

Assumptions:

- 1. Assuming that for orders made in same time by the same customer, it is handled by same employee.
- 2. Assuming that unit price is fix across all customers.
- 3. Assuming that for the same part, they have the same cage code.

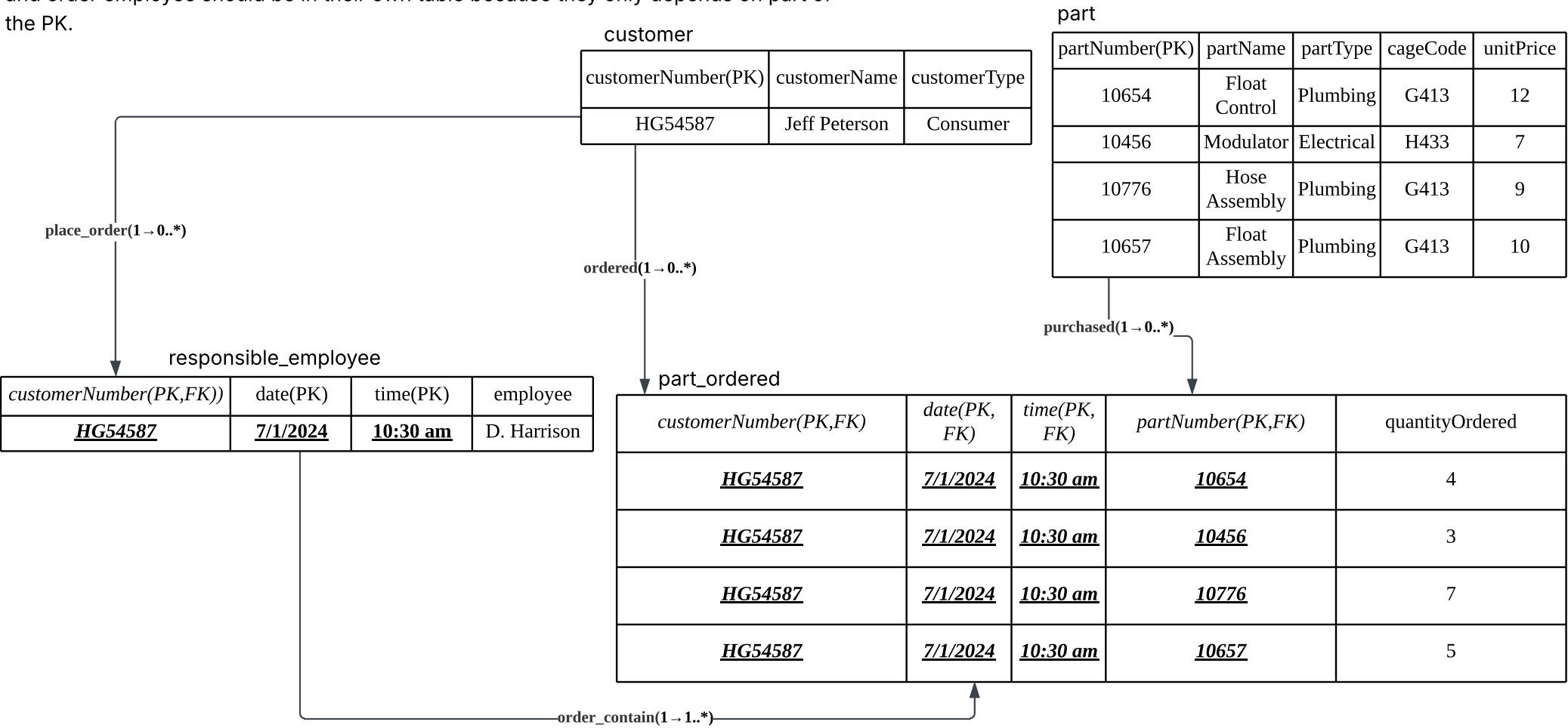
Raw Table

| CustomerName | CustomerNumber | CustomerType | Date | Time | Employee | PartNumber | PartName | PartType | CageCode | QuantityOrdered | UnitPrice |
|---------------|----------------|--------------|----------|----------|-------------|----------------------------|---|--|------------------------|-----------------|--------------|
| Jeff Peterson | HG54587 | Consumer | 7/1/2024 | 10:30 am | D. Harrison | 10654, 10456, 10776, 10657 | Float Control, Modulator, Hose Assembly, Float Assembly | Plumbing, Electrical, Plumbing, Plumbing | G413, H433, G413, G413 | 4, 3, 7, 5 | 12, 7, 9, 10 |

