SESSION 12_Normalization

06 October 2021 09:28 AM

Creating foreign key.

BLUEPRINT:

		emp			
id	fname	lname	age	gender	email
		dep			dep_emp
	depid	depname		dep.depid	emp.id
	101	IT		101	2
	106	HR		106	3
	105	F		101	5
	220	A			

#emp Table:

```
mysql> SELECT * FROM emp;
+-----+---------+---------+------+--------+-----------------+
| id  | fname   | lname   | age  | gender | email           |
+-----+---------+---------+------+--------+-----------------+
|  -1 | ancient | one     | 3500 | F      | zzzz@marvel.com |
|   0 | natasha | romanof |   30 | F      | zzzz@marvel.com |
|   1 | nayan   | gadhari |   22 | M      | zzzz@marvel.com |
|   8 | wanda   | witch   |   29 | F      | zzzz@marvel.com |
|  23 | hope    | wasp    |   28 | F      | zzzz@marvel.com |
|  38 | peter   | parker  |   18 | M      | zzzz@marvel.com |
|  40 | nick    | fury    |   45 | M      | zzzz@marvel.com |
|  78 | wanda   | witch   |   89 | F      | zzzz@marvel.com |
|  89 | bruse   | banner  |   24 | M      | zzzz@marvel.com |
|  98 | wanda   | witch   |    9 | F      | zzzz@marvel.com |
| 283 | tony    | stark   |   35 | M      | zzzz@marvel.com |
| 980 | steve   | rogers  |    9 | M      | zzzz@marvel.com |
| 988 | steve   | rogers  |    9 | M      | zzzz@marvel.com |
+-----+---------+---------+------+--------+-----------------+
13 rows in set (0.00 sec)
```

#dep TABLE:

```
mysql> SELECT * FROM dep;
+-------+---------+
| depid | depname |
+-------+---------+
|   101 | IT      |
|   104 | HR      |
|   109 | A       |
|   678 | F       |
|   999 | BOD     |
+-------+---------+
5 rows in set (0.00 sec)
```

#info TABLE:

CREATE TABLE table_name(depid int, id int, FOREIGN KEY(dep id) REFERENCES dep(depid), FOREIGN KEY(id) REFERENCES emp(id));

```
mysql> CREATE TABLE info(depid int, id int, FOREIGN KEY(depid) REFEREN
CES dep(depid), FOREIGN KEY(id) REFERENCES emp(id));
Query OK, 0 rows affected (0.08 sec)
```

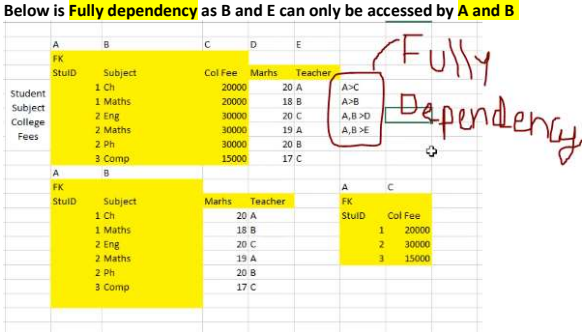
```
+-------+------+
| depid | id   |
+-------+------+
|   999 |   -1 |
|   999 |  980 |
|   999 |  988 |
|   101 |   89 |
|   101 |    8 |
|   101 |    1 |
|   104 |    0 |
|   104 |   23 |
|   104 |   38 |
|   109 |    8 |
|   104 |   78 |
|   109 |  283 |
|   678 |   40 |
+-------+------+
13 rows in set (0.00 sec)
```

Try to print fname, lname, and depname (3 different column from 2 tables)

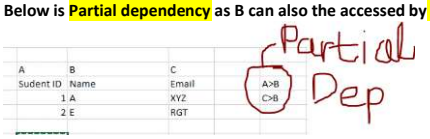
```
mysql> SELECT fname,lname,depname FROM emp,dep WHERE id in  (SELECT id
 FROM info WHERE depid = 101 ) and depid in (SELECT depid FROM dep WHE
RE depname = 'IT');
+-------+---------+---------+
| fname | lname   | depname |
+-------+---------+---------+
| bruse | banner  | IT      |
| wanda | witch   | IT      |
| nayan | gadhari | IT      |
+-------+---------+---------+
3 rows in set (0.00 sec)
```

