DBMS LAB-3

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Question 1

1. $\pi_{(pid,pname,p.did,dname)}$(Program $\bowtie_{p.did=d.did}$ DEP)
   SELECT pid, pname,p.did,dname
   FROM program as p
   JOIN department as d ON (p.did=d.did);

2. $\pi_{(studid,s.name)}(\sigma_{(pname=MTech(IT)\ \&\ cpi>6.5)}$(Prog $\bowtie_{p.pid=s.progid}$ Student))
   SELECT studid,s.name
   FROM student as s
   JOIN program as p ON (p.pid=s.progid)
   WHERE (pname='MTech(IT)') and (cpi>6.5) ;

3. $\pi_{(studid,s.name)}(\sigma_{(p.did=IT\ or\ p.did=EE)}$(Prog $\bowtie_{p.pid=s.progid}$ Student))
   SELECT studid, s.name
   FROM student AS s
   JOIN program AS p ON (s.progid = p.pid)
   WHERE (p.did = 'IT') or (p.did = 'EE');

4. $\pi_{(studid,s.name)}(\sigma_{(pname=MSc(IT)\ \&\ batch=2012)}$(Student $\bowtie_{p.pid=s.progid}$ Prog $\bowtie_{p.did=d.did}$ Department))
   SELECT studid, s.name, cpi, d.did, dname
   FROM student AS s
   JOIN program AS p ON (s.progid = p.pid)
   JOIN department AS d ON (p.did = d.did)
   WHERE (batch='2012') and (pname = 'MSc(IT)');

Question 2

1. SELECT pname
   FROM project as p
   JOIN dept_locations as d
   ON (d.dno = p.dno)
   WHERE dlocation='Houston';
   $\pi_{(pname)}(\sigma_{(dlocation=Houston)}$(Project $\bowtie_{d.dno=p.dno}$ dept_locations))

2. SELECT e.*
   FROM employee AS e
   JOIN department AS d
   ON (e.dno = d.dno)
   JOIN employee as e2
   ON (e2.ssn=d.mgrssn)

WHERE e2.salary>e.salary;
$\pi_{(e.*)}(\sigma_{(e2.salary>e.salary)}$(Employee $\bowtie_{e.dno=d.dno}$
Department $\bowtie_{e2.ssn=d.mgrssn}$ Employee))

3. SELECT fname,dependent_name,d.sex,d.bdate,d.relationship
FROM employee as e
JOIN dependent as d
ON (e.ssn = d.essn)
WHERE (e.dno=1);
$\pi_{(fname,dependent_name,d.sex,d.bdate,d.relationship)}(\sigma_{e.dno=1}$(Employee $\bowtie_{e.ssn=d.essn}$
Dependent))

4. SELECT e.fname,e.minit,e.lname
FROM employee AS e
JOIN project AS p
ON (e.dno = p.dno)
JOIN works_on AS w
ON (p.pno = w.pno)
WHERE (e.dno=5) and (w.hours¿2) and (pname='ProductX');
$\pi_{(e.fname,e.minit,e.lname)}(\sigma_{((e.dno=5)\,\&\,(w.hours>2)\,\&\,(pname=ProductX))}$(Employee $\bowtie_{e.dno=d.dno}$
Project $\bowtie_{p.pno=w.pno}$ works_on))

Question 3

1. SELECT * FROM items where category=5 and saleprice>500;
$\sigma_{(category=5\,\&\,saleprice>500)}(items)$

2. SELECT invno
FROM customer as c
JOIN sales as s
ON (c.custno=s.customerno)
WHERE c.name ='Allen';
$\pi_{invno}(\sigma_{c.name=Allen}$(customer $\bowtie_{c.custno=s.customerno}$ sales))

