

- a.
- ```
SELECT a.did, a.dname
FROM `dept` as a
INNER JOIN `works` as b ON a.did = b.did
WHERE b.pct_time = 50;
```
- b.
- ```
SELECT e.ename
FROM `emp` as e
RIGHT JOIN `works` as w ON e.eid = w.eid
LEFT JOIN `dept` as d ON w.did = d.did
WHERE d.dname IN ('Hardware', 'Software', 'Research')
GROUP BY e.ename
HAVING COUNT(e.ename)>2
```
- c.
- ```
SELECT d.dname
FROM `dept` as d
LEFT JOIN `works` as w ON d.did = w.did
LEFT JOIN `emp` as e ON w.eid = e.eid
WHERE e.eid IS NULL
```
- d.
- ```
SELECT managerid
FROM `dept`
WHERE budget > 1500000 AND managerid NOT IN (
    SELECT managerid
    FROM `dept`
    WHERE budget < 1500000)
```
- e.
- ```
SELECT ename
FROM `emp`
WHERE salary = (
    SELECT MIN(salary)
    FROM `emp`)
```

f.

```
SELECT ename
FROM `emp`
WHERE eid = (
    SELECT managerid
    FROM `dept`
    WHERE budget = (
        SELECT MAX(budget)
        FROM `dept`))
```

g.

```
SELECT d.dname, AVG(e.salary)
FROM `dept` as d
LEFT JOIN `works` as w ON d.did = w.did
LEFT JOIN `emp` as e ON w.eid = e.eid
GROUP BY d.dname
HAVING SUM(e.salary) >= 50
```

h.

```
SELECT managerid, SUM(budget) as sumbudget
FROM `dept`
GROUP BY managerid
Having SUM(budget) >= ALL (
    SELECT SUM(budget)
    FROM `dept`
    GROUP BY managerid)
```

i.

```
SELECT ename, salary
FROM `emp` as e
INNER JOIN `works` as w ON e.eid = w.eid
WHERE salary <= (
    SELECT AVG(salary)
    FROM `emp` as e2
    INNER JOIN `works` as w2 ON e2.eid = w2.eid
    WHERE w2.did = w.did)
GROUP BY ename
```

j.

```
SELECT ename
FROM `emp`
WHERE eid IN (
    SELECT eid
    FROM `works`)
```

```
WHERE eid NOT IN(  
  SELECT eid  
  FROM `works`  
  WHERE did IN (  
    SELECT did  
    FROM `dept`  
    WHERE dname != "hardware")))
```