Assignment 6 - Relational Algebra

"Muhammad Bimatara Indianto / 5025221260"

1. Select nama, alamat, and gaji from employee in "Research" department.
   - PEG ← σ (PEGAWAI)
   - DEP ← σ (Departemen)
   - JOIN_PEG_DEP ← $\sigma_{DNO=Dnomor}$(PEG X DEP)
   - RES_PEG ← $\sigma_{DNama="Research"}$ (JOIN_PEG_DEP)
   - $\pi_{nama, alamat, gaji}$(RES_PEG)

2. Select nama, alamat, and noKTP from employee that is a supervisor of other employees.
   - PEG_NAMA ← $\pi_{nama, NoKTP, alamat, NoKTPKepala}$ (PEGAWAI)
   - PEG(NM_KEPALA, KTPKEPALA) ← $\pi_{nama, NoKTP}$ (PEGAWAI)
   - JOIN_PEG_SUP ← $\sigma_{NoKTPKepala = KTPKEPALA}$ (PEG_NAMA X PEG)
   - $\pi_{nama, alamat, NoKTP}$ (JOIN_PEG_SUP)

3. Select nama and noKTP from employee with its supervisor's nama and noKTP.
   - PEG_NAMA ← $\pi_{nama, NoKTP, NoKTPKepala}$ (PEGAWAI)
   - PEG(NM_KEPALA, KTPKEPALA) ← $\pi_{nama, NoKTP,}$ (PEGAWAI)
   - JOIN_PEG_SUP ← $\sigma_{NoKTPKepala = KTPKEPALA}$ (PEG X PEG_NAMA)
   - $\pi_{nama, NoKTP, NM\_KEPALA, KTPKEPALA}$ (JOIN_PEG_SUP)

4. Select nama, alamat, and noKTP that is a manager in Department 4.
   - DEP4 ← $\sigma_{Dnomor=4}$ (Departemen)
   - PEG ← $\pi_{nama, alamat, NoKTP}$(PEGAWAI)
   - JOIN_PEG_DEP ← $\sigma_{NoKTP = NOKTP\_MGR}$(PEG X DEP4)
   - $\pi_{nama, alamat, NoKTP}$(JOIN_PEG_DEP)

5. Select nama, alamat, and nama_proyek from employee that works in "ProductZ" project.
   - PROD_Z ← $\sigma_{Pnama = "ProductZ"}$ (PROYEK)
   - BEKERJA ← σ (Bekerja_pada)
   - BEKERJA_Z ← $\sigma_{PROD\_Z.Pnomor = BEKERJA.Pnomor}$ (PROD_Z X BEKERJA)
   - KTP_Z ← $\pi_{NoKTP, Pnama}$(BEKERJA_Z)
   - PEG ← σ (PEGAWAI)
   - JOIN_PEG_KTP ← $\sigma_{PEG.NoKTP = KTP\_Z.NoKTP}$(PEG X KTP_Z)
   - $\pi_{nama, alamat, Pnama}$(JOIN_PEG_KTP)

6. Select nama_proyek controlled by “Research” department.
   - RES_PROJ ← $\sigma_{\text{Dnama = “Research”}}$ (PROYEK)
   - PROYEK ← σ (PROYEK)
   - JOIN_RES_PROJ ← $\sigma_{\text{Dnum = Dnomor}}$(PROYEK X RES_PROJ)
   - π_{Pnama}(JOIN_RES_PROJ)

7. Select nama_proyek located in “Houston” or ” Stafford”.
   - HOUS_PROJ ← $\sigma_{\text{Plokasi = “Houston”}}$ (PROYEK)
   - STAFF_PROJ ← $\sigma_{\text{Plokasi = “Houston”}}$ (PROYEK)
   - UNIONPROJ ← (HOUS_PROJ ∪ STAFF_PROJ)
   - π_{Pnama}(UNIONPROJ)

8. Select name and location of the project which “John” work on it.
   - JOHN_PEG ← $\sigma_{\text{NmDepan = ”John”}}$ (PEGAWAI)
   - PROYEK ← σ (PROYEK)
   - JOIN_JOHN_PROJ ← $\sigma_{\text{DNO = Dnum}}$(JOHN_PEG X PROYEK)
   - $\pi_{\text{Pnama, Plokasi}}$(JOIN_JOHN_PROJ)

9. Select nama and alamat of male employee with salary less than 40000
   - MALE_PEG ← $\sigma_{\text{JenisKel = ”L”}}$ (PEGAWAI)
   - COND_PEG ← $\sigma_{\text{Gaji = 40000}}$ (MALE_PEG)
   - $\pi_{\text{NmDepan, Alamat}}$(COND_PEG)

10. Select nama and gaji of “Administration” department manager.
    - ADMIN_MAN ← $\sigma_{\text{Dnama = “Administrator”}}$ (Departemen)
    - PEG ← σ (PEGAWAI)
    - JOIN_PEG_ADMIN ← $\sigma_{\text{NoKTP = NOKTP_MGR}}$ (PEG X ADMIN_MAN)
    - $\pi_{\text{NmDepan, Gaji}}$ (JOIN_PEG_ADMIN)

