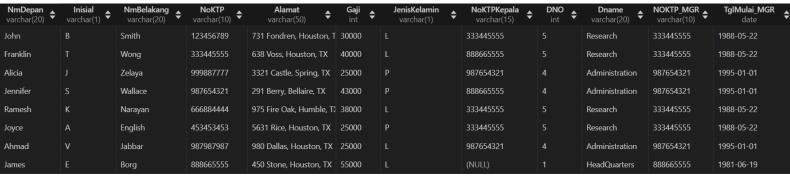
Mochammad Irfan Sandy / 5025241127 / SBD C

Relational Algebra

- Select Nama, Alamat, and Gaji from employee in "Research" department.
 - Employee_Departement ← Employee ⋈ Departement (Natural Join)



2. Research_Employee ← σ_{Dname='Research'} (Employee_Departement)

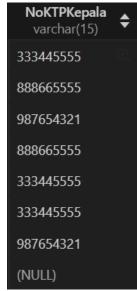
NmDepan varchar(20) ♦	Inisial varchar(1) ♦	NmBelakang varchar(20)	NoKTP varchar(10) ♦	Alamat varchar(50)	Gaji int ♦	JenisKelamin varchar(1) ♦	NoKTPKepala varchar(15) ♦	DNO total	Dname varchar(20) ♦	NOKTP_MGR varchar(10)	TglMulai_MGR date
John	В	Smith	123456789	731 Fondren, Houston, TX	30000		333445555		Research	333445555	1988-05-22
Franklin		Wong	333445555	638 Voss, Houston, TX	40000		888665555		Research	333445555	1988-05-22
Ramesh	К	Narayan	666884444	975 Fire Oak, Humble, TX	38000		333445555		Research	333445555	1988-05-22
Joyce	Α	English	453453453	5631 Rice, Houston, TX	25000	Р	333445555		Research	333445555	1988-05-22

3. Hasil ← π_{NmDepan, NmBelakang, Alamat, Gaji} (Research_Employee)

nmdepan varchar(20)	‡	nmbelakang varchar(20)	alamat varchar(50) ♦	gaji int ♦
John		Smith	731 Fondren, Houston, TX	30000
Franklin		Wong	638 Voss, Houston, TX	40000
Ramesh		Narayan	975 Fire Oak, Humble, TX	38000
Joyce		English	5631 Rice, Houston, TX	25000

2. Select nama, alamat, and noKTP from employee that is a supervisor of other employees.

1. SupervisorNoKTP $\leftarrow \pi_{NoKTPKepala}$ (Employee)



2. Supervisor $\leftarrow \sigma_{NoKTP \text{ in }NOKTP_MGR}$ (Employee)

NmDepan varchar(20) ♦	Inisial varchar(1) ◆	NmBelakang varchar(20) ◆	NoKTP varchar(10) ♦	Alamat varchar(50) ♦	Gaji int ♦	JenisKelamin varchar(1) ♦	NoKTPKepala varchar(15) ◆	DNO int ♦
Franklin	Т	Wong	333445555	638 Voss, Houston, TX	40000	L	888665555	5
Jennifer	S	Wallace	987654321	291 Berry, Bellaire, TX	43000	Р	888665555	4
James	E	Borg	888665555	450 Stone, Houston, TX	55000	L	(NULL)	1

3. Hasil ← π_{NmDepan, NmBelakang, Alamat, NoKTP} (Supervisor)

nmdepan varchar(20) ♦	nmbelakang varchar(20)	alamat varchar(50) ♦	NoKTP varchar(10) ♦
Franklin	Wong	638 Voss, Houston, TX	333445555
Jennifer	Wallace	291 Berry, Bellaire, TX	987654321
James	Borg	450 Stone, Houston, TX	888665555

- 3. Select nama and noKTP from employee with its supervisor's nama and noKTP.
 - 1. Employee_Supervisor ← Employee ⋈ Employee.NoKTPKepala = Employee.NoKTP (Equi-join)



2. Hasil(Nama_Employee, NoKTP_Employee, Nama_Supervisor, NoKTP_Supervisor) ← π_{Nama_Employee, NoKTP_Employee, Nama_Supervisor, NoKTP_Supervisor} (Employee_Supervisor)

Nama_Employee varchar(41) ◆	NoKTP_Employee varchar(10) ◆	Nama_Supervisor varchar(41)	NoKTP_Supervisor varchar(10) ◆
John Smith	123456789	Franklin Wong	333445555
Franklin Wong	333445555	James Borg	888665555
Alicia Zelaya	999887777	Jennifer Wallace	987654321
Jennifer Wallace	987654321	James Borg	888665555
Ramesh Narayan	666884444	Franklin Wong	333445555
Joyce English	453453453	Franklin Wong	333445555
Ahmad Jabbar	987987987	Jennifer Wallace	987654321
James Borg	888665555	(NULL)	(NULL)

- 4. Select nama, alamat, and noKTP that is a manager in Department 4.
 - 1. Departement_Manager ← Departement ⋈ Departement.NOKTP_MGR = Employee.NoKTP (Equi-join)

