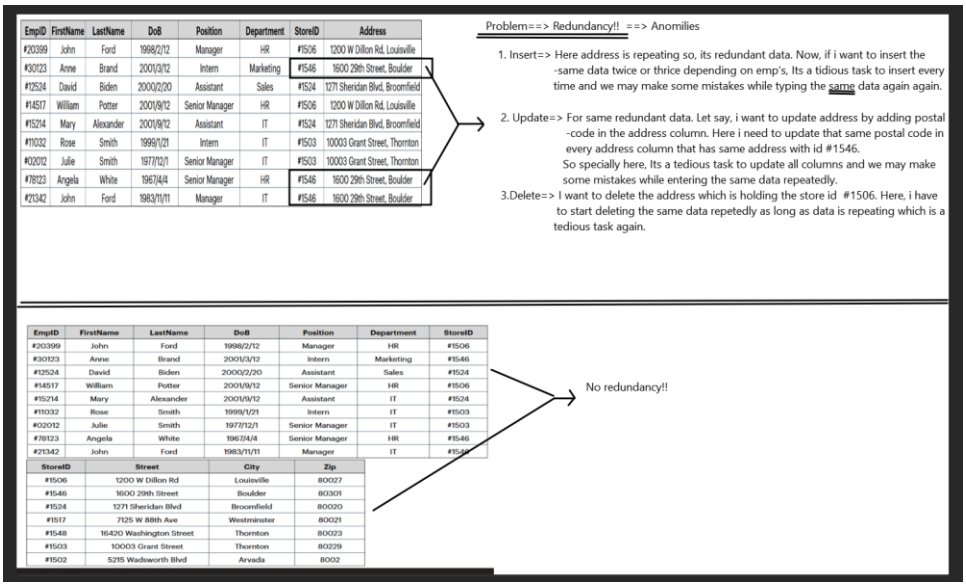
Redundancy Problem:

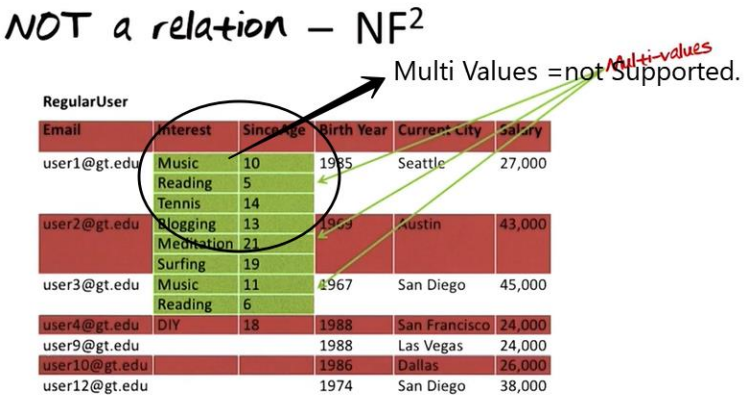


EmpID	FirstName	LastName	DoB	Position	Department	StoreID	Address
#20399	John	Ford	1998/2/12	Manager	HR	#1506	1200 W Dillon Rd, Louisville
#30123	Anne	Brand	2001/3/12	Intern	Marketing	#1546	1600 29th Street, Boulder
#12524	David	Biden	2000/2/20	Assistant	Sales	#1524	1271 Sheridan Blvd, Broomfield
#14517	William	Potter	2001/9/12	Senior Manager	HR	#1506	1200 W Dillon Rd, Louisville
#15214	Mary	Alexander	2001/9/12	Assistant	IT	#1524	1271 Sheridan Blvd, Broomfield
#11032	Rose	Smith	1999/1/21	Intern	IT	#1503	10003 Grant Street, Thornton
#02012	Julie	Smith	1977/12/1	Senior Manager	IT	#1503	10003 Grant Street, Thornton
#78123	Angela	White	1967/4/4	Senior Manager	HR	#1546	1600 29th Street, Boulder
#21342	John	Ford	1983/11/11	Manager	IT	#1546	1600 29th Street, Boulder

EmpID	FirstName	LastName	DoB	Position	Department	StoreID
#20399	John	Ford	1998/2/12	Manager	HR	#1506
#30123	Anne	Brand	2001/3/12	Intern	Marketing	#1546
#12524	David	Biden	2000/2/20	Assistant	Sales	#1524
#14517	William	Potter	2001/9/12	Senior Manager	HR	#1506
#15214	Mary	Alexander	2001/9/12	Assistant	IT	#1524
#11032	Rose	Smith	1999/1/21	Intern	IT	#1503
#02012	Julie	Smith	1977/12/1	Senior Manager	IT	#1503
#78123	Angela	White	1967/4/4	Senior Manager	HR	#1546
#21342	John	Ford	1983/11/11	Manager	IT	#1546

