

## # Normalisation.

### # First Normal Form (1NF)

- > A reln will be 1NF if it contains an atomic value.
- > Each record must be unique.
- > It states that an attribute of a table cannot hold multiple values. It must hold only single-valued attributes.

Note:- Each entry must have only one single value for each cell and each record must be unique.

### # Second Normal Form (2NF)

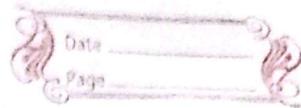
- > In the 2NF, relational must be in 1NF.
- > In the second normal form, all non-prime attributes are fully functional dependent on the primary key. NOT partially dependent on the primary key).

Note:- No partially dependency.

### # Third Normal Form (3NF)

- > A relation must be in 2NF & No transitive dependency for no-key attributes,
- > 3NF has to reduce the data duplication
- > Note :- No transitive dependency.

## Example - 1



### # 1NF

project code  
project Title  
Project Manager  
Project Budget  
Employee No.  
Employee Name  
Department No.  
Department Name  
Hourly Rate

### # 1NF

project code  
project Title  
Project Manager  
Project Budget  
Employee No.  
Employee Name  
Department No.  
Department Name  
Hourly Rate.

### # 2NF

project code  
project Title  
Project Manager  
Project Budget  
  
project code  
Employee No.  
Hourly Rate

### # 3NF

project code  
Employee No.  
Hourly Rate

Employee No.

Employee Name  
Department No.

Department No.

Department Name

Employee No.

Employee Name

Department No.

Department Name.

project code

project Title

Project Manager

Project Budget.

## Example - 2

# UNF

patient No.

patient Surname

patient Forename

Ward No.

Ward Name

Prescription Date

Drug code

Drug Name

Dosage

Length of Treatment

# 2NF → remove partial dependency

patient no.

patient Surname

patient Forename

Ward no.

Ward Name

patient no.

prescription date

Drug code

Dosage

Length of Treatment

Drug code

Drug name.

# 1NF - remove redundancy

patient No.

patient Surname

patient Forename

Ward no.

Ward name.

patient No.

prescription date

Drug code

Drug name

Dosage

Length of Treatment

# 3NF - remove transitive dependency

patient no.

patient Surname

patient Forename

Ward no.

Ward name

Drug code

Drug name

Ward no.

Ward name

patient No.

prescription date

Drug Code.

Dosage

length of Treatment

### Example - 3

#### # 1NF

Order No.

Customer Name

Customer Address

telephone no.

depot No.

depot Name

Product No.

Product Name

Product Qty

Product Price

#### # 1NF

Order No.

Customer No.

Customer Name

Customer Address

tele. No.

depot No.

depot Name

Order No.

product No.

product Name

product Qty

product price

#### # 3NF

Order No.

Customer No.

depot No.

Customer No.

Customer Name

Customer Address

Tel no.

depot No.

depot Name

#### # 2NF

Order No.

Customer No.

Customer Name

Customer Address

Tel no.

depot No.

depot Name

Order No.

product No.

product Qty

Order No.

product No.

product Qty

product No.

product name

product price

product No.

product Name

product Price

## Examples-4

### #UNF

#### Branch ID

Branch Name

Address

Post code

Town

Country

Branch Manager Employee ID

Branch Manager Surname

Franchise owner ~~name~~ name

Franchise ~~Manager~~ <sup>owner</sup> ID

Franchise owner Tel-No

Franchise start date

Employee ID

Employee First Name

Employee sur Name

Employee NI No.

Item ID

Item Name

Item Description

Unit Price

No. in stock

Category code

Category Description

Suppliers ID

Suppliers Name

Price + VAT

\*

### #1NF

#### Branch ID

Branch Name

Address

Country

Post code

Town

Franchise owner ID

Branch Manager

Employee ID

Branch Manager Surname

~~Branch Manager~~

Franchise owner Name

Franchise owner Tel-No

Franchise start date

#### Branch ID

#### Employee ID

#### Item ID

#### Suppliers ID

Employee First Name

Employee sur Name

Employee NI NO.