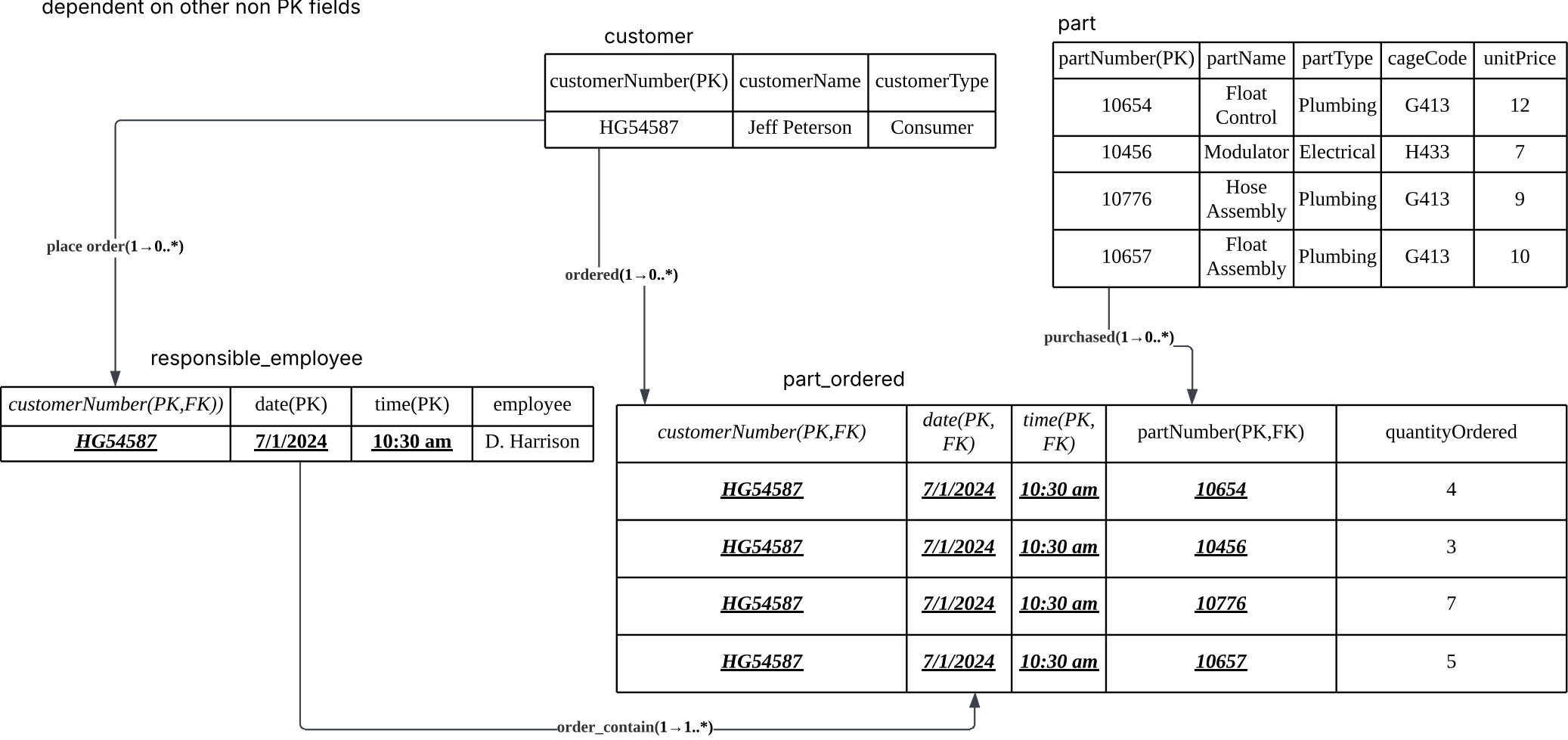
1NF: Identify Primary key (Composite primary key in this case). Customer number, date, time, and part number can be primary key as we trying to record the order detail of each part No multiple value stored in single cell so we split the parts into different rows. Each row represent an order part.

