

14.  $\{(p.pid, p.pname) \mid \text{student}(p) \wedge \text{hasManager}(h) \wedge \text{worksFor}(w) \wedge p.city = \text{'Bloomington'} \wedge w.pid = p.pid \wedge p.pid = h.eid \wedge w.salary > 30000\}$

15.  $\{(p.pid, p.pname) \mid \text{person}(p) \wedge \text{hasManager}(h) \wedge p.pid = h.eid \wedge \neg \exists p1 \in \text{person}, p2 \in \text{person}, h1 \in \text{hasManager}(p.pid = p1.pid \wedge p1.pid = h1.eid \wedge p2.pid = h1.mid \wedge p1.city = p2.city)\}$

16.  $\{(p.pid, p.pname, w.salary) \mid \text{Person}(p) \wedge \text{hasManager}(h) \wedge \text{worksFor}(w) \wedge p.pid = h.eid \wedge w.pid = h.eid \wedge (\exists h1 \in \text{hasManager}, ps1 \in \text{personSkill} (h.eid = h1.eid \wedge h.mid \neq h1.mid \wedge h.mid = ps1.pid \wedge h1.mid = ps2.pid \wedge ps1.skill \neq \text{'Networks'}))\}$

17.  $\{(w.cname, w.salary) \mid \text{worksFor}(w) \wedge \neg \exists w1 \in \text{worksFor}(w.cname = w1.cname \wedge w.salary < w1.salary)\}$

18.  $\neg \exists w \in \text{worksFor}(\neg \exists ps1 \in \text{personSkill}, ps2 \in \text{personSkill}(ps1.pid = w.pid \wedge ps2.pid = w.pid \wedge ps1.skill \neq ps2.skill))$

19.  $\exists h \in \text{hasManager}(\exists w1 \in \text{worksFor}, w2 \in \text{worksFor}(w1.pid = h.eid \wedge w2.pid = h.mid \wedge w1.salary > w2.salary))$

20.  $\neg \exists h \in \text{hasManager}(\neg \exists w1 \in \text{worksFor}, w2 \in \text{worksFor}(w1.pid = h.eid \wedge w2.pid = h.mid \wedge w1.cname = w2.cname))$