Item Name

Item Description

Unit price

No. in stock

Price + VAT

Category code

Category Description

Suppliers ~~Name~~

## # 2NF

### Branch ID

Branch Name

Address

Post code

Town

Country

Branch Manages Employee ID

Branch Manages Surname

Franchise owner Name

Franchise owner Tel. no.

Franchise owner ID

Franchise start date.

### Employee ID

Employee First name

Employee surname

Employee NI No.

### Item ID

Item Name

Item description

Unit price

No. of stock

Category code

Category description

### Supplies ID

Supplier Name

### Branch ID

### Employee ID

### Item ID

### Supplies ID

Price + VAT

## # 3NF

### Branch ID

Branch Name

Branch Manages Employee ID

Branch Manages Surname

Franchise owner Name

Franchise owner ID

Franchise owner tel. no.

Franchise owner start date

post code

address

town

country

### Employee ID

Employee First Name

Employee Surname

Employee NI No.

### Item ID

Item Name

Item description

Unit Price

No. of stock

category code

### category code

Category description

### Supplies ID

Supplier Name

### Branch ID

### Employee ID

### Item ID

### Supplies ID

Price + VAT

## Examples - 5

### # VNF

Order No.  
Order Date  
Customer ID  
 Title  
 First Name  
 Last Name  
 Address  
 Town  
 country  
Postcode  
 Telephone  
Book ID  
 ISBN  
Book Title  
 Author  
 Publisher  
 Price  
 Qty

### # 1NF

Customer ID  
Order No.  
 Order Date  
 Customer ID  
 Title  
 First Name  
 Last Name  
 Address  
 Town  
 country  
 Telephone  
 Postcode  
Order NO.  
Book Id  
 ISBN  
 Book Title  
 Author  
 Publisher  
 Price  
 Qty.

### # 2NF

Order NO.  
 Order Date  
 Customer ID  
 Title  
 First Name  
 Last Name  
 Address  
 Town  
 Country  
 Telephone  
 Postcode  
Book id  
 B. Title  
 Author  
 ISBN  
 Publisher  
 Price  
Order NO.  
Book Id  
Qty

# # 3NF

Order no.

order Date

Customer ID \*

Customer ID

First Name

Last Name

Title

Address

town

country

Postcode

telephone

Order No.

BookId

Qty

Book Id

Book Title

Author

Publisher

price

ISBN

## Examples - 6

### # UNF

Customer Account No.

Customer Name

Customer Tel No.

Holiday Reference No.

Booking date

Hotel Name

Holiday Resort

Flight No.

Departure Airport

Arrival Airport

Departure Date

Return Date

### # 2NF

Customer Account No.

Customer Address

Customer Name

Customer Tel. No.

Holiday Ref. No.

Holiday Resort

Hotel Name

Flight no.

Departure Date

Arrival ~~Date~~ Airport

Departure Airport

Return Date

Customer Account No.

Holiday Ref. No.

Booking date

### # 1NF

Customer Account No.

Customer Name

Customer Address

Customer Tel. No.

Customer Account No.

Holiday Ref. No.

Booking date

Hotel Name

Holiday Resort

Flight No.

Departure Airport

Arrival Airport

Departure Date

Return Date

### # 3NF

Customer Account No.

Customer Name

Customer Address

Customer Tel. No.

Customer Account No.

Holiday Ref. No.

Booking date

Holiday Ref. No.

Hotel name

Holiday Resort

Flight no. \*

Flight no.

Departure Airport

Arrival Airport

Departure Date

~~Departure~~

Return Date.



→ skeleton Table

*Customer*(<sup>Customer</sup> Acc. No. \*, customer name, customer address, customer tel. no.)

*Booking*( customer Acc. No. \*, Holiday Ref. no. \*, Booking date)

*Holiday*( Holiday Ref. No, Hotel name, Holiday Resort, flight no,\*)

*Flight* ( flight no, Departure Airport, Arrival airport, Departure date, ~~Arrival~~<sup>Return</sup> date )