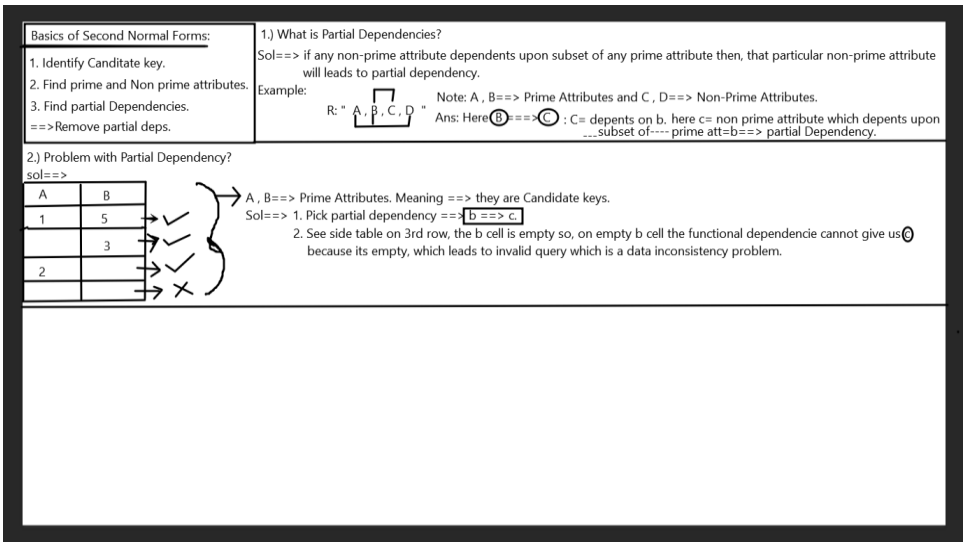
StoreID	Street	City	Zip
#1506	1200 W Dillon Rd	Louisville	80027
#1546	1600 29th Street	Boulder	80301
#1524	1271 Sheridan Blvd	Broomfield	80020
#1517	7125 W 88th Ave	Westminster	80021
#1548	16420 Washington Street	Thornton	80023
#1503	10003 Grant Street	Thornton	80229
#1502	5215 Wadsworth Blvd	Arvada	8002

First Normal Form:



Email	Interest	Since Age	Birth Year	Current City	Salary
user1@gt.edu	Music	10	1985	Seattle	27,000
	Reading	5			
	Tennis	14			
user2@gt.edu	Blogging	13	1969	Austin	43,000
	Meditation	21			
	Surfing	19			
user3@gt.edu	Music	11	1967	San Diego	45,000
	Reading	6			
user4@gt.edu	DIY	18	1988	San Francisco	24,000
user9@gt.edu			1988	Las Vegas	24,000
user10@gt.edu			1986	Dallas	26,000
user12@gt.edu			1974	San Diego	38,000

Second Normal Form:



Basics of Second Normal Forms:

1. Identify Canditate key.
2. Find prime and Non prime attributes.
3. Find partial Dependencies.
==>Remove partial deps.

1.) What is Partial Dependencies?

Sol==> if any non-prime attribute dependents upon subset of any prime attribute then, that particular non-prime attribute will leads to partial dependency.

Example:

R: " A , B , C , D "

Note: A , B==> Prime Attributes and C , D==> Non-Prime Attributes.

Ans: Here (B) ==> (C) : C= depents on b. here c= non prime attribute which depents upon ---subset of---- prime att=b==> partial Dependency.

2.) Problem with Partial Dependency?