| customerNumber(PK) | date(PK) | time(PK) | partNumber(PK) | customerName | customerType | employee | partName | partType | cageCode | quantityOrdered | unitPrice |
|--------------------|-----------------|-----------------|----------------|---------------|--------------|-------------|----------------|------------|----------|-----------------|-----------|
| <u>HG54587</u> | <u>7/1/2024</u> | <u>10:30 am</u> | <u>10654</u> | Jeff Peterson | Consumer | D. Harrison | Float Control | Plumbing | G413 | 4 | 12 |
| <u>HG54587</u> | <u>7/1/2024</u> | <u>10:30 am</u> | <u>10456</u> | Jeff Peterson | Consumer | D. Harrison | Modulator | Electrical | H433 | 3 | 7 |
| <u>HG54587</u> | <u>7/1/2024</u> | <u>10:30 am</u> | <u>10776</u> | Jeff Peterson | Consumer | D. Harrison | Hose Assemblt | Plumbing | G413 | 7 | 9 |
| <u>HG54587</u> | <u>7/1/2024</u> | <u>10:30 am</u> | <u>10657</u> | Jeff Peterson | Consumer | D. Harrison | Float Assembly | Plumbing | G413 | 5 | 10 |

2NF: Every non-key attribute depend on the whole key of that relation. Customer, part, and order employee should be in their own table because they only depends on part of the PK.



3NF: This should be the same as 2NF in this situation because none of the field are dependent on other non PK fields



Assumption

- 1. Therapist can work in different branch.
- 2. Patient can go to different branch
- 3. We don't store any information about the branch except branch number.
- 4. A patient can have no appointment history.

