Problema 5.1:

a) π Pname, Fname, Lname, Ssn (((works-on) $\bowtie$ Essn = Ssn (employee)) $\bowtie$ Pno = Pnumber (project))

b) σ Fname = 'Carlos' $\wedge$ Minit = 'D' $\wedge$ Lname = 'Gomes' (employee)

π Fname ((employee) $\bowtie$ Super_ssn = S_Ssn (π S.Ssn $\leftarrow$ Ssn (σ Fname = 'Carlos' $\wedge$ Minit = 'D' $\wedge$ Lname = 'Gomes' (employee))))

c) γ Pname ; TotalHours $\leftarrow$ sum (Hours) ((works-on) $\bowtie$ Pno = Pnumber (project))

d) π Fname, Minit, Lname ((σ Dno = 3 (employee)) $\bowtie$ Ssn = Essn (σ Hours > 20 (works-on)) $\bowtie$ Pname = 'Aveiro Digital' (project))

e) π Fname ((σ Ssn = null (employee)) $\bowtie$ Ssn = Essn (works-on))

f) γ Dname ; SalarioMedio $\leftarrow$ avg (Salary) ((department) $\bowtie$ Dnumber = Dno (σ Sex = 'F' (employee)))

g) σ Count > 1 (γ Fname, Lname ; Count $\leftarrow$ count (Essn) ((dependent) $\bowtie$ Essn = Ssn (employee)))

h) π Essn (σ Dependent_name = null (dependent $\bowtie$ Essn = Ssn ((department) $\bowtie$ Mgr_ssn = Ssn (employee))))

i) π Fname, Lname, Address ((employee $\bowtie$ Ssn = Essn (works-on $\bowtie$ Pno = Pnumber (σ Plocation = 'Aveiro' (project)) $\bowtie$ Dno = Dnumber (σ Dlocation $\neq$ 'Aveiro' (department $\bowtie$ dept_locations)))