Dname varchar(20) ◆	Dnomor int ♦	NOKTP_MGR varchar(10) ◆	TglMulai_MGR date ♦	NmDepan varchar(20) ◆	Inisial varchar(1) ♦	NmBelakang varchar(20) ◆	NoKTP varchar(10) ◆	Alamat varchar(50)	Gaji int	enisKelamin varchar(1)	NoKTPKepala varchar(15)
Research		333445555	1988-05-22	Franklin		Wong	333445555	638 Voss, Houston, TX	40000		888665555
Administration	4	987654321	1995-01-01	Jennifer		Wallace	987654321	291 Berry, Bellaire, TX	43000		888665555
HeadQuarters		888665555	1981-06-19	James		Borg	888665555	450 Stone, Houston, TX	55000		(NULL)

2. Hasil $\leftarrow \pi_{Nama, Alamat, NoKTP}(\sigma_{Dnomor=4} (Departement_Manager))$

Nama	Alamat	NoKTP
varchar(41) ♦	varchar(50) ◆	varchar(10) ♦
Jennifer Wallace	291 Berry, Bellaire, TX	987654321

- 5. Select nama, alamat, and nama_proyek from employee that works in "ProductZ" project.
 - 1. Employee_Project ← Bekerja_Pada ⋈ Bekerja_Pada.NoKTP = Employee.NoKTP ⋈

Bekerja_Pada.Pnomor = Project.Pnomor

NoKTP varchar ♦	Pnomor tint	LamaJam newdecimal ♦	NmDepan varchar ♦	Inisial varchar	NmBelakang varchar	NoKTP varchar ♦	Alamat varchar ♦	Gaji int ♦	JenisKelamin varchar	NoKTPKepala varchar	DNO tent	Pnama varchar	Pnomor int	Plokasi varchar ♦	Dnum int ♦
123456789		7.5	John		Smith	123456789	731 Fondren, H	30000		333445555		ProductY		Sugarland	5
123456789		32.5	John	В	Smith	123456789	731 Fondren, F	30000		333445555		ProductX		Bellaire	5
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000		888665555		Reorganization		Houston	1
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000		888665555		Computerizati		Stafford	4
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hou	40000		888665555		ProductZ		Houston	5
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000		888665555		ProductY		Sugarland	5
999887777	30	10.0	Alicia		Zelaya	999887777	3321 Castle, Sp	25000		987654321		Newbenefits	30	Stafford	4
999887777		30.0	Alicia		Zelaya	999887777	3321 Castle, Sp	25000		987654321		Newbenefits	30	Stafford	4
987654321		15.0	Jennifer		Wallace	987654321	291 Berry, Bell	43000		888665555		Reorganization		Houston	1
987654321	30	20.0	Jennifer		Wallace	987654321	291 Berry, Bell	43000		888665555		Newbenefits	30	Stafford	4
666884444		40.0	Ramesh	К	Narayan	666884444	975 Fire Oak, F	38000		333445555		ProductZ		Houston	5
453453453		20.0	Joyce		English	453453453	5631 Rice, Hou	25000		333445555		ProductY		Sugarland	5
453453453		20.0	Joyce		English	453453453	5631 Rice, Hou	25000		333445555		ProductX		Bellaire	5
987987987	30	5.0	Ahmad		Jabbar	987987987	980 Dallas, Ho	25000		987654321		Newbenefits	30	Stafford	4
987987987		35.0	Ahmad		Jabbar	987987987	980 Dallas, Ho	25000		987654321		Computerizati		Stafford	4
888665555	20	(NULL)	James		Borg	888665555	450 Stone, Hou	55000		(NULL)		Reorganization	20	Houston	1

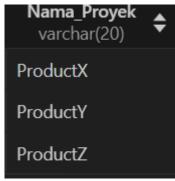
2. Hasil $\leftarrow \pi_{Nama, Alamat, Nama_Proyek} (\sigma_{Nama_proyek = 'ProductZ'} (Employee_Project))$

Nama varchar ♦	Alamat varchar	nama_proyek varchar
Franklin Wong	638 Voss, Houston, TX	ProductZ
Ramesh Narayan	975 Fire Oak, Humble, TX	ProductZ

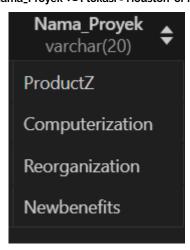
- 6. Select nama_proyek controlled by "Research" department.
 - 1. Proyek_Departement ← Project ⋈ Project.Dnum = Departement.Dnomor

Pnama varchar(20) ◆	Pnomor tint	Plokasi varchar(20) ◆	Dnum int ♦	Dname varchar(20) ♦	Dnomor int ◆	NOKTP_MGR varchar(10) ◆	TglMulai_MGR date
ProductX	1	Bellaire	5	Research	5	333445555	1988-05-22
ProductY	2	Sugarland	5	Research	5	333445555	1988-05-22
ProductZ	3	Houston	5	Research	5	333445555	1988-05-22
Computerization	10	Stafford	4	Administration	4	987654321	1995-01-01
Reorganization	20	Houston	1	HeadQuarters	1	888665555	1981-06-19
Newbenefits	30	Stafford	4	Administration	4	987654321	1995-01-01