NORMALIZATION *(every column should depend upon primary key and no redundancy)*

Below is Fully dependency as B and E can only be accessed by A and B

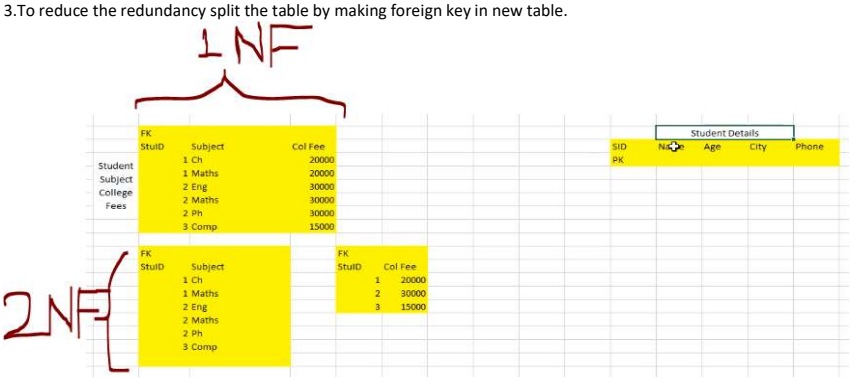


Below is Partial dependency as B can also the accessed by A or B.



1NF:
Data should be atomic (*means it doesn't contain multiple data in one row)*
Sigle column there cannot be a multiple columns.

2NF:
1.Table should be in 1NF from.
2.All the NON KEY columns should fully dependent on Primary key.
3.To reduce the redundancy split the table by making foreign key in new table.



3NF:
1.Should be in 2NF form.

2.There should not be **transitive dependency**.
We can jump from 2NF to 4NF.

A		C	B			A>B	B>C
EmpID	EmpName	C Code	Country				
1	Amit	91	India				
2	Nayan	1	Canada				
3	Nitin	86	China				

PK		FK		PK	
EmpID	EmpName	Country	C Code	Country	
1	Amit	India	91	India	
2	Nayan	Canada	1	Canada	
3	Nitin	China	86	China	

BCNF:
1.Table should be in 3NF.
2.Every Non Key Column should **be connected by Primary key.**

PK			PK	FK	FK
EmpID	EmpName	C Code	Country	EmpID	Country
1	Amit	91	India	1	India
2	Nayan	1	Canada	2	Canada
3	Nitin	86	China	3	China
4	Sumit			4	Canada

4NF:
1.It should be in BCNF form.
2.Still there is some redundancy then split.

A>B	A>C								
		Stu	Sub	Hobby					
		1	Ch	Dance					
		1	NA	Learning					
		2	Mt	Swimming					
		2	CH	NA	Stu	Sub		Stu	Hobby
		2	PH	NA		1	Ch	1	Dance
						2	Mt	1	Learning
						2	CH	2	Swimming
						2	PH		

5NF:
1.It should be in 4NF form.
2.Split Table into **as small part as possible**.

				LY				
BookID	Bname	DepID	DepName	Author	Price	SID	Sname	Time
1	A	101	Comps	James	235	C101	Tony	2
2	B	201	IT	Ted	532	I103	Bruse	3
3	C	301	EXTC	Lily	452	EX405	Tom	7
4	D	401	Civil	Marshall	462	CV89	Natasha	9
5	E	101	Comps	Zoey	324	C105	Aurthur	1
6	F	201	IT	Ted	462	I206	Nayan	5
7	G	301	EXTC	James	213	EX409	Harsh	2
8	H	401	Civil	Ted	452	CV96	Tiffny	4
9	I	101	Comps	Zoey	486	C118	Ritu	3
10	J	201	IT	Marshall	533	I107	Scarlet	7
11	K	301	EXTC	James	344	EX445	Cruela	9
12	L	401	Civil	Lily	789	CV45	Taylour	2

Book		dept		stu		book.price		Book.author		Book.dept		Book.stu		Book.time	
BookID	Bname	DepID	DepName	SID	Sname	BookID	Price	BookID	Author	DepID	BookID	BookID	SID	BookID	Time
1	A	101	Comps	C101	Tony	1	235	1	James	101	1	1	C101	1	2
2	B	201	IT	I103	Bruse	2	532	2	Ted	201	2	2	I103	2	3
3	C	301	EXTC	EX405	Tom	3	452	3	Lily	301	3	3	EX405	3	7
4	D	401	Civil	CV89	Natasha	4	462	4	Marshall	401	4	4	CV89	4	9
5	E	101	Comps	C105	Aurthur	5	324	5	Zoey	101	5	5	C105	5	1
6	F	201	IT	I206	Nayan	6	462	6	Ted	201	6	6	I206	6	5
7	G	301	EXTC	EX409	Harsh	7	213	7	James	301	7	7	EX409	7	2
8	H	401	Civil	CV96	Tiffny	8	452	8	Ted	401	8	8	CV96	8	4
9	I	101	Comps	C118	Ritu	9	486	9	Zoey	101	9	9	C118	9	3
10	J	201	IT	I107	Scarlet	10	533	10	Marshall	201	10	10	I107	10	7
11	K	301	EXTC	EX445	Cruela	11	344	11	James	301	11	11	EX445	11	9
12	L	401	Civil	CV45	Taylour	12	789	12	Lily	401	12	12	CV45	12	2