

1. Examine the table shown below.

branchNo	branchAddress	telNos
B001	8 Jefferson Way, Portland, OR 97201	503-555-3618, 503-555-2727, 503-555-6534
B002	City Center Plaza, Seattle, WA 98122	206-555-6756, 206-555-8836
B003	14– 8th Avenue, New York, NY 10012	212-371-3000
B004	16– 14th Avenue, Seattle, WA 98128	206-555-3131,

a) Why is this table not in 1NF?

Ans: It contains multiple value attributes in column(tel Nos).

b) Describe and illustrate the process of normalizing the data shown in this table to third normal form (3NF).

c) Identify the primary, alternate and foreign keys in your 3NF relations.

branchNo(Primary Key)	branchAddress
B001	8 Jefferson Way, Portland, OR 97201
B002	City Center Plaza, Seattle, WA 98122
B003	14– 8th Avenue, New York, NY 10012
B004	16– 14th Avenue, Seattle, WA 98128

branchNo(Foreign key)	telNos
B001	503-555-3618
B001	503-555-2727
B001	503-555-2727
B002	206-555-6756
B002	206-555-8836
B003	212-371-3000
B004	206-555-3131
B004	206-555-4112

2. Examine the table shown below.

staffNo	branchNo	branchAddress	name	position	hoursPerWeek
S4555	B002	City Center Plaza, Seattle, WA 98122	Ellen Layman	Assistant	16
S4555	B004	16 – 14th Avenue, Seattle, WA 98128	Ellen Layman	Assistant	9
S4612	B002	City Center Plaza, Seattle, WA 98122	Dave Sinclair	Assistant	14
S4612	B004	16 – 14th Avenue, Seattle, WA 98128	Dave Sinclair	Assistant	10

a) Why is this table not in 2NF?

Ans: Partial Dependency

b) Describe and illustrate the process of normalizing the data shown in this table to third normal form (3NF).

c) Identify the primary, (alternate) and foreign keys in your 3NF relations.

staffNo	name	position
S4555	Ellen Layman	Assistant
S4612	Dave Sinclair	Assistant

branchNo	branchAddress
B002	City Center Plaza, Seattle, WA 98122
B004	16 – 14th Avenue, Seattle, WA 98128

staffNo	branchNo	hoursPerWeek
S4555	B002	16
S4555	B004	9
S4612	B002	14
S4612	B004	10

3. Examine the table shown below.

branchNo	branchAddress	telNo	mgrStaffNo	name
B001	8 Jefferson Way, Portland, OR 97201	503-555-3618	S1500	Tom Daniels
B002	City Center Plaza, Seattle, WA 98122	206-555-6756	S0010	Mary Martinez

B003	14– 8th Avenue, New York, NY 10012	212-371- 3000	S0145	Art Peters
B004	16– 14th Avenue, Seattle, WA 98128	206-555- 3131	S2250	Sally Stern

a) Why is this table not in 3NF?

Because of transitive dependency.

b) Describe and illustrate the process of normalizing the data shown in this table to third normal form (3NF).

c) Identify the primary, (alternate) and foreign keys in your 3NF relations.

branchNo	branchAddress	telNo	mgrStaffNo
B001	8 Jefferson Way, Portland, OR 97201	503-555- 3618	S1500
B002	City Center Plaza, Seattle, WA 98122	206-555- 6756	S0010
B003	14– 8th Avenue, New York, NY 10012	212-371- 3000	S0145
B004	16– 14th Avenue, Seattle, WA 98128	206-555- 3131	S2250

mgrStaffNo	name
S1500	Tom Daniels
S0010	Mary Martinez
S0145	Art Peters
S2250	Sally Stern