

Ryan Lee DB HW2 (rsl82)

1. PROBLEM 1

```
CREATE TABLE Employee (  
  id INT,  
  name VARCHAR(25),  
  age INT,  
  salary DOUBLE,  
  PRIMARY KEY(id)  
);
```

```
CREATE TABLE Dept (  
  id INT,  
  name VARCHAR(25),  
  budget DOUBLE,  
  PRIMARY KEY(id)  
);
```

```
CREATE TABLE WorksIn (  
  employeeId INT,  
  deptId INT,  
  percentTime DOUBLE,  
  PRIMARY KEY(employeeId, deptId),  
  FOREIGN KEY (employeeId) REFERENCES Employee(id),  
  FOREIGN KEY (deptId) REFERENCES Dept(id)  
);
```

2. PROBLEM 2

(a)

```
SELECT DISTINCT Suppliers.name
FROM Suppliers, Parts, Catalog
WHERE Suppliers.id = Catalog.sid
AND Parts.id = Catalog.pid
AND Parts.color='red';
```

(b)

```
SELECT DISTINCT Suppliers.name
FROM Suppliers, Parts, Catalog
WHERE Suppliers.id = Catalog.sid
AND Parts.id = Catalog.pid
AND (Parts.color='red' OR Suppliers.address='123 College Ave');
```

(c)

```
SELECT Catalog.sid
FROM Catalog, Parts
WHERE Catalog.pid = Parts.id
AND (Parts.color = 'red' OR Parts.color='green')
GROUP BY Catalog.sid
HAVING COUNT(DISTINCT pid) = (SELECT COUNT(DISTINCT id) FROM Parts WHERE (color ='red' OR
color='green'));
```

(d)

```
SELECT sid
FROM Catalog, Parts
WHERE Catalog.pid = Parts.id
GROUP BY Catalog.sid
HAVING COUNT(DISTINCT CASE WHEN Parts.color = 'red' THEN pid END) = (SELECT COUNT(DISTINCT id)
FROM Parts WHERE color = 'red')
OR COUNT(DISTINCT CASE WHEN Parts.color = 'green' THEN pid END) = (SELECT COUNT(DISTINCT id)
FROM Parts WHERE color = 'green');
```

(e)

```
SELECT pid
FROM Catalog
WHERE cost = (SELECT MAX(cost) FROM Catalog WHERE sid = (SELECT id FROM Suppliers WHERE name =
'Toshiba'))
AND sid = (SELECT id FROM Suppliers WHERE name = 'Toshiba');
```

3. PROBLEM 3

(a)

```
SELECT DISTINCT Students.name
FROM Students, Classes, Takes, Profs
WHERE Students.level = 'JR'
AND Takes.sid = Students.id
AND Classes.name = Takes.cname
AND Profs.id = Classes.pid
AND Profs.name = 'Marie Curie';
```

(b)

```
SELECT DISTINCT Classes.name
```

```
FROM Classes, Takes
```

```
WHERE Classes.room = 'Tillett 232'
```

```
OR (Classes.name = Takes.cname AND (SELECT COUNT(DISTINCT sid) FROM Takes WHERE cname =  
Classes.name) >=5);
```

(c)

```
SELECT Profs.name
```

```
FROM Profs
```

```
WHERE (SELECT COUNT(DISTINCT Classes.name) FROM Classes
```

```
WHERE Classes.pid = Profs.id)
```

```
= (SELECT COUNT(DISTINCT Classes.room) FROM Classes);
```

(d)

```
SELECT Students.level, AVG(Students.age)
```

```
FROM Students
```

```
GROUP BY Students.level;
```

(e)

```
SELECT Profs.name, COUNT(Classes.name)
```

```
FROM Profs, Classes
```

```
WHERE Profs.id = Classes.pid
```

```
AND Classes.room = 'Tillett 232'
```

```
AND NOT EXISTS (
```

```
    SELECT *
```

```
    FROM Classes c2
```

```
    WHERE Profs.id = c2.pid
```

```
    AND c2.room != 'Tillett 232'
```

```
)
```

```
GROUP BY Profs.name;
```