

From A RegisterTo a
SpreadsheetTo
RDBM & SQL



student name -

course

room no

mob no

club membership no

cafe credit no-----

₹

ser	date	Room rent	laundry	Xerox	Mob ile no	Mob rechar ge	Clum member ship no	badmi nton	newsp aper	Cafe credit book page no	cafe
1	month	Ac room rent rs 3000	-	-		-		-	-		-
2	13 aug 14	-	100	-		50		-	-		-
3.	1 aug			25							220
4	10 aug							100			
5	12 aug								35		

Normalization process

- From un-normalized to 1st normal form
 - Remove multiple values by adding row(s)
 - Ensure that every cell has one value and only one value.



Un-normalized Form

ser	date	studentid	ac/non ac	room no	name	room rent	laundry	xerox	mobile no	mob rech	club membership	badminton	news paper	café credit page no	café bill	café bill 2	
1	01-Aug-14	1	ac	5	A	3000	-	-	-	-	-	-	-	11	220	02/08/14 100	
2	10-Aug-14	1				-	-	-	-	-	23	100	-	-	-	-	-
3	12-Aug-14	1				-	-	-	-	-	-	-	35	-	-	-	-
4	03-Aug-14	1				-	-	-	123456789	50	-	-	-	-	-	-	-
5	01-Aug-14	2	non ac	12	B	-	-	-	-	-	12	50	-	-	-	-	
6	10-Aug-14	3	ac	6	C	-	-	-	987654321	50	-	-	-	-	-	-	
7	12-Aug-14	4	non ac	13	B	-	-	-	-	-	-	34	50	-	-	-	

Observations

1. 'Café bill 2' is multivalued and should be entered as ser 8
2. Under Column 'name' 'A' covers four cells; the name has to be repeated.
3. All vacant cells should have null value

Ist Normal Form

ser	date	studentid	ac/non ac	room no	name	room rent	laundry	xerox	mobile no	mob rech	club membership	badminton	news paper	café credit page no	café bill
1	01-Aug-14	1	ac	5	A	3000	N	N	N	N	N	N	N	11	220
2	10-Aug-14	1	N	N	A	N	N	N	N	N	23	100	N	N	N
3	12-Aug-14	1	N	N	A	N	N	N	N	N	N	N	35	N	N
4	03-Aug-14	1	N	N	A	N	N	N	123456789	50	N	N	N	N	N
5	01-Aug-14	2	non ac	12	B	N	N	N	N	-	34	50	N	N	N
6	10-Aug-14	3	ac	6	C	N	N	N	987654321	50	N	N	N	N	N
7	12-Aug-14	4	non ac	13	B	N	N	N	N	-	N	34	50	N	N
8	03-Aug-14	2	N	N	B	N	N	N	N	N	N	N	N	15	200
9	02-Aug-14	1			A	N	N	N	N	N	N	N	N	11	100

Observations

1. All CELLS HAVE SOME VALUEs
2. NO MULTIPLE VALUES

What is functional dependency ?

- A functional dependency occurs when one attribute in a relation uniquely determines another attribute.

For eg content of column Emp_no determines the content of column emp name



Normalization process

- From 1st normal form to 2nd normal form
 - Identify **primary key**.
 - Identify partial dependency and take them to a separate **relation** along with a **copy** of their **determinant**.
 - This is applicable only for a **composite primary key**. (If it is a single attribute PK, it will already be in 2nd normal form. Nothing needs to be done. 😊)

FUNCTIONAL DEPENDENCIES

ser	date	studentid	ac/non ac	room no	name	room rent	laundry	xerox	mobile no	mob rech	club membership	badminton	news	paper	café credit page no	café bill
1	1-Aug-14	1	ac	5	A	3000	N	N	N	N	N	N	N	N	11	220
2	10-Aug-14	1	N	N	A	N	N	N	N	N	23	100	N	N	N	N
3	12-Aug-14	1	N	N	A	N	N	N	N	N	N	N	35	N	N	N
4	3-Aug-14	1	N	N	A	N	N	N	123456789	50	N	N	N	N	N	N
5	1-Aug-14	2	nonac	12	B	N	N	N	N	-	34	50	N	N	N	N
6	10-Aug-14	3	ac	6	C	N	N	N	987654321	50	N	N	N	N	N	N
7	12-Aug-14	4	nonac	13	B	N	N	N	N	-	N	34	50	N	N	N
8	3-Aug-14	2	N	N	B	N	N	N	N	N	N	N	N	N	15	200
9	1-Aug-14	1			A	N	N	N	N	N	N	N	N	N	11	100

Observations

1. Primary key is a composite key consisting of date and studentid.
2. Some of the non primary attributes are fully dep and others are partially dep