2. Hasil $\leftarrow \pi_{\text{Nama_Proyek}}(\sigma_{\text{Dname = 'Research'}}(\text{Employee_Project}))$



- 7. Select nama_proyek located in "Houston" or "Stafford".
 - 1. Hasil ← π_{Nama_Proyek} (σ_{Plokasi = Houston' or Plokasi = 'Stafford'} (Project))



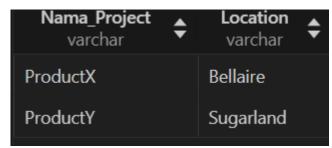
8. Select name and location of the project which "John" work on it.

1. Employee_Project ← Bekerja_Pada ⋈ Bekerja_Pada.NoKTP = Employee.NoKTP ⋈

Bekerja_Pada.Pnomor = Project.Pnomor

varchar 💠	int \$	newdecimal *	varchar \$	varchar 💠	varchar	varchar \$	varchar 💠	int :	\$	varchar \$	varchar \Rightarrow	int \$	varchar 💠	int	varchar 🕏	int 💠
123456789		7.5	John		Smith	123456789	731 Fondren, F	30000			333445555		ProductY		Sugarland	
123456789		32.5	John		Smith	123456789	731 Fondren, F	30000			333445555		ProductX		Bellaire	
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000			888665555		Reorganization		Houston	
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000			888665555		Computerization		Stafford	
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000			888665555		ProductZ		Houston	
333445555		10.0	Franklin		Wong	333445555	638 Voss, Hous	40000			888665555		ProductY		Sugarland	
999887777	30	10.0	Alicia		Zelaya	999887777	3321 Castle, Sp	25000			987654321		Newbenefits	30	Stafford	
999887777		30.0	Alicia		Zelaya	999887777	3321 Castle, Sp	25000			987654321		Newbenefits	30	Stafford	
987654321		15.0	Jennifer		Wallace	987654321	291 Berry, Bella	43000			888665555		Reorganization		Houston	
987654321	30	20.0	Jennifer		Wallace	987654321	291 Berry, Bella	43000			888665555		Newbenefits	30	Stafford	
666884444		40.0	Ramesh	К	Narayan	666884444	975 Fire Oak, F	38000			333445555		ProductZ		Houston	
453453453		20.0	Joyce		English	453453453	5631 Rice, Hou	25000			333445555		ProductY		Sugarland	
453453453		20.0	Joyce		English	453453453	5631 Rice, Hou	25000			333445555		ProductX		Bellaire	
987987987	30	5.0	Ahmad		Jabbar	987987987	980 Dallas, Ho	25000			987654321		Newbenefits	30	Stafford	
987987987		35.0	Ahmad		Jabbar	987987987	980 Dallas, Ho	25000			987654321		Computerization		Stafford	
888665555	20	(NULL)	James		Borg	888665555	450 Stone, Hou	55000			(NULL)		Reorganization	20	Houston	

2. Hasil $\leftarrow \pi_{\text{Nama_Proyek, Location}}(\sigma_{\text{NmDepan = 'John'}}(\text{Employee_Project}))$



- 9. Select nama and alamat of male employee with salary less than 40000
 - 1. Hasil $\leftarrow \pi_{\text{Nama, Alamat}} (\sigma_{\text{JenisKelamin = 'L' AND Gaji} < 40000} (Employee))$

Nama varchar(41)	Alamat varchar(50) ◆
John Smith	731 Fondren, Houston, TX
Ramesh Narayan	975 Fire Oak, Humble, TX
Ahmad Jabbar	980 Dallas, Houston, TX

- 10. Select nama and gaji of "Administration" department manager.
 - 1. Departement_Manager ← Departement ⋈ Departement.NOKTP_MGR = Employee.NoKTP

Dname _	Dnomor _	NOKTP_MGR _	TglMulai_MGR 🛕	NmDepan 🛕	Inisial 🛕	NmBelakang 🛕	NoKTP _	Alamat 🛕	Gaji	JenisKelamin	NoKTPKepala
varchar(20) ▼	int 🔻	varchar(10)	date ▼	varchar(20)	varchar(1) 🔻	varchar(20)	varchar(10)	varchar(50) ▼		▼ varchar(1)	▼ varchar(15)
Research		333445555	1988-05-22	Franklin		Wong	333445555	638 Voss, Houston, TX	40000		888665555
Administration	4	987654321	1995-01-01	Jennifer		Wallace	987654321	291 Berry, Bellaire, TX	43000		888665555
HeadQuarters		888665555	1981-06-19	James		Borg	888665555	450 Stone, Houston, TX	55000		(NULL)

2. Hasil $\leftarrow \pi_{\text{Nama, Gaji}}$ ($\sigma_{\text{Dname = 'Administration'}}$ (Departement_Manager))