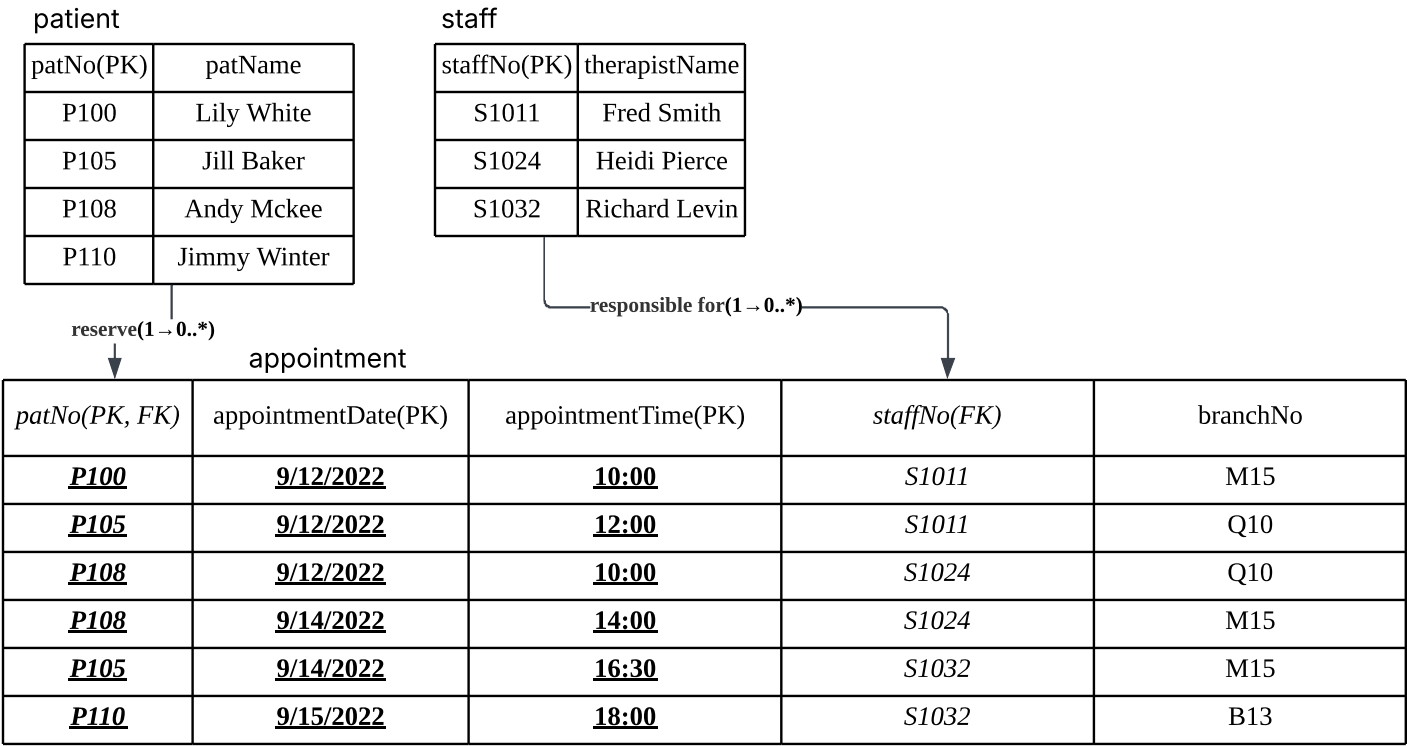
Raw Data

| staffNo | therapistName | patNo | patName | appointment 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 | Q10 |
| S1024 | Heidi Pierce | P108 | Andy Mckee | 9/12/2022 10:00 | Q10 |
| S1024 | Heidi Pierce | P108 | Andy Mckee | 9/14/2022 14:00 | M15 |
| S1032 | Richard Levin | P105 | Jill Baker | 9/14/2022 16:30 | M15 |
| S1032 | Richard Levin | P110 | Jimmy Winter | 9/15/2022 18:00 | B13 |

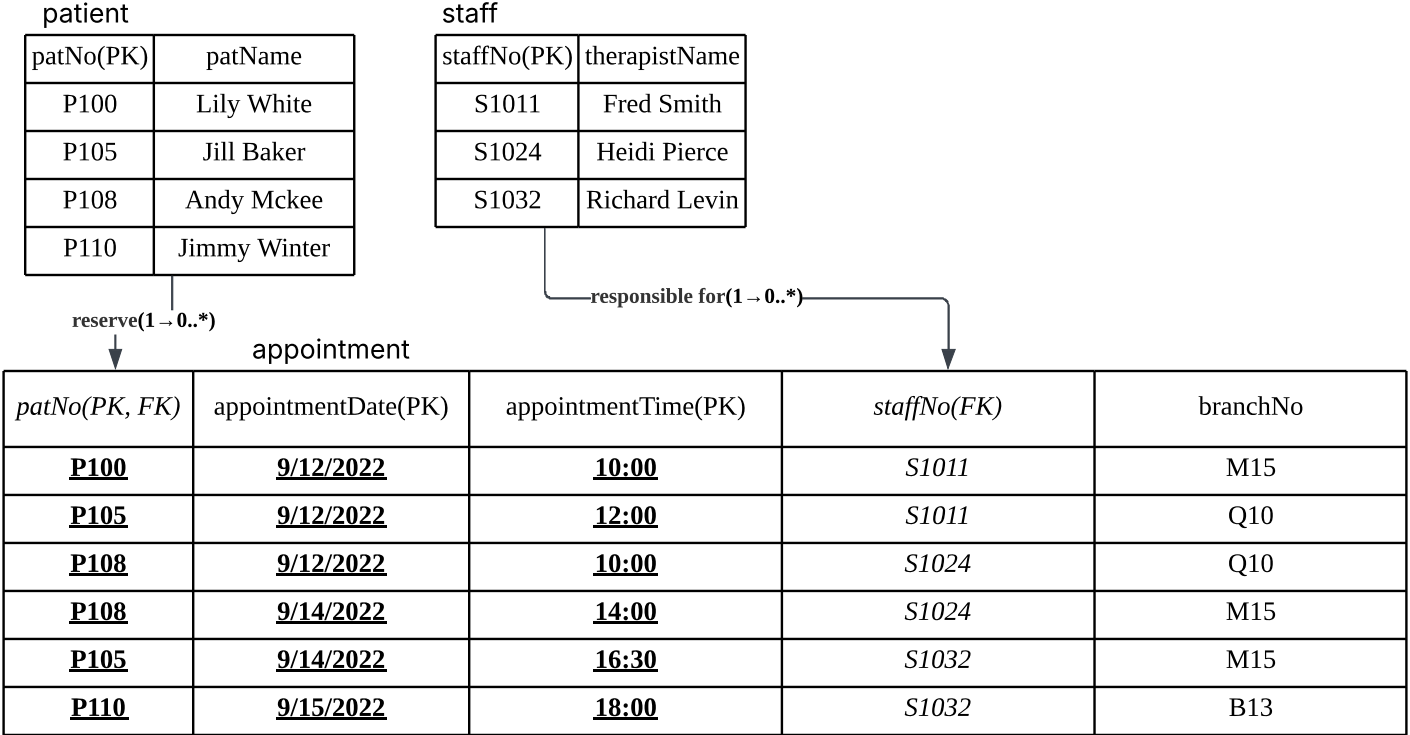
1NF: composite PK could be patNo + appointment date and time. For it to be 1NF, I also have to split the appoint date time column into two columns

