Worksheet - 3.3

Consider the following query on our Engineering database:

Select ENAME, SAL FROM, PROJ, ASG, PAY
Where EMP.ENO = ASG.ENO
AND EMP. TITLE = PAY. TITLE
AND (BUDGET > 200000 OR DUR > 24)
AND ASG.PNO = PROJ.PNO AND (DUR > 24 OR
PNAME = "CAD/CAM")

Compose the selection predicate corresponding to the WHERE clause and transform it, using idempotency rules, into the simplest equivalent form. Furthermore, compose an operator tree corresponding to the query and transform it, using relational algebra transformation rules, to equivalent forms.

Sol. The selection predicate of the query is following:

(BUDGET > 200000 ∨ DUR > 24) ∧ (DUR > 24 ∨ PNAME = "CAD/CAM")

Note, that this is in conjunctive normal form. If it is converted to disjunctive normal form and then simplify for the two DUR > 24, it becomes

DUR > 24 ∨ (BUDGET > 200000 ∧ PNAME = "CAD/CAM")

The relational operator tree corresponding to the simplified query is as follows: