

Table:

❖ Case1: Company system – UNF table

EmployeeID	EmployeeName	Department	Projects	Manager
E001	Ahmed	IT	P101:Website, P102:Mobile App	Eng. Khalid
E002	Salim	HR	P103:Recruitment	Ms. Amal
E003	Aisha	IT	P102:Mobile App, P104:Database Upgrade	Eng. Khalid

Identify problem :

Repeating groups

The solution

N1 :

EmployeeID	EmployeeName	Department	Projects	ProjectsID	Manager
E001	Ahmed	IT	Website	P101	Eng. Khalid
E001	Ahmed	IT	Mobile App	P102	Eng. Khalid
E002	Salim	HR	Recruitment	P103	Ms. Amal
E003	Aisha	IT	Mobile App	P102	Eng. Khalid
E003	Aisha	IT	Database Upgrade	P104	Eng. Khalid

Identify problem :
Partial dependencies

The solution

N 2 :

PROJECT TABLES

Projects	ProjectsID
Website	P101
Mobile App	P102
Recruitment	P103
Database Upgrade	P104

Enrollments Table

EmployeeID	ProjectsID
E001	P101
E001	P102
E002	P103
E003	P104
E003	P101

EmployeeTABLE

EmployeeID	EmployeeName
E001	Ahmed
E002	Salim
E003	Aisha

DepTable

EmployeeID	Department	Manager
E001	IT	Eng. Khalid
E002	HR	Ms. Amal
E003	IT	Eng. Khalid

❖ Case 2: University System – UNF Table

StudentID	StudentName	Department	Courses Enrolled	Advisor
S001	Reem	CS	C101:DB, C102:AI	Dr. Omar
S002	Tariq	Business	C103:Marketing	Dr. Sarah
S003	Noura	CS	C101:DB, C104:Cybersecurity	Dr. Omar

Identify problem :
Repeating groups

The solution

N1 :

StudentID	StudentName	Department	Courses	Courses ID	Advisor
S001	Reem	CS	DB	C101	Dr. Omar
S001	Reem	CS	AI	C102	Dr. Omar
S002	Tariq	Business	Marketing	C103	Dr. Sarah
S003	Noura	CS	DB	C101	Dr. Omar
S003	Noura	CS	Cybersecurity	C104	Dr. Omar

Identify problem :
Partial dependencies

The solution

N 2 :
PROJECT TABLES

StudentName	StudentID
Reem	S001
Tariq	S002
Noura	S003

Enrollments Table

Courses	coursesID
AI	C102
Marketing	C103
DB	C101
Cybersecurity	C104

EmployeeTABLE

StudentID	Courses ID
S001	C101
S001	C102
S002	C103
S003	C101

DepTable

StudentID	Department	Manager
S001	CS	Dr. Omar
S002	Business	Dr. Sarah
S003	CS	Dr. Omar

Table :

❖ Case 3: Airline System – UNF Table

BookingID	PassengerName	Flights	SeatNumbers	PaymentMethod
B001	Salem	F101:Muscat-Dubai, F102:Dubai-London	12A, 14C	Credit Card
B002	Fatma	F103:Muscat-Istanbul	10B	PayPal
B003	Zayed	F104:Istanbul-Paris, F105:Paris-Oslo	9A, 13A	Credit Card

Identify problem :

Repeating groups

The solution

N1 :

BookingID	PassengerName	Flights	FlightsID	SeatNumbers	PaymentMethod
B001	Salem	Muscat - Dubai	F101	12A,	Credit Card
B001	Salem	Dubai - London	F102	14C	Credit Card
B002	Fatma	Muscat - Istanbul	F103:	10B	PayPal
B003	Zayed	Istanbul - Paris	F104	9A,	Credit Card
B003	Zayed	Paris - Oslo	F105	13A	Credit Card

Identify problem :
Partial dependencies

The solution

N 2 :

USER TABLE

BookingID	PassengerName	PaymentMethod
B001	Salem	Credit Card
B002	Fatma	PayPal
B003	Zayed	Credit Card

FLIGHTE

Flights	FlightsID	SeatNumbers
Muscat - Dubai	F101	12A
Dubai - London	F102	14C
Muscat - Istanbul	F103	10B
Istanbul - Paris	F104	9A
Paris - Oslo	F105	13A

Airline tables

BookingID	FlightsID
B001	F101
B001	F102
B002	F103:
B003	F104
B003	F105