Assignment 6 - Relational Algebra

“Muhammad Bimatara Indianto / 5025221260”

1. Select nama, alamat, and gaji from employee in “Research” department.
   - PEG ← σ (PEGAWAI)
   - DEP ← σ (Departemen)
   - JOIN_PEG_DEP ← $\sigma_{\text{DNO=Dnomor}}$(PEG X DEP)
   - RES_PEG ← $\sigma_{\text{DNama=”Research”}}$ (JOIN_PEG_DEP)
   - $\pi_{\text{nama, alamat, gaji}}$(RES_PEG)

2. Select nama, alamat, and noKTP from employee that is a supervisor of other employees.
   - PEG_NAMA ← $\pi_{\text{nama, NoKTP, alamat, NoKTPKepala}}$ (PEGAWAI)
   - PEG(NM_KEPALA, KTPKEPALA) ← $\pi_{\text{nama, NoKTP}}$ (PEGAWAI)
   - JOIN_PEG_SUP ← $\sigma_{\text{NoKTPKepala = KTPKEPALA}}$ (PEG_NAMA X PEG)
   - $\pi_{\text{nama, alamat, NoKTP}}$ (JOIN_PEG_SUP)

3. Select nama and noKTP from employee with its supervisor's nama and noKTP.
   - PEG_NAMA ← $\pi_{\text{nama, NoKTP, NoKTPKepala}}$ (PEGAWAI)
   - PEG(NM_KEPALA, KTPKEPALA) ← $\pi_{\text{nama, NoKTP,}}$ (PEGAWAI)
   - JOIN_PEG_SUP ← $\sigma_{\text{NoKTPKepala = KTPKEPALA}}$ (PEG X PEG_NAMA)
   - $\pi_{\text{nama, NoKTP, NM_KEPALA, KTPKEPALA}}$ (JOIN_PEG_SUP)

4. Select nama, alamat, and noKTP that is a manager in Department 4.
   - DEP4 ← $\sigma_{\text{Dnomor=4}}$ (Departemen)
   - PEG ← $\pi_{\text{nama, alamat, NoKTP}}$(PEGAWAI)
   - JOIN_PEG_DEP ← $\sigma_{\text{NoKTP = NOKTP_MGR}}$(PEG X DEP4)
   - $\pi_{\text{nama, alamat, NoKTP}}$(JOIN_PEG_DEP)

5. Select nama, alamat, and nama_proyek from employee that works in "ProductZ" project.
   - PROD_Z ← $\sigma_{\text{Pnama = "ProductZ"}}$ (PROYEK)
   - BEKERJA ← σ (Bekerja_pada)
   - BEKERJA_Z ← $\sigma_{\text{PROD_Z.Pnomor = BEKERJA.Pnomor}}$ (PROD_Z X BEKERJA)
   - KTP_Z ← $\pi_{\text{NoKTP, Pnama}}$(BEKERJA_Z)
   - PEG ← σ (PEGAWAI)
   - JOIN_PEG_KTP ← $\sigma_{\text{PEG.NoKTP = KTP_Z.NoKTP}}$(PEG X KTP_Z)
   - $\pi_{\text{nama, alamat, Pnama}}$(JOIN_PEG_KTP)

6. Select nama_proyek controlled by "Research" department.
   - RES_PROJ ← $\sigma_{\text{Dnama = "Research"}}$ (PROYEK)
   - PROYEK ← σ (PROYEK)
   - JOIN_RES_PROJ ← $\sigma_{\text{Dnum = Dnomor}}$(PROYEK X RES_PROJ)
   - π_{Pnama}(JOIN_RES_PROJ)

7. Select nama_proyek located in "Houston" or " Stafford".
   - HOUS_PROJ ← $\sigma_{\text{Plokasi = "Houston"}}$ (PROYEK)
   - STAFF_PROJ ← $\sigma_{\text{Plokasi = "Houston"}}$ (PROYEK)
   - UNIONPROJ ← (HOUS_PROJ $\cup$ STAFF_PROJ)

- π_{Pnama}(UNIONPROJ)

8. Select name and location of the project which “John” work on it.
   - JOHN_PEG ← $\sigma_{NmDepan = "John"}$ (PEGAWAI)
   - PROYEK ← σ (PROYEK)
   - JOIN_JOHN_PROJ ← $\sigma_{DNO = Dnum}$(JOHN_PEG X PROYEK)
   - $\pi_{Pnama, Plokasi}$(JOIN_JOHN_PROJ)

9. Select nama and alamat of male employee with salary less than 40000
   - MALE_PEG ← $\sigma_{JenisKel = "L"}$ (PEGAWAI)
   - COND_PEG ← $\sigma_{Gaji = 40000}$ (MALE_PEG)
   - $\pi_{NmDepan, Alamat}$(COND_PEG)

10. Select nama and gaji of “Administration” department manager.
    - ADMIN_MAN ← $\sigma_{Dnama = "Administrator"}$ (Departemen)
    - PEG ← σ (PEGAWAI)
    - JOIN_PEG_ADMIN ← $\sigma_{NoKTP = NOKTP\_MGR}$ (PEG X ADMIN_MAN)
    - $\pi_{NmDepan, Gaji}$ (JOIN_PEG_ADMIN)