FUNCTIONAL DEPENDENCIES IDENTIFIED

ser	PK		ac/non ac	room no	name	room rent	laundry	xerox	mobile no	mob rech	club membership	badminton	news paper	café credit no	café bill
	date	studentid													
1	01-Aug-14	1	ac	5	A	3000	N	N	N	N	N	N	N	11	220
2	10-Aug-14	1	N	N	A	N	N	N	N	N	23	100	N	N	N
3	12-Aug-14	1	N	N	A	N	N	N	N	N	N	N	35	N	N
4	03-Aug-14	1	N	N	A	N	N	N	123456789	50	N	N	N	N	N
5	01-Aug-14	2	non ac	12	B	N	N	N	N	-	34	50	N	N	N
6	10-Aug-14	3	ac	6	C	N	N	N	987654321	50	N	N	N	N	N
7	12-Aug-14	4	non ac	13	B	N	N	N	N	-	N	34	50	N	N
8	03-Aug-14	2	N	N	B	N	N	N	N	N	N	N	N	15	200
9	02-Aug-14	1	N	N	A	N	N	N	N	N	N	N	N	11	100

Observations

1. Primary key is a composite key consisting of date and studentid
2. We have 7 fields partially dep and 6 fields fully dependent.

date	studentid	laundry	xerox	mob rech	badminton	news	paper
1-Aug-14	1	N	N	N	N	N	
10-Aug-14	1	N	N	N	100	N	
12-Aug-14	1	N	N	N	N		35
3-Aug-14	1	N	N	50	N	N	
1-Aug-14	2	N	N	-	50	N	
10-Aug-14	3	N	N	50	N	N	
12-Aug-14	4	N	N	-	34		50

MAKE ANOTHER TABLE WITH ALL **PARTIAL DEPENDENT ATTRIBUTES** AND A COPY OF THEIR DETERMINENT (Let Us Call It **Master_roll**)

The Columns Date And **Studentid** And **Fully Dep Attributes** May Be Called **Txns**

Txns

Database in Sec Normal form

studentid	ac/non ac	room no	name	room rent	mobile no	club membership	café credit page no
1	ac	5	A	3000	123456789	23	11
2	nonac	12	B	N	N	34	15
3	ac	6	C	N	987654321	N	N
4	nonac	13	B	N	N	N	N

Master_roll

Normalization process

- From 2nd normal form to 3rd normal form
 - iden **attributes** with **transitive dep.**
 - make a separate **relation** along with a **copy** of their **determinant**.



date	studentid	laundry	xerox	mob rech	badminton	news	paper
1-Aug-14	1	N	N	N	N	N	
10-Aug-14	1	N	N	N	100	N	
12-Aug-14	1	N	N	N	N		35
3-Aug-14	1	N	N	50	N	N	
1-Aug-14	2	N	N	-	50	N	
10-Aug-14	3	N	N	50	N	N	
12-Aug-14	4	N	N	-	34		50

CHECK ALL ATTRIBUTES FOR ANY PARTIAL DEP.

YOU WILL NOTICE THAT ALL ARE NOW FULLY DEP ON THEIR PRIMARY KEY

Txns

HOWEVER TWO OF THE ATTRIBUTES VZ, **ROOM RENT** AND **AC NON AC** ARE DEP ON **ROOM NO** WHICH IN TURN IS DEP ON **STUDENT ID** (TRANSITIVE DEP)

studentid	ac/non ac	room no	name	room rent	mobile no	club membership	café credit page no
1	ac	5	A	3000	123456789	23	11
2	nonac	12	B	N	N	34	15
3	ac	6	C	N	987654321	N	N
4	nonac	13	B	N	N	N	N

Master_roll

DATABASE IN 3RD NORMAL FORM

	(F)	(F)	(F)	(F)	(F)	(F)
date	studentid	laundry	xerox	mob rech	badminton	news paper
1-Aug-14	1	N	N	N	N	N
10-Aug-14	1	N	N	N	100	N
12-Aug-14	1	N	N	N	N	35
3-Aug-14	1	N	N	50	N	N
1-Aug-14	2	N	N	-	50	N
10-Aug-14	3	N	N	50	N	N
12-Aug-14	4	N	N	-	34	50

MASTER ROLL

studentid	room no	name	mobile no	club membership	café credit page no
1	5	A	123456789	23	11
2	12	B	N	34	15
3	6	C	987654321	N	N
4	13	B	N	N	N

TXN

Room DETAILS

ac/non ac	room no	room rent
ac	5	3000
nonac	12	N
ac	6	N
nonac	13	N

We are done !



WHAT IS PARTIAL DEPENDENCY ?

- in case of a composite primary key, ie a primary key consisting of two attributes ; in attribute is said to be partially dep if one of the parts of primary key is dropped still the dep holds
- Eg in the table below if **block + class room** for the composite primary key, then the attribute **block ic** is partially dep while the attrib **no of pcs** is fully dep

<i>block</i>	<i>class room</i>	<i>block ic</i>	<i>no of PCs</i>
Bhaskar	cr-26	Mr ABC	35

