

Homework 5

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Problem 1

Retrieve the first and last names of employees that work in departments 1 or 4.

$$\Pi_{(Fname, Lname)}(\sigma_{(Dno=4 \text{ or } Dno=1)}(EMPLOYEE))$$

Fname	Lname
Alicia	Zelaya
Jennifer	Wallace
Ahmad	Jabbar
James	Borg

Problem 2

Retrieve the names of all departments with a location in 'Stafford'.

$$\Pi_{Dname}(\sigma_{Dlocation=Stafford}(DEPARTMENT \bowtie DEPT_LOCATIONS))$$

Dname
Administration

Problem 3

Retrieve the SSNs of all employees that work more than 10 hours per week on project number 1.

$$\Pi_{Essn}(\sigma_{(Pno=1 \text{ and } Hours>10)}(WORKS_ON))$$

Essn
123456789
453453453

Problem 4

Retrieve the first and last names of employees in department 5 who work more than 10 hours per week on the 'ProductX' project.

$$\begin{aligned} EMP_PROJ &\leftarrow EMPLOYEE \bowtie_{Ssn=Essn} WORKS_ON \bowtie_{pno=Pnumber} PROJECT \\ &\Pi_{Fname, Lname}(\sigma_{Pname=ProductX \text{ and } Hours>10}(EMP_PROJ)) \end{aligned}$$

Fname	Lname
John	Smith
Joyce	English

Problem 5

Retrieve the first and last names of employees that are directly supervised by 'Franklin Wong'.

$$\begin{aligned} \text{FWSsn} &\leftarrow \Pi_{\text{Ssn}}(\sigma_{\text{Fname}=\text{Franklin and Lname}=\text{Wong}}(\text{EMPLOYEE})) \\ &\Pi_{\text{Fname, Lname}}(\sigma_{\text{Super_ssn}=\text{FWSsn}}(\text{EMPLOYEE})) \end{aligned}$$

Fname	Lname
John	Smith
Ramesh	Narayan
Joyce	English

Problem 6

For each project, list the project name and the total hours per week (by all employees) spent on that project.

$$\begin{aligned} \text{HOUR_SUM} &\leftarrow \text{Pno} \mathcal{F}_{\text{SUM}(\text{Hours}) \text{ as Sumhours}}(\text{WORKS_ON}) \\ &\Pi_{\text{Pname, Sumhours}}(\text{HOUR_SUM} \bowtie_{\text{Pno}=\text{Pnumber}} \text{Project}) \end{aligned}$$

Pname	Sumhours
ProductX	52.5
ProductY	37.5
ProductZ	50
Computerization	55
Reorganization	25
Newbenefits	55

Problem 7

Retrieve the SSNs of employees who work on every project.

$$\Pi_{\text{Essn}, \text{Pno}}(\text{WORKS_ON}) \div \Pi_{\text{Pnumber}}(\text{PROJECT})$$

Essn	Pno
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Problem 8

For each department, retrieve the department name, and the maximum salary of employees working in that department.

$$\begin{aligned} & \text{MAX_SALARY} \leftarrow \text{Dno} \mathcal{F}_{\text{MAX}(\text{Salary}) \text{ as Maxsalary}}(\text{EMPLOYEE}) \\ & \Pi_{\text{Dname}, \text{Maxsalary}}(\text{MAX_SALARY} \bowtie_{\text{Dno}=\text{Dnumber}} \text{DEPARTMENT}) \end{aligned}$$

Dname	Maxsalary
Research	40000
Administration	43000
Headquarters	55000