

Scenario 1:

Symbols: Project: Π

Select: σ

And: \wedge

Union: \cup

Not: \neg

Intersection: \cap

Set Difference: $-$

Rename: ρ

Cartesian Product: \times

Inner Join: \bowtie

Outer Join:

a) Full: \bowtie_{full}

b) Left: \bowtie_{left}

c) Right: \bowtie_{right}

Assignment: \leftarrow

1. $\Pi \text{ name (Employee)}$
2. $\Pi \text{ name , telno}(\sigma \text{ post} = \text{'junior engineer'} \text{ (Employee)})$
3. $\Pi \text{ name , post}(\sigma \text{ city} = \text{'Mumbai'} \wedge \text{sal} > 10,000 \text{ (Employee)})$
4. $\Pi \text{ name } (\sigma \text{ pno}=123 \wedge \text{Assigned.eno}=\text{Employee.eno} \text{ (Assigned X Employee)})$
OR
 $\Pi \text{ name } (\sigma \text{ Assigned.eno}=\text{Employee.eno} \text{ (Employee X } (\sigma \text{ pno}=123 \text{ (Assigned))})$
OR
 $\Pi \text{ name (Employee } \bowtie (\sigma \text{ pno}=123 \text{ (Assigned)))}$
5. $\Pi \text{ location } (\sigma \text{ eno}=5 \wedge \text{Assigned.pno}=\text{project.pno} \text{ (Project X Assigned)})$
OR
 $\Pi \text{ location } (\sigma \text{ Assigned.pno}=\text{project.pno} \text{ (Project X } (\sigma \text{ eno}=5 \text{ (Assigned))})$
6. $\Pi \text{ city } (\sigma \text{ location} = \text{'Dadar'} \wedge \text{Eno} = \text{Managerid} \text{ (Project X Employee)})$
OR
 $A \leftarrow (\sigma \text{ location} = \text{'Dadar'} \text{ (Project)})$
 $\Pi \text{ city}(\sigma \text{ Employee.eno}=A.\text{Managerid}(\text{Employee X A}))$

7.

$\Pi \text{ eno } (\sigma \text{ date} > \text{DOJ} \wedge \text{Assigned.pno} = 123 (\text{Assigned X } (\sigma \text{ eno} = \text{managerid}(\text{Employee X } (\sigma \text{ pno} = 123 (\text{Project}))))))$

$A \leftarrow (\sigma \text{ pno} = 123 (\text{Project}))$

$B \leftarrow (\sigma \text{ eno} = \text{managerid} (\text{Employee X A}))$

$C \leftarrow (\sigma \text{ date} > \text{DOJ} \wedge \text{Assigned.pno} = 123 (\text{Assigned X B}))$

$R \leftarrow \Pi \text{ eno } (C)$

8. $\Pi \text{ Name } (\sigma \text{ Name} = \text{'XYZ'} \wedge \text{E.city} = \text{Employee.city} \wedge \text{E.Name} \neq \text{'XYZ'} (\text{Employee X } \rho(\text{E}, \text{Employee}))$

|
V

Rename operator

Or

$\text{temp} \leftarrow \Pi \text{ city} (\sigma \text{ Name} = \text{'XYZ'} (\text{Employee}))$

$\Pi \text{ eno} (\sigma \text{ Employee.name} \neq \text{'XYZ'} \wedge \text{temp.city} = \text{Employee.city} (\text{Employee X temp}))$

9. $\text{Employee} \bowtie \Pi \text{ Eno } (\sigma \text{ pno} = 123 (\text{Assigned}))$

10. $\Pi \text{ name } (\sigma \text{ city} = \text{location} (\text{Project} \bowtie \text{Assigned} \bowtie \text{Employee}))$

OR

$A \leftarrow \text{Project} \bowtie \text{Assigned}$

$\Pi \text{ Name} (\sigma \text{ Employee.city} = A.\text{location} (\text{Employee} \bowtie A))$

11. Step 1: Find employee whose name is xyz

$A \leftarrow \sigma \text{ name} = \text{'xyz'} (\text{Employee})$

Step 2: Projects on which xyz is working

$B \leftarrow \Pi \text{ pno } (\text{Assigned} \bowtie A)$

Step 3: Employees working on that project

$C \leftarrow \Pi \text{ eno } (\text{Assigned} \bowtie B)$

Step 4: Name of Employees working on the project

$\Pi \text{ eno, name } (\sigma \text{ name} \neq \text{'xyz'} (\text{Employee} \bowtie C))$

12. $\Pi pno (\sigma \text{ Managerid}=\text{eno} \wedge \text{city}=\text{location} (\text{Project X Employee}))$

13.

Employee

Name	Salary
A	10k
B	20k
C	30k

E

E.Name	E.Salary
A	10k
B	20k
C	30k

Solution :

Employee X E

Name	Salary	E.Name	E.Sal
A	10k	A	10k
A	10k	B	20k
A	10k	C	30k
B	20k	A	10k
B	20k	B	20k
B	20k	C	30k
C	30k	A	10k
C	30k	B	20k
C	30k	C	30k

$\Pi \text{Emp.sal} (\text{Emp}) - \Pi \text{E.sal} (\sigma \text{Emp.sal} > \text{E.sal} (\text{Employee X } \rho(\text{E}, \text{Employee})))$

OR

$\Pi \text{ Emp.sal (Emp) - } \Pi \text{ Emp.sal}(\sigma \text{ Emp.sal} < \text{E.sal (Employee X } \rho(\text{E, Employee})))$

14. $\Pi \text{ Emp.sal (Emp) - } \Pi \text{ Emp.sal}(\sigma \text{ Emp.sal} > \text{E.sal (Employee X } \rho(\text{E, Employee})))$

15. $\Pi \text{ eno (Employee) - } \Pi \text{ eno (Assigned)}$

16. **$A \leftarrow \text{Assigned}$**

$B \leftarrow \Pi \text{ pno (Project)}$

$A \div B$

17. $\Pi \text{ task}(\sigma \text{ deadline} = \text{"11-02-2021"} (\text{Assigned}))$

18. **$A \leftarrow (\sigma \text{ deadline} = \text{"11-02-2021"} (\text{Project} \bowtie \text{Assigned}))$**

$\Pi \text{ Name } (\sigma \text{ eno} = \text{Managerid (A X Employee)})$

19. **$A \leftarrow (\Pi \text{ Managerid (Project)})$**

$\Pi \text{ eno (Employee) - A}$

20. $\Pi \text{ eno (Employee) - } \Pi \text{ eno (Assigned)}$

21. $\Pi \text{ pno } (\sigma \text{ deadline} < \text{"11-02-2021"} (\text{Assigned}))$

22. $\Pi \text{ Name } (\sigma \text{ deadline} = \text{"11-02-2021"} (\text{Employee} \bowtie \text{Assigned}))$