| patNo(PK) | appointmentDate(PK) | appointmentTime(PK) | staffNo | therapistName | patName | branchNo |
|--------------------|-------------------------|---------------------|---------|---------------|--------------|----------|
| <u>P100</u> | <u>9/12/2022</u> | <u>10:00</u> | S1011 | Fred Smith | Lily White | M15 |
| <u>P105</u> | <u>9/12/2022</u> | <u>12:00</u> | S1011 | Fred Smith | Jill Baker | Q10 |
| <u>P108</u> | <u>9/12/2022</u> | <u>10:00</u> | S1024 | Heidi Pierce | Andy Mckee | Q10 |
| <u>P108</u> | <u>9/14/2022</u> | <u>14:00</u> | S1024 | Heidi Pierce | Andy Mckee | M15 |
| <u>P105</u> | <u>9/14/2022</u> | <u>16:30</u> | S1032 | Richard Levin | Jill Baker | M15 |
| <u>P110</u> | <u>9/15/2022</u> | <u>18:00</u> | S1032 | Richard Levin | Jimmy Winter | B13 |

2NF: patName depends only on patNo; therapistName depends only on staffNo. Thus move them into separate tables



3NF is the same as 2NF as we don't have any data for branch. So there are no any field depend on other no PK field.



- Assumption
1. One contract applied to only one event. One event can have multiple contract.
 2. uniquely identifies an employee. contractNo uniquely identifies a contract. eventNo uniquely identifies an event.

Raw Data

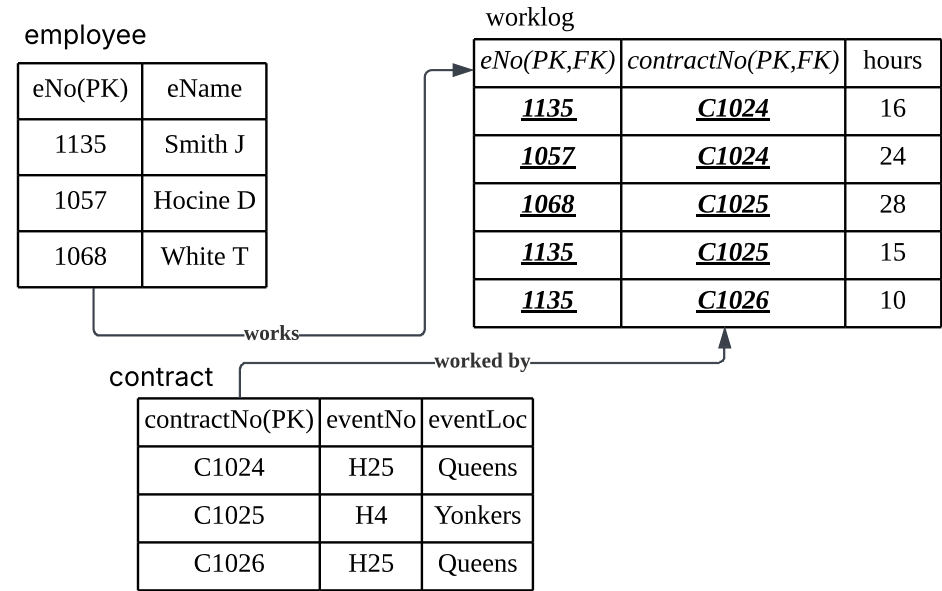
| eNO | contractNo | hours | eName | eventNo | eventLoc |
|------|------------|-------|----------|---------|----------|
| 1135 | C1024 | 16 | Smith J | H25 | Queens |
| 1057 | C1024 | 24 | Hocine D | H25 | Queens |
| 1068 | C1025 | 28 | White T | H4 | Yonkers |
| 1135 | C1025 | 15 | Smith J | H4 | Yonkers |
| 1135 | C1026 | 10 | Smith J | H25 | Queens |

1NF: Identify Primary key.

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

- Dependency Observe
1. Hours depends on eNo and contractNo
 2. eName depends on eNo
 3. eventNo depends on contractNo
 4. eventLoc depends on eventNo

2NF: Move out eName depends on eNo, eventNo depends on contractNo, eventLoc depends on contractNo as they depend only on one of the PK



3NF: eventLoc depends on eventNo which is not a PK. Thus we need to create a separate table for eventNo to be PK with eventLoc stored.

