Write SQL statements for the following queries. Make sure that each of your queries returns a set but not a bag. In other words, make appropriate use of the DISTINCT clause where necessary.

1. Find the id, name, and salary of each employee who lives in Indianapolis and whose salary is in the range [30000, 50000].
   1. SELECT DISTINCT e.id, e.ename, e.salary
   2. FROM employee e
   3. WHERE e.salary >= 30000
   4. AND e.salary <= 50000
   5. AND e.city = 'Indianapolis';
2. Find the id and name of each employee who works in a city located in Chicago and who has a manager who lives in Bloomington.
   1. SELECT DISTINCT e.id, e.ename
   2. FROM (SELECT e.id, e.ename
   3. FROM employee e
   4. WHERE e.cname IN (SELECT c.cname
   5. FROM company c
   6. WHERE c.city = 'Chicago')) e
   7. WHERE e.id IN (SELECT m.eid
   8. FROM manages m
   9. WHERE m.mid IN (SELECT e.id
   10. FROM employee e
   11. WHERE e.city = 'Bloomington'));
3. Find the id and name of each employee who lives in the same city as at least one of his or her managers.
   1. SELECT DISTINCT e.id, e.ename
   2. FROM employee e, manages m
   3. WHERE e.id = m.eid
   4. AND m.mid IN (SELECT DISTINCT e2.id
   5. FROM employee e2
   6. WHERE e.city = e2.city)
   7. ORDER BY e.id;
4. Find the id and name of each employee who has at least 3 job skills.
5. SELECT DISTINCT e.id, e.ename
6. FROM employee e, jobskill j1, jobskill j2, jobskill j3
7. WHERE e.id = j1.id AND e.id = j2.id AND e.id = j3.id AND
8. j1.skill <> j2.skill AND j1.skill <> j3.skill AND j2.skill <> j3.skill
9. ORDER BY e.id;
10. Find the id, name, and salary of each manager who manages an employee who manages at least one other employee who has a programming job skill.
    1. SELECT DISTINCT e.id, e.ename, e.salary
    2. FROM (SELECT DISTINCT e.id
    3. FROM manages m, employee e, (SELECT DISTINCT e.id, j.skill
    4. FROM employee e, jobskill j, manages m
    5. WHERE e.id = j.id AND j.skill = 'Programming' AND e.id = m.eid) m2
    6. WHERE m.mid = e.id AND
    7. m2.id = m.eid) m2, manages m3, employee e
    8. WHERE m3.mid = e.id AND
    9. m3.eid = m2.id
    10. ORDER BY e.id;

6.For the pairs (id1, id2) of different employees who have a common man- ager.

* 1. SELECT DISTINCT m1.eid, m2.eid
  2. FROM employee e, manages m1, manages m2
  3. WHERE m1.mid = m2.mid AND m1.eid <> m2.eid
  4. ORDER BY m1.eid;

1. Find the cname of each company that does not have employees who live in Bloomington.
   1. SELECT DISTINCT c.cname
   2. FROM company c
   3. WHERE c.cname NOT IN (SELECT e.cname
   4. FROM employee e
   5. WHERE e.city = 'Bloomington');
2. For each company, list its name along with the ids of its employees who have the highest salary.
   1. SELECT DISTINCT c.cname, jbr.id
   2. FROM company c,
   3. (SELECT e.id, e.cname
   4. FROM employee e
   5. WHERE e.cname = cname AND NOT EXISTS (SELECT e1.salary
   6. FROM employee e1
   7. WHERE e1.salary > e.salary AND e.cname = e1.cname)) AS jbr
   8. WHERE c.cname = jbr.cname
   9. ORDER BY cname;
3. Find the id and name of each employee who does not have a manager with a salary higher than that of the employee.

SELECT DISTINCT e.id, e.ename

FROM employee e, manages m

WHERE m.mid NOT IN (SELECT e2.id

FROM employee e2

WHERE e2.salary >= e.salary);

1. Find the id and name of each manager who has none of the skills of the employees that he or she manages.
   1. SELECT DISTINCT m.mid
   2. FROM manages m
   3. WHERE m.mid NOT IN (SELECT e.id
   4. FROM employee e, manages m, jobskill j
   5. WHERE m.mid = e.id AND j.id = e.id
   6. AND j.skill IN (
   7. SELECT j.skill
   8. FROM employee e, manages m, jobskill j
   9. WHERE e.id = m.eid AND j.id = e.id));