**Part 1:**

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

1. Examine the table:

|  |  |  |
| --- | --- | --- |
| *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, 206-555-䄒 |

**Bài làm:**

***(Branch Relation)***

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

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(***BranchtelNo Relation)***

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|  |  |
| --- | --- |
| **branchNo** | telNos |
| B001 | 503-555-3618 |
| B001 | 503-555-2727  503-555-2727 |
| B001 | 503-555-6534 |
| B002 | 206-555-6756 |
| B002 | 206-555-8836 |
| B003 | 212-371-3000 |
| B004 | 206-555-3131 |
| B004 | 206-555-䄒 |

1. Examine the table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *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 |

**Bài làm:**

**Branch Realation Staff Realation**

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

|  |  |  |
| --- | --- | --- |
| **staffNo** | name | position |
| S4555 | Ellen Layman | Assistant |
| S4612 | Dave Sinclair | Assistant |

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

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1. **The “Member” table is used to store the information. As a member can attend many dinners xand a member will not attend more than 1 dinner on the same date.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MEMBER NUM | MEMBER NAME | MEMBER ADDRESS | DINNER NUM | DINNER DATE | VENUE CODE | VENUE DESCRIPTION | FOOD CODE | FOOD DESCRIPTION |
| 214 | Peter Wong | 325  Meadow Park | D0001 | 15-Mar-10 | B01 | Grand Ball Room | EN3 | Stuffed crab |
|  |  |  |  |  |  |  | DE8 | Chocolate mousse |
| 235 | Mary Lee | 123 Rose Court | D0002 | 15-Mar-10 | B02 | Petit Ball Room | EN5 | Marinated steak |
|  |  |  |  |  |  |  | DE8 | Chocolate mousse |
| 250 | Peter Wong | 9 Nine Ave | D0003 | 20-Mar-10 | C01 | Café | SO1 | Pumpkin soup |
|  |  |  |  |  |  |  | EN5 | Marinated steak |
|  |  |  |  |  |  |  | DE2 | Apple pie |
| 235 | Mary Lee | 123 Rose Court | D0003 | 20-Mar-10 | C01 | Café | SO1 | Pumpkin soup |
|  |  |  |  |  |  |  | EN5 | Marinated steak |
|  |  |  |  |  |  |  | DE2 | Apple pie |
| 300 | Paul Lee | 123 Rose  Court | D0004 | 20-Mar-10 | E10 | Petit Ball Room | SA2 | Apple pie |

**Bài làm:**

**1NF:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MEMBER NUM | MEMBER NAME | MEMBER ADDRESS | DINNER NUM | DINNER DATE | VENUE CODE | VENUE DESCRIPTION | FOOD CODE | FOOD DESCRIPTION |
| 214 | Peter Wong | 325  Meadow Park | D0001 | 15-Mar-10 | B01 | Grand Ball Room | EN3 | Stuffed crab |
| 214 | Peter Wong | 325  Meadow Park | D0001 | 15-Mar-10 | B01 | Grand Ball Room | DE8 | Chocolate mousse |
| 235 | Mary Lee | 123 Rose Court | D0002 | 15-Mar-10 | B02 | Petit Ball Room | EN5 | Marinated steak |
| 235 | Mary Lee | 123 Rose Court | D0002 | 15-Mar-10 | B02 | Petit Ball Room | DE8 | Chocolate mousse |
| 250 | Peter Wong | 9 Nine Ave | D0003 | 20-Mar-10 | C01 | Café | SO1 | Pumpkin soup |
| 250 | Peter Wong | 9 Nine Ave | D0003 | 20-Mar-10 | C01 | Café | EN5 | Marinated steak |
| 250 | Peter Wong | 9 Nine Ave | D0003 | 20-Mar-10 | C01 | Café | DE2 | Apple pie |
| 235 | Mary Lee | 123 Rose Court | D0003 | 20-Mar-10 | C01 | Café | SO1 | Pumpkin soup |
| 235 | Mary Lee | 123 Rose Court | D0003 | 20-Mar-10 | C01 | Café | EN5 | Marinated steak |
| 235 | Mary Lee | 123 Rose Court | D0003 | 20-Mar-10 | C01 | Café | DE2 | Apple pie |
| 300 | Paul Lee | 123 Rose  Court | D0004 | 20-Mar-10 | E10 | Petit Ball Room | SA2 | Apple pie |

**2NF:**

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|  |  |  |
| --- | --- | --- |
| MEMBER NUM | MEMBER NAME | MEMBER ADDRESS |
| 214 | Peter Wong | 325  Meadow Park |
| 235 | Mary Lee | 123 Rose Court |
| 250 | Peter Wong | 9 Nine Ave |
| 235 | Mary Lee | 123 Rose Court |
| 300 | Paul Lee | 123 Rose  Court |

|  |  |  |  |
| --- | --- | --- | --- |
| DINNER NUM | DINNER DATE | VENUE CODE | VENUE DESCRIPTION |
| D0001 | 15-Mar-10 | B01 | Grand Ball Room |
| D0002 | 15-Mar-10 | B02 | Petit Ball Room |
| D0003 | 20-Mar-10 | C01 | Café |
| D0004 | 20-Mar-10 | E10 | Petit Ball Room |

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| --- | --- |
| FOOD CODE | FOOD DESCRIPTION |
| EN3 | Stuffed crab |
| DE8 | Chocolate mousse |
| EN5 | Marinated steak |
| DE8 | Chocolate mousse |
| SO1 | Pumpkin soup |
| EN5 | Marinated steak |
| DE2 | Apple pie |
| SO1 | Pumpkin soup |
| EN5 | Marinated steak |
| DE2 | Apple pie |
| SA2 | Apple pie |

|  |  |  |
| --- | --- | --- |
| MEMBER NUM | DINNER NUM | FOOD CODE |
| 214 | D0001 | EN3 |
| 214 | D0001 | DE8 |
| 235 | D0002 | EN5 |
| 235 | D0002 | DE8 |
| 250 | D0003 | SO1 |
| 250 | D0003 | EN5 |
| 300 | D0004 | DE2 |
| 300 | D0004 | SO1 |

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**3NF:**

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| --- | --- | --- |
| MEMBER NUM | MEMBER NAME | MEMBER ADDRESS |
| 214 | Peter Wong | 325  Meadow Park |
| 235 | Mary Lee | 123 Rose Court |
| 250 | Peter Wong | 9 Nine Ave |
| 235 | Mary Lee | 123 Rose Court |
| 300 | Paul Lee | 123 Rose  Court |

|  |  |
| --- | --- |
| FOOD CODE | FOOD DESCRIPTION |
| EN3 | Stuffed crab |
| DE8 | Chocolate mousse |
| EN5 | Marinated steak |
| DE8 | Chocolate mousse |
| SO1 | Pumpkin soup |
| EN5 | Marinated steak |
| DE2 | Apple pie |
| SO1 | Pumpkin soup |
| EN5 | Marinated steak |
| DE2 | Apple pie |
| SA2 | Apple pie |

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| --- | --- | --- | --- |
| **DINNER NUM** | DINNER DATE | VENUE CODE | VENUE DESCRIPTION |
| D0001 | 15-Mar-10 | B01 | Grand Ball Room |
| D0002 | 15-Mar-10 | B02 | Petit Ball Room |
| D0003 | 20-Mar-10 | C01 | Café |
| D0004 | 20-Mar-10 | E10 | Petit Ball Room |

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|  |  |  |
| --- | --- | --- |
| **MEMBER NUM** | **