

Problem1

I assume that:

every customer has its own unique customer number

A part has its unique part number, which determines its name, type, cage code and unit price

First put all the data into one table

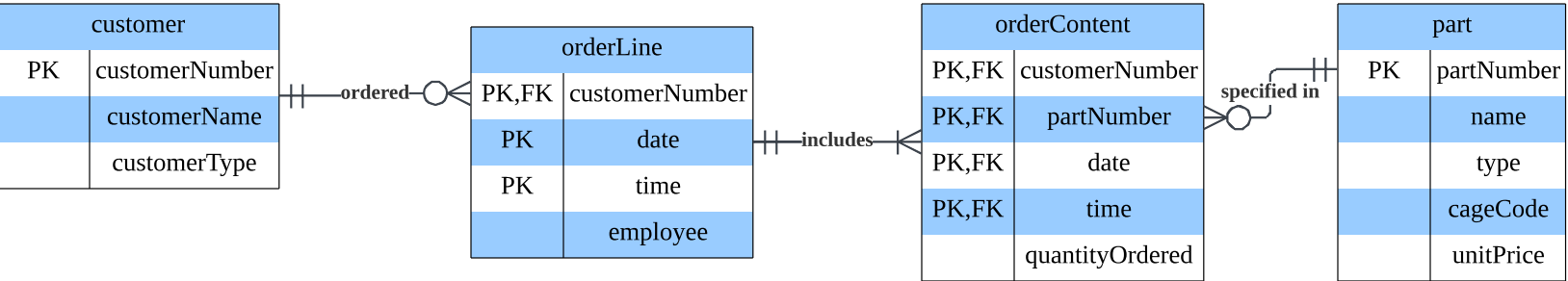
order											
customerName	<u>customerNumber</u>	customerType	<u>date</u>	<u>time</u>	employee	<u>partNumber</u>	name	type	cageCode	quatityOrdered	unitPrice
Jeff Peterson	HG54587	Consumer	7/1/2024	10:30am	D.Harrison	10654	Float Control	Plumbing	G413	4	12
Jeff Peterson	HG54587	Consumer	7/1/2024	10:30am	D.Harrison	10456	Modulator	Electrical	H433	3	7
Jeff Peterson	HG54587	Consumer	7/1/2024	10:30am	D.Harrison	10776	Hose Assembly	Plumbing	G413	7	9
Jeff Peterson	HG54587	Consumer	7/1/2024	10:30am	D.Harrison	10657	Float Assembly	Plumbing	G413	5	10

It is already in 1NF. It has no lists or repeating groups.

customer			part					orderContent					orderLine			
<u>customerNumber</u>	customerName	customerType	<u>partNumber</u>	name	type	cageCode	unitPrice	<u>customerNumber</u>	<u>partNumber</u>	<u>date</u>	<u>time</u>	quantityOrdered	<u>customerNumber</u>	<u>date</u>	<u>time</u>	employee
Jeff Peterson	HG54587	Consumer	10654	Float Control	Plumbing	G413	12	HG54587	10654	7/1/2024	10:30am	4	HG54587	7/1/2024	10:30am	D. Harrison
			10456	Modulator	Electrica	H433	7	HG54587	10456	7/1/2024	10:30am	3				
			10776	Hose Assembly	Plumbing	G413	9	HG54587	10776	7/1/2024	10:30am	7				
			10657	Float Assembly	Plumbing	G413	10	HG54587	10657	7/1/2024	10:30am	5				

It is now in 2NF. CustomerName, customerType depends solely on customerNumber. Name, type, cage code, quatity ordered and unit price depends solely on the part that is ordered. Employee is only determined by customer,date and time as a full order is managed by one employee

It is also in 3NF now because no transitive relationships exists



Problem2

I assume that

a staff has a unique number and a patient also has a unqiue patient number;

a staff is only assigned to ine branch in a day;

every patient and every therapist will meet at most once in a day so that time doesn't have to be a part of PK.

