$\Pi_{ENO}\sigma_{RESP=\text{“Analyst”}\wedge\neg(PNO=\text{“P2”}\vee DUR=12)\wedge PNO/=\text{“P2”})\wedge DUR=12}ASG$

Consider only the selection predicate and note that this is already in conjunctive normal form. First push the negation inside the second conjunct term to get

RESP=“Analyst” ∧¬PNO = “P2” ∧¬DUR = 12 ∧ PNO ≠ “P2” ∧ DUR = 12

Notice that

$$DUR = 12 \wedge \neg DUR = 12 \Leftrightarrow false$$

Also note that

$$\neg PNO = \text{“P2”} \Leftrightarrow PNO \neq \text{“P2”}$$

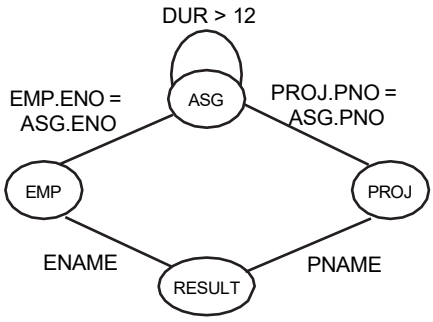
which results in

$$PNO \neq \text{“P2”} \wedge PNO \neq \text{“P2”} \Leftrightarrow PNO \neq \text{“P2”}$$

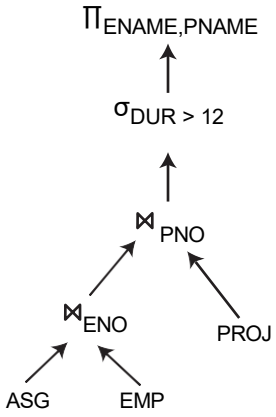
Thus, the predicate becomes

1.1) 10 $RESP=\text{“Analyst”} \wedge PNO \neq \text{“P2”} \wedge false$ or false

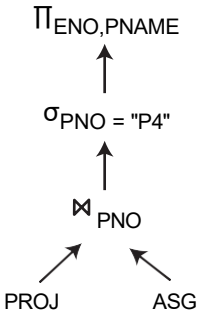
This reduces to *false* and, therefore, the query result would be empty. 1.2) 10



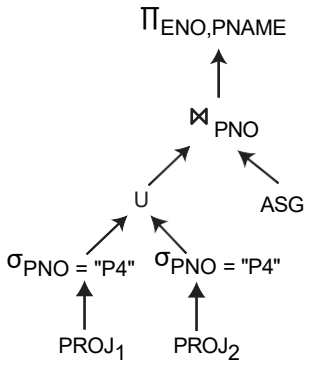
2.1) 13



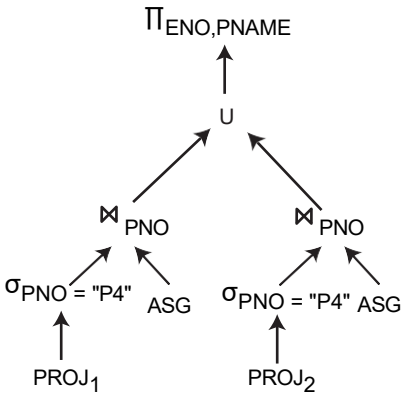
2.2) 13



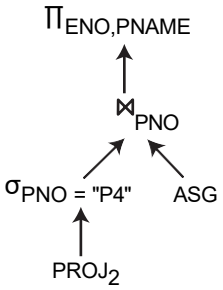
3.1) 12


$\Pi_{ENO,PNAME}$
$\bowtie_{PNO}$
U
ASG
$\sigma_{PNO = "P4"}$
$\sigma_{PNO = "P4"}$
$PROJ_1$
$PROJ_2$

3.2) 13


$\Pi_{ENO,PNAME}$
U
$\bowtie_{PNO}$
$\bowtie_{PNO}$
$\sigma_{PNO = "P4"}$
ASG
$\sigma_{PNO = "P4"}$
ASG
$PROJ_1$
$PROJ_2$

3.3) 14



3.4) 15