

### Exercise 1 : Normalization

member_id	member_name	member_address	dinner_id	dinner_date	venue_code	venue_description	food_code	food_description
1	Amit	325 Max park	D00001001	2020-03-15	B01	Grand Ball Room	C1, C2	Curry, Cake
2	Ben	24 Hudson lane	D00001002	2020-03-15	B02	Zoku Roof Top	S1, C2	Soup, Cake
3	Cristina	516 6th Ave	D00001002	2020-03-15	B02	Zoku Roof Top	S1, C2	Soup, Cake
4	Dan	89 John St	D00001003	2020-03-20	B03	Goat Farm	P1, T1, M1	Pie, Tea, Mousse
5	Ema	91 Pixar St	D00001003	2020-03-20	B03	Goat Farm	P1, T1, M1	Pie, Tea, Mousse
6	Fatima	56 8th Ave	D00001004	2020-03-20	B04	Mama's Kitchen	F1, M1	Falafal, Mousse
7	Gabor	54 Vivaldi St	D00001005	2020-02-20	B05	Hungry Hungary	G1, P2	Goulash, Pasca
8	Hema	9 Peter St	D00001003	2020-03-20	B03	Goat Farm	P1, T1, M1	Pie, Tea, Mousse

How can you convert the table into 1NF ?

- Rule 1 : Single valued attributes (each column should have atomic value, no multiple values)
- Rule 2 : Attribute domain should not change
- Rule 3 : Unique names for attributes / columns
- Rule 4 : Order does not matter

member_id	member_name	member_address	dinner_id	dinner_date	venue_code	venue_description	food_code	food_description
1	Amit	325 Max park	D00001001	2020-03-15	B01	Grand Ball Room	C1	Curry
1	Amit	325 Max park	D00001001	2020-03-15	B01	Grand Ball Room	C2	Cake
2	Ben	24 Hudson lane	D00001002	2020-03-15	B02	Zoku Roof Top	S1	Soup
2	Ben	24 Hudson lane	D00001002	2020-03-15	B02	Zoku Roof Top	C2	Cake
3	Cristina	516 6th Ave	D00001002	2020-03-15	B02	Zoku Roof Top	S1	Soup
3	Cristina	516 6th Ave	D00001002	2020-03-15	B02	Zoku Roof Top	C2	Cake
4	Dan	89 John St	D00001003	2020-03-20	B03	Goat Farm	P1	Pie
4	Dan	89 John St	D00001003	2020-03-20	B03	Goat Farm	T1	Tea
4	Dan	89 John St	D00001003	2020-03-20	B03	Goat Farm	M1	Mousse
5	Ema	91 Pixar St	D00001003	2020-03-20	B03	Goat Farm	P1	Pie
5	Ema	91 Pixar St	D00001003	2020-03-20	B03	Goat Farm	T1	Tea
5	Ema	91 Pixar St	D00001003	2020-03-20	B03	Goat Farm	M1	Mousse
6	Fatima	56 8th Ave	D00001004	2020-03-20	B04	Mama's Kitchen	F1	Falafal

6	Fatima	56 8th Ave	D00001004	2020-03-20	B04	Mama's Kitchen	M1	Mousse
7	Gabor	54 Vivaldi St	D00001005	2020-02-20	B05	Hungry Hungary	G1	Goulash
7	Gabor	54 Vivaldi St	D00001005	2020-02-20	B05	Hungry Hungary	P2	Pasca
8	Hema	9 Peter St	D00001003	2020-03-20	B03	Goat Farm	P1	Pie
8	Hema	9 Peter St	D00001003	2020-03-20	B03	Goat Farm	T1	Tea
8	Hema	9 Peter St	D00001003	2020-03-20	B03	Goat Farm	M1	Mousse

2-What are the super, candidate, primary keys ?

Create a primary key to `member_id` so

**Primary key**

`member_id`

**Super key**

`{member_name | member_address | dinner_id - food_code}`

**Candidate key**

`{ member_name | member_address }`

`{ member_name | food_code }`

1- What are the potential relationships between different possible tables ?

2- How can you convert the table into 2NF ?

3- How can you convert the table into 2NF ?

# Tables Planned

First Table

member_id P_K	member_name	member_address
1	Amit	325 Max park
2	Ben	24 Hudson lane
3	Cristina	516 6th Ave
4	Dan	89 John St
5	Ema	91 Pixar St
6	Fatima	56 8th Ave
7	Gabor	54 Vivaldi St
8	Hema	9 Peter St

Second Table

dinner_id P_K	dinner_date	venue_code	venue_description
D00001001	2020-03-15	B01	Grand Ball Room
D00001002	2020-03-15	B02	Zoku Roof Top
D00001003	2020-03-20	B03	Goat Farm
D00001004	2020-03-20	B04	Mama's Kitchen
D00001005	2020-03-20	B05	Hungry Hungary

Third Table

food_no P_K	food_code	food_description
101	C1	Curry
102	C2	Cake
103	S1	Soup
104	P1	Pie
105	P2	Pasca
106	T1	Tea
107	M1	Mousse
108	F1	Falafal
109	G1	Goulash

Forth Table

member_id	dinner_id	food_no
F_k references first table (member_id)	F_k references second table (dinner_id)	F_k references thired table (food_no)