The appointment date and time contains two values but is compressed into one attribute, which needs to be resolved. Then, it will be in 1NF

appointment						
<u>staffNo</u>	therapistName	<u>patNo</u>	patName	<u>date</u>	time	branchNo
S1011	Fred Smith	P100	Lily White	9/12/2022	10:00	M15
S1011	Fred Smith	P105	Jill Baker	9/12/2022	12:00	M15
S1024	Pierce	P108	Andy Mcke	9/12/2022	10:00	Q10
S1024	Pierce	P108	Andy Mcke	9/14/2022	14:00	Q10
S1032	Richard Levin	P105	Jill Baker	9/14/2022	16:30	M15
S1032	Richard Levin	P110	Jimmy Winter	9/15/2022	18:00	B13

Therapist name depends only on staffNo. Similarly, patName depends only on patNo. BranchNo depends on staff and the date because one staff only works in one branch in the same day. We should separate them out. Then, it will be in 2NF

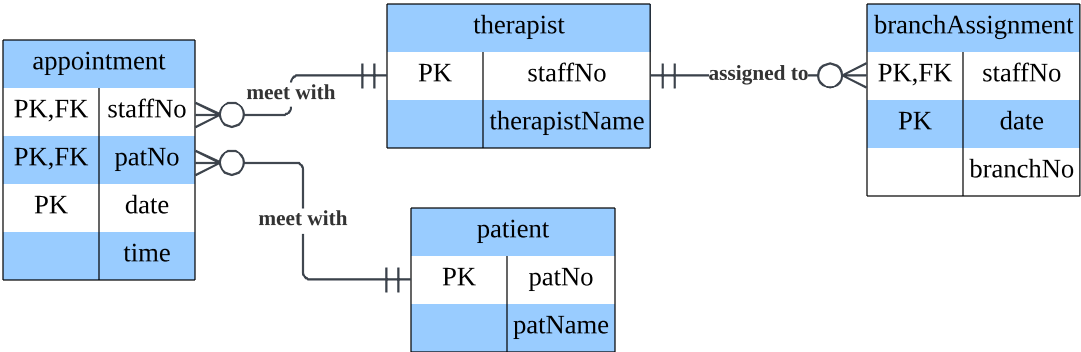
appointment			
<u>staffNo</u>	<u>patNo</u>	<u>date</u>	time
S1011	P100	9/12/2022	10:00
S1011	P105	9/12/2022	12:00
S1024	P108	9/12/2022	10:00
S1024	P108	9/14/2022	14:00
S1032	P105	9/14/2022	16:30
S1032	P110	9/15/2022	18:00

therapist	
<u>staffNo</u>	therapistName
S1011	Fred Smith
S1024	Pierce
S1032	Richard Levin

patient	
<u>patNo</u>	patName
P100	Lily White
P105	Jill Baker
P108	Andy Mcke
P110	Jimmy Winter

branchAssignment		
<u>staffNo</u>	<u>date</u>	branchNo
S1011	9/12/2022	M15
S1024	9/14/2022	Q10
S1032	9/14/2022	M15
S1032	9/15/2022	B13

Now the tables should be in 3NF as no transitive relationship exists between different non keys.



Problem3

I assume that:  
one event can only happen in one location

The table is already in 1NF as there is no lists or repeated groups

workAssignment					
<u>eNo</u>	<u>contractNo</u>	hours	eName	eventNo	eventLoc
1135	C1024	16	Smith J	H25	Queens
1057	C1024	24	Hocine D	H25	Queens
1068	C1025	28	White T	H4	Yonkers
1135	C1025	15	Smith J	H4	Yonkers
1135	C1026	10	Smith J	H25	Queens

eName depends only on eNo. eventNo and eventLoc depends only on contractNo as one contract only applies to one event. We need to separate them to get in 2NF.

workHour			employee		contract		
<u>eNo</u>	<u>contractNo</u>	hours	<u>eNo</u>	eName	<u>contractNo</u>	eventNo	eventLoc
1135	C1024	16	1135	Smith J	C1024	H25	Queens
1057	C1024	24	1057	Hocine D	C1025	H4	Yonkers
1068	C1025	28	1068	White T	C1026	H25	Queens
1135	C1025	15					
1135	C1026	10					

event location depends on eventNo so there is a transitive relationship. We need to separate that to get a 3NF

workHour			employee		contract		event	
<u>eNo</u>	<u>contractNo</u>	hours	<u>eNo</u>	eName	<u>contractNo</u>	eventNo	<u>eventNo</u>	eventLoc
1135	C1024	16	1135	Smith J	C1024	H25	H25	Queens
1057	C1024	24	1057	Hocine D	C1025	H4	H4	Yonkers
1068	C1025	28	1068	White T	C1026	H25		
1135	C1025	15						
1135	C1026	10						

