

- Assumptions:
- one employee can serve many customers
 - one part can be bought by multiple customers
 - one cage can have multiple parts

primary key: customerNumber, date, time, partNumber

| customerName | customerNumber | customerType | date | time | employee | partNumber | name | type | cageCode | quantityOrdered | unitPrice |
|---------------|----------------|--------------|----------|---------|-------------|------------|----------------|------------|----------|-----------------|-----------|
| Jeff Paterson | HG54587 | consumer | 7/1/2024 | 10:30am | D. Harrison | 10654 | float control | plumbing | G413 | 4 | 12 |
| Jeff Paterson | HG54587 | consumer | 7/1/2024 | 10:30am | D. Harrison | 10456 | modulator | electrical | H433 | 3 | 7 |
| Jeff Paterson | HG54587 | consumer | 7/1/2024 | 10:30am | D. Harrison | 10776 | house assembly | plumbing | G413 | 7 | 9 |
| Jeff Paterson | HG54587 | consumer | 7/1/2024 | 10:30am | D. Harrison | 10657 | float assembly | plumbing | G413 | 5 | 10 |

- table is in 1NF because has primary key and atomic values but it has partial dependencies so it is not 2NF:
- name, type, cageCode, unitPrice only depend on partNumber
 - customerType and customerName only depend on customerNumber

part

| partNumber | name | type | cageCode | unitPrice |
|------------|----------------|------------|----------|-----------|
| 10654 | float control | plumbing | G413 | 12 |
| 10456 | modulator | electrical | H433 | 7 |
| 10776 | house assembly | plumbing | G413 | 9 |
| 10657 | float assembly | plumbing | G413 | 10 |

customer

| customerNumber | customerName | customerType |
|----------------|---------------|--------------|
| HG54587 | Jeff Paterson | consumer |

order

| customerNumber | date | time | employee | partNumber | quantityOrdered |
|----------------|----------|---------|-------------|------------|-----------------|
| HG54587 | 7/1/2024 | 10:30am | D. Harrison | 10654 | 4 |
| HG54587 | 7/1/2024 | 10:30am | D. Harrison | 10456 | 3 |
| HG54587 | 7/1/2024 | 10:30am | D. Harrison | 10776 | 7 |
| HG54587 | 7/1/2024 | 10:30am | D. Harrison | 10657 | 5 |

- table is now in 3NF
- in 1NF
 - no partial dependencies -> in 2NF
 - no transitive dependencies -> in 3NF

Panacea Menal Health Corporation

- assumptions:
- appointment date time split into two attributes
 - staff cannot see more than one patient at a time
 - staff cannot be at more than one branch at a time

PK: staffNo, date, time

| staffNo | therapistName | patNo | patName | date | 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 | Heidi Pierce | P108 | Andy McKee | 9/12/2022 | 10:00 | Q10 |
| S1024 | Heidi Pierce | P108 | Andy McKee | 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 |

- table is in 1NF bc it has PK and atomic values, but not in 2NF because there are partial dependencies
- therapistName is only dependent on staffNo

staff

| staffNo | therapistName |
|---------|---------------|
| S1011 | Fred Smith |
| S1024 | Heidi Pierce |
| S1032 | Richard Levin |

split staff into own table to remove partial dependency

appointment

| staffNo | patNo | patName | date | time | branchNo |
|---------|-------|--------------|-----------|-------|----------|
| S1011 | P100 | Lily White | 9/12/2022 | 10:00 | M15 |
| S1011 | P105 | Jill Baker | 9/12/2022 | 12:00 | M15 |
| S1024 | P108 | Andy McKee | 9/12/2022 | 10:00 | Q10 |
| S1024 | P108 | Andy McKee | 9/14/2022 | 14:00 | Q10 |
| S1032 | P105 | Jill Baker | 9/14/2022 | 16:30 | M15 |
| S1032 | P110 | Jimmy Winter | 9/15/2022 | 18:00 | B13 |

- table is in 2NF because it is in 1NF and there are no partial dependencies, not in 3NF because there are transitive dependencies:
- patName is dependent on patNo which is dependent on PK

patient

| patNo | patName |
|-------|--------------|
| P100 | Lily White |
| P105 | Jill Baker |
| P108 | Andy McKee |
| P110 | Jimmy Winter |

staff

| staffNo | therapistName |
|---------|---------------|
| S1011 | Fred Smith |
| S1024 | Heidi Pierce |
| S1032 | Richard Levin |

takes an

appointment

| staffNo | patNo | date | time | branchNo |
|---------|-------|-----------|-------|----------|
| S1011 | P100 | 9/12/2022 | 10:00 | M15 |
| S1011 | P105 | 9/12/2022 | 12:00 | M15 |
| S1024 | P108 | 9/12/2022 | 10:00 | Q10 |
| S1024 | P108 | 9/14/2022 | 14:00 | Q10 |
| S1032 | P105 | 9/14/2022 | 16:30 | M15 |
| S1032 | P110 | 9/15/2022 | 18:00 | B13 |

has

- table is in 3NF because it is in 1NF and 2NF and there are no transitive dependencies

Maid Better

PK: eNo, contractNo

| eNo | contractNo | 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 |

- table is in 1NF bc has PK and atomic values, not in 2NF bc has partial dependencies:
- eName only dependent on eNo
 - eventNo and eventLoc only dependent on contractNo

employee

| eNo | eName |
|------|----------|
| 1135 | Smith J |
| 1057 | Hocine D |
| 1068 | White T |

contract

| contractNo | eventNo | eventLoc |
|------------|---------|----------|
| C1024 | H25 | Queens |
| C1025 | H4 | Yonkers |
| C1026 | H25 | Queens |

split employee and contract tables to remove partial dependencies and use contract_hours as a bridging table

contract_hours

| eNo | contractNo | hours |
|------|------------|-------|
| 1135 | C1024 | 16 |
| 1057 | C1024 | 24 |
| 1068 | C1025 | 28 |
| 1135 | C1025 | 15 |
| 1135 | C1026 | 10 |

- table is in 2NF because it's in 1NF and no partial dependencies, not in 3NF bc has transitive dependency:
- eventLoc dependent on eventNo which is dependent on contractNo

employee

| eNo | eName |
|------|----------|
| 1135 | Smith J |
| 1057 | Hocine D |
| 1068 | White T |

is assigned

contract_hours

| eNo | contractNo | hours |
|------|------------|-------|
| 1135 | C1024 | 16 |
| 1057 | C1024 | 24 |
| 1068 | C1025 | 28 |
| 1135 | C1025 | 15 |
| 1135 | C1026 | 10 |

describes

event

| eventNo | eventLoc |
|---------|----------|
| H25 | Queens |
| H4 | Yonkers |

describes

contract

| contractNo | eventNo |
|------------|---------|
| C1024 | H25 |
| C1025 | H4 |
| C1026 | H25 |

- table is in 3NF bc it is in 1NF and 2NF and has no transitive dependencies