sol==>

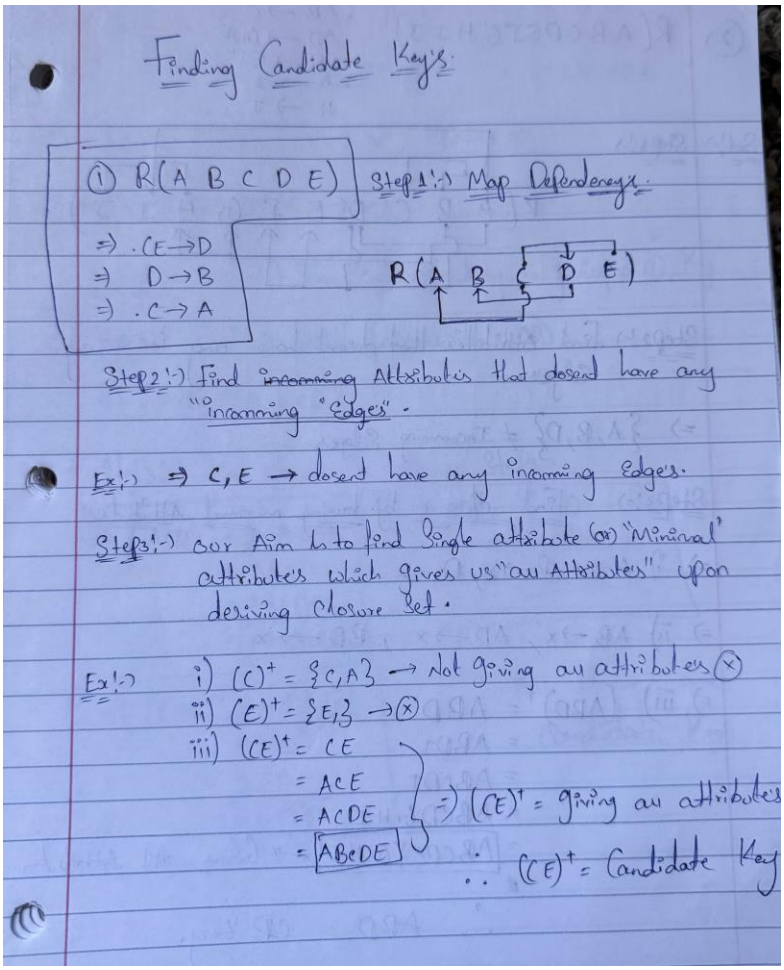
A	B
1	5
	3
2	

A , B==> Prime Attributes. Meaning ==> they are Candidate keys.

Sol==> 1. Pick partial dependency ==> b ==> c.

2. See side table on 3rd row, the b cell is empty so, on empty b cell the functional dependencie cannot give us (c) because its empty, which leads to invalid query which is a data inconsistency problem.

Prime Attributes:



Finding Candidate Key's

① R(A B C D E)

⇒ . CE → D
⇒ D → B
⇒ . C → A

Step 1:) Map Dependencys.

R(A B C D E)

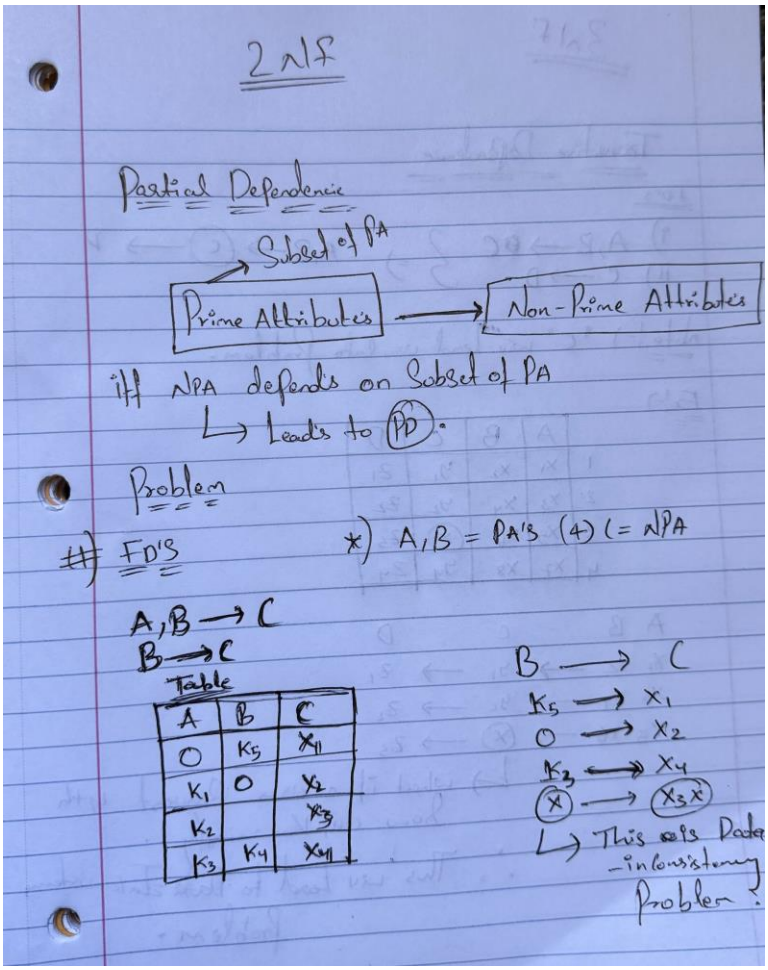
Step 2:) Find ~~incomming~~ Attributes that doesnt have any "Incomming "Edges".

Ex:) ⇒ C, E → doesnt have any incomming edges.

Step 3:) our Aim is to find Single attribute (or) "Minimal" attributes which gives us "all Attributes" upon deriving closure set.

Ex:)
i) $(C)^+ = \{C, A\}$ → Not giving all attributes (x)
ii) $(E)^+ = \{E, \}$ → (x)
iii) $(CE)^+ = CE$
$= ACE$
$= ACDE$
$= \boxed{ABCDE}$
⇒ $(CE)^+$ = giving all attributes
∴ $(CE)^+$ = Candidate Key

Partial Dependencies:



Third Normal Form: