

1. Specify the query using relational algebra. (20 points)

“John Smith” is a department manager. His department controls many projects. List the name of those projects controlled by his department.

Answer:

dManager $\longleftarrow \sigma_{FNAME = 'John' \text{ AND } LNAME = 'Smith'} (EMPLOYEE)$

dMgrSSN $\longleftarrow \pi_{SSN} (dManger)$

mDep $\longleftarrow dMgrSSN \triangleright \triangleleft (SSN = MGRSSN) DEPARTMENT$

mDepNum $\longleftarrow \pi_{DNUMBER} (mDep)$

mProjects $\longleftarrow mDepNum \triangleright \triangleleft (DNUMBER = DNUM) PROJECTS$

Result $\longleftarrow \pi_{PNAME} (mProjects)$