

A customer_id	B fname	C lname	D email	E customer_address	F telephone_no
1	A	B	a@gmail	A Street No: 15	0528 985 77 14, 0565 909 0414
2	A	C	c@gmail	C Street No: 17	0505 708 9187
3	D	E	d@gmail	D Street No: 15	0531 928 3815
4	F	E	f@gmail	F Street No: 1	0505 741 38 91, 0545 454 2212
5	F	K	k@gmail	K Street No: 3	0533 729 31 61
6					
7					

non-atomic

non-atomic

customer_id \rightarrow fname, lname

customer_id, email \rightarrow customer_address, telephone_no

customer_street \rightarrow customer_street_no

CUSTOMERINFO (customer_id, fname, lname), CUSTOMERADDRESS (customer_street, customer_street_no)

CUSTOMERS (customer_id, email, customer_street, customer_street_no, telephone_no)

FK

PK

CUSTOMERINFO

customer_id	fname	lname
1	A	B
2	A	C
3	D	E
4	F	E
5	F	K

CUSTOMERS

customer_id	email	customer_street	customer_street_no	telephone_no
1	a@gmail	A Street	15	0533 985 77 14
1	a@gmail	A Street	15	0565 909 0414
2	c@gmail	C Street	17	0505 708 9187
3	d@gmail	D Street	15	0531 928 3815
4	f@gmail	F Street	1	0505 741 38 91
4	f@gmail	F Street	1	0545 454 2212
5	k@gmail	K Street	3	0533 729 31 61

2NF

CUSTOMERADDRESS

customer_street	customer_street_no
A	15
C	17
D	15
F	1
K	3

F;

customer_street \rightarrow customer_street_no

customer_id \rightarrow fname, lname

customer_id, email \rightarrow customer_street, customer_street_no, telephone_no

Fc:

(customer_street)⁺ = customer_street, customer_street_no (R₁)

(customer_id)⁺ = customer_id, fname, lname (R₂)

(customer_id, email)⁺ = customer_id, email, customer_street, customer_street_no, telephone_no (R₃)

R₁ ∩ R₂ = {∅}

R₂ ∩ R₃ = {customer_id} (customer_id)⁺ = customer_id, fname, lname (dependency, lossless)

R₁ ∩ R₃ = {customer_street, customer_street_no} (customer_street, customer_street_no)⁺ = customer_street, customer_street_no (no dependency)

BCNF;

customer_id = A

F:

A \rightarrow BC

AD \rightarrow EFG

E \rightarrow F

F:

A⁺ = ABC

(AD)⁺ = ADEFG

(E)⁺ = EF

since I can reach EF from

AD \rightarrow EFG, Thus E \rightarrow F extraneous attribute!

extraneous. So that, final decomposition is;

R₂, R₃

fname = B

lname = C

email = D

customer_street = E

customer_street_no = F

telephone_no = G