3. SELECT i.name
FROM customer as c
JOIN sales as s on (c.custno=s.customerno)
JOIN salesdetails as sd on (s.invno=sd.invno)
JOIN items as i on (i.code=sd.itemcode)
WHERE c.name='John' and invdate='2011-08-23';
$\pi_{(i.name)}(\sigma_{(c.name=John\,\&\,invdate=2011-08-23)}$(customer $\bowtie_{c.custno=s.customerno}$
sales $\bowtie_{s.invno=sd.invno}$ salesdetails $\bowtie_{i.code=sd.itemcode}$ items))

4. SELECT c.name
FROM customer as c
JOIN sales as s on (c.custno=s.customerno)
JOIN salesdetails as sd on (s.invno=sd.invno)
JOIN items as i on (i.code=sd.itemcode)

WHERE i.code='c1' ;
$\pi_{(c.name)}(\sigma_{(i.code=c1)}$(customer $\bowtie_{c.custno=s.customerno}$
sales $\bowtie_{s.invno=sd.invno}$ salesdetails $\bowtie_{i.code=sd.itemcode}$ items))

Question 4

1. SELECT coursename
   FROM instructor AS i
   JOIN offers AS o
   ON (i.instructorid = o.instructorid)
   JOIN course AS c
   ON (c.courseno = o.courseno)
   WHERE (instructorname = 'P M Jaat') and acadyear=2010 and
   (semester='2' or semester='4');
   $\pi_{(coursenamename)}(\sigma_{(instructorname=PM Jaat)\ \&\ acadyear=2010\ \&\ (semester=2\ or\ semester=4)}$(instructor
   $\bowtie_{i.instructorid=o.instructorid}$ offers $\bowtie_{c.courseno=o.courseno}$ course))

2. SELECT studentid
   FROM registers AS r
   WHERE r.courseno='MT101' or r.courseno='MT104';
   $\pi_{studentid}(\sigma_{(r.courseno='MT101'\ or\ r.courseno='MT104')}(registers))$

3. SELECT studentid FROM registers AS r
   WHERE r.courseno='MT101'
   except
   SELECT studentid
   FROM registers AS r2
   WHERE r2.courseno = 'MT104';
   $\pi_{studentid}(\sigma_{r.courseno=MT101}(registers)) -$
   $\pi_{studentid}(\sigma_{r.courseno=MT104}(registers))$

4. SELECT s.studentid, s.name, s.cpi
   FROM student AS s
   JOIN registers AS r
   ON (s.studentid = r.studentid)
   WHERE (batch=2008) and (r.courseno='MT101')
   INTERSECT
   SELECT s.studentid, s.name, s.cpi
   FROM student AS s
   JOIN registers AS r
   ON (s.studentid = r.studentid)
   WHERE (batch=2008) and (r.courseno='MT104');
   $\pi_{s.studentid,s.name,s.cpi}(\sigma_{(batch=2008\ \&\ r.courseno=MT101)}$(students $\bowtie_{s.studentid=r.studentid}$
   registers)) $\cap$
   $\pi_{s.studentid,s.name,s.cpi}(\sigma_{(batch=2008\ \&\ r.courseno=MT104)}$(students $\bowtie_{s.studentid=r.studentid}$
   registers))

5. SELECT s.studentid, s.name, s.cpi
   FROM student AS s
   JOIN registers AS r
   ON (s.studentid = r.studentid)
   WHERE batch=2008 and (semester='1'or semester='3') and
   (grade='AA' or grade='AB');
   $\pi_{s.studentid,s.name,s.cpi}(\sigma_{(batch=2008\ \&\ (semester=1\ or\ semester=3)\ \&\ (grade=AA\ or\ grade=AB))}$
   (students $\bowtie_{s.studentid=r.studentid}$ registers))

6. SELECT s.studentid
   FROM student AS s
   JOIN program as p
   ON (s.progid=p.progid)
   JOIN result as r
   ON (r.studentid = s.studentid)
   WHERE batch=2007 and progname='Btech(CS)' and spi≥6;
   $\pi_{s.studentid}(\sigma_{(batch=2007\ \&\ progname='Btech(CS)'\ \&\ spi>6)}$(student $\bowtie_{s.progid=p.progid}$
   program $\bowtie r.studentid = s.studentid$result))