NORMALISASI DATABASE

PRAKTIKUM BASIS DATA 2022

NORMALISASI

Langkah - Langkah melakukan normalisasi :

1. UNF - Unnormalized Form
2. 1NF - First Normal Form
3. 2NF - Second Normal Form
4. 3NF - Third Normal Form
5. BCNF - Boyce-Codd Normal Form
6. 4NF - Fourth Normal Form
7. 5NF - Fifth Normal Form
8. 6NF - Six Normal Form

UNF: UNNORMALIZED TABLE

Project Code	Project Title	Project Manager	Project Budget	Employee No.	Employee Name	Department No.	Department Name	Hourly Rate
PC010	Pensions System	M Philips	24500	S10001	A Smith	L004	IT	22.00
				S10030	L Jones	L023	Pensions	18.50
				S21010	P Lewis	L004	IT	21.00
PC045	Salaries System	H Martin	17400	S10010	B Jones	L004	IT	21.75
				S10001	A Smith	L004	IT	18.00
				S31002	T Gilbert	L028	Database	25.50
				S13210	W Richards	L008	Salary	17.00
PC064	HR System	K Lewis	12250	S31002	T Gilbert	L028	Database	23.25
				S21010	P Lewis	L004	IT	17.50
				S10034	B James	L009	HR	16.50

1NF - FIRST NORMAL FORM

RULE:

1. Setiap nama atribut harus unik
2. Setiap nilai atribut harus *single*
3. Setiap baris harus unik
4. Tidak ada *repeating group*

TO-DO:

- Tentukan Primary Key

1NF - FIRST NORMAL FORM

Project Code	Project Title	Project Manager	Project Budget
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250

Employee No.	Employee Name	Department No.	Department Name	Hourly Rate
S10001	A Smith	L004	IT	22.00
S10030	L Jones	L023	Pensions	18.50
S21010	P Lewis	L004	IT	21.00
S10010	B Jones	L004	IT	21.75
S10001	A Smith	L004	IT	18.00
S31002	T Gilbert	L028	Database	25.50
S13210	W Richards	L008	Salary	17.00
S31002	T Gilbert	L028	Database	23.25
S21010	P Lewis	L004	IT	17.50
S10034	B James	L009	HR	16.50

1NF: Menghilangkan duplikat kolom dan mengidentifikasi Primary Key

2NF - SECOND NORMAL FORM

RULE:

1. Sudah dalam bentuk 1NF
2. Semua atribut yang bukan primary key harus bergantung sepenuhnya kepada primary key

TO-DO:

- Pisahkan menjadi beberapa tabel berdasarkan primary key

2NF - FIRST NORMAL FORM

Project Code	Project Title	Project Manager	Project Budget
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250

Employee No.	Employee Name	Department No.	Department Name	Hourly Rate
S10001	A Smith	L004	IT	22.00
S10030	L Jones	L023	Pensions	18.50
S21010	P Lewis	L004	IT	21.00
S10010	B Jones	L004	IT	21.75
S10001	A Smith	L004	IT	18.00
S31002	T Gilbert	L028	Database	25.50
S13210	W Richards	L008	Salary	17.00
S31002	T Gilbert	L028	Database	23.25
S21010	P Lewis	L004	IT	17.50
S10034	B James	L009	HR	16.50

Ya   Tidak

2NF - FIRST NORMAL FORM

Project Code	Project Title	Project Manager	Project Budget
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC010	Pensions System	M Philips	24500
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC045	Salaries System	H Martin	17400
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250
PC064	HR System	K Lewis	12250

Employee No.	Employee Name	Department No.	Department Name	Hourly Rate
S10001	A Smith	L004	IT	22.00
S10030	L Jones	L023	Pensions	18.50
S21010	P Lewis	L004	IT	21.00
S10010	B Jones	L004	IT	21.75
S10001	A Smith	L004	IT	18.00
S31002	T Gilbert	L028	Database	25.50
S13210	W Richards	L008	Salary	17.00
S31002	T Gilbert	L028	Database	23.25
S21010	P Lewis	L004	IT	17.50
S10034	B James	L009	HR	16.50

Ya   Ya

2NF - SECOND NORMAL FORM

Tabel Project

Project Code	Project Title	Project Manager	Project Budget
PC010	Pensions System	M Philips	24500
PC045	Salaries System	H Martin	17400
PC064	HR System	K Lewis	12250

Tabel Employee

Employee No.	Employee Name	Department No.	Department Name
S10001	A Smith	L004	IT
S10030	L Jones	L023	Pensions
S21010	P Lewis	L004	IT
S10010	B Jones	L004	IT
S10001	A Smith	L004	IT
S31002	T Gilbert	L028	Database
S13210	W Richards	L008	Salary
S31002	T Gilbert	L028	Database
S21010	P Lewis	L004	IT
S10034	B James	L009	HR

Tabel Utama

Project Code	Employee No.	Hourly Rate
PC010	S10001	22.00
PC010	S10030	18.50
PC010	S21010	21.00
PC045	S10010	21.75
PC045	S10001	18.00
PC045	S31002	25.50
PC045	S13210	17.00
PC064	S31002	23.25
PC064	S21010	17.50
PC064	S10034	16.50

2NF: Partial Key Dependencies Removed

3NF - THIRD NORMAL FORM

RULE:

1. Sudah dalam bentuk 2NF
2. Semua non-primary key dari seluruh tabel tidak boleh tergantung kepada atribut lain yang juga non-primary key (no transitive dependencies)

TO-DO:

- Semua transitive dependencies dihapus dari tabel utama dan diletakkan di tabel lain

3NF - THIRD NORMAL FORM

3NF: Non-key dependencies Removed

Tabel Project

Project Code	Project Title	Project Manager	Project Budget
PC010	Pensions System	M Philips	24500
PC045	Salaries System	H Martin	17400
PC064	HR System	K Lewis	12250

Tabel Project Team

Project Code	Employee No.	Hourly Rate
PC010	S10001	22.00
PC010	S10030	18.50
PC010	S21010	21.00
PC045	S10010	21.75
PC045	S10001	18.00
PC045	S31002	25.50
PC045	S13210	17.00
PC064	S31002	23.25
PC064	S21010	17.50
PC064	S10034	16.50

Tabel Employee

Employee No.	Employee Name	Department No.*
S10001	A Smith	L004
S10030	L Jones	L023
S21010	P Lewis	L004
S10010	B Jones	L004
S31002	T Gilbert	L028
S13210	W Richards	L008
S10034	B James	L009

Tabel Department

Department No.	Department Name
L004	IT
L023	Pensions
L028	Database
L008	Salary
L009	HR

KESIMPULAN

1NF	Tidak ada atribut multi value
2NF	Semua atribut yang bukan primary key hanya boleh bergantung (functional dependency) pada atribut primary key
3NF	tidak ada atribut non primary key yang memiliki ketergantungan terhadap atribut non primary key yang lainnya(no transitive dependencies).