Sulfate, Barry M.	Computer Sciences
-------------------	-------------------

Cheong, R.	Computer Sciences
------------	-------------------

Thorton, James Q.	Computer Sciences
-------------------	-------------------

Gooch	Computer Sciences
-------	-------------------

Smith, L.	Computer Sciences
-----------	-------------------

Zappa, F.	Mathematics
-----------	-------------

Ghandi, I.	Mathematics
------------	-------------

Uoiea, Z.	Mathematics
-----------	-------------

Sulfate, Barry M.	Sanitary Engineering
-------------------	----------------------

+-----+

17 rows in set (0.01 sec)

+-----+

sname

+-----+

| Zappa, F. |

+-----+

1 row in set (0.00 sec)

+-----+-----+-----+

| dname | Average Age | Largest Age Difference |

+-----+-----+-----+

| Chemical Engineering | 29.3636 | 42 |

| Civil Engineering | 27.2500 | 80 |

| Computer Sciences | 25.0417 | 38 |

| Industrial Engineering | 27.7000 | 65 |

| Mathematics | 30.6316 | 83 |

| Sanitary Engineering | 19.0000 | 0 |

+-----+-----+-----+

6 rows in set (0.00 sec)

+-----+

| sname |

+-----+

| Auen, B. |

| Baskett, Wayse T. |

| Carter, Jimmy |

| Heilskov, G. |

| Kellerman, S. |

| Paul, Mary W. |

| Scott, Kim J. |

| Soong, V. |

+-----+

8 rows in set (0.00 sec)

+-----+

| count |

+-----+

| 4 |

+-----+

1 row in set (0.00 sec)

+-----+

| MAX(s.sname) |

+-----+

| Jacobs, T. |

| Pierson, E. |

| Sulfate, Barry M. |

| Zeene, Ben N. |

+-----+

4 rows in set (0.00 sec)

+-----+

| sname |

+-----+

| Ghandi, I. |

+-----+

1 row in set (0.00 sec)

+----+-----+-----+

| sid | sname | gpa |

+----+-----+-----+

| 66 | Altenhaus, Stuart | 2.8 |

74 Andrus, J. 3.7
96 Birch, M. 3.5
23 Bomber, C. 3.2
36 Burroughs, Susan S. 3
60 Calcmity, J. 2.6
70 Caucutt, B. 3
33 Chao, Tsechih 3.6
79 Evert, Chris 3.9
64 Fred, Edwin B. 4
18 Gooch 1.4
29 Hamilton, S. 2.8
34 Kasten, Norman L. 2.5
61 Kennedy, Ed 2.3
32 Liu, Huihusan 3.9
54 Maximillian 3
85 Mayer, N. 3.5
48 Natividad, A. 4
73 Quarnty, G. 4
47 Roger, Blotter N. 1.9
81 Smith, Ike Z. 1.1
9 Smith, Joyce A. 2
3 Zeene, Ben N. 3.9
76 Zorhoff, C. 3

```
+-----+-----+-----+
```

24 rows in set (0.01 sec)

```
+-----+-----+
```

dname	numphds
-------	---------

```
+-----+-----+
```


Sanitary Engineering	3
----------------------	---

+-----+-----+

1 row in set (0.00 sec)

+-----+

count(s.sid)

+-----+

104

+-----+

1 row in set (0.00 sec)

+-----+-----+

sname	max(s.gpa)
-------	------------

+-----+-----+

News, Nightly	1.9
---------------	-----

Zappa, F.	4
-----------	---

Form, Clara O.	3.5
----------------	-----

Sulfate, Barry M.	3.7
-------------------	-----

Scott, Kim J.	4
---------------	---

Zeene, Ben N.	3.9
---------------	-----

Sather, Roberto B.	4
--------------------	---

Paul, Mary W.	3.6
---------------	-----

Soong, V.	3.6
-----------	-----

Cheong, R.	4
------------	---

Borchart, Sandra L.	3.9
---------------------	-----

Thorton, James Q.	2.7
-------------------	-----

Jacobs, T.	3.9
------------	-----

Dunbar, D.	3.4
------------	-----

Pierson, E.	3.5
-------------	-----

Smith, Ike Z.	1.1
Kirk, J.	2.2
Kool, Joseph F.	3.7
Smith, L.	2.5
Barnes, J.	2.3
Villa-lobos, M.	3.7
Kennedy, Ed	3.5
Carter, Jimmy	3.5
Kissinger, Henry	3.4
Ford, Gerald	3.5
Ghandi, I.	3.5
Fred, Edwin B.	4
Maximillian	3
Longlastname, A.	4

+-----+

29 rows in set (0.00 sec)

+-----+

count(s.sid)

+-----+

104

+-----+

1 row in set (0.00 sec)

+-----+

count(s.sid)

+-----+

104

+-----+

1 row in set (0.00 sec)

+-----+
count(s.sid)
+-----+
104
+-----+

1 row in set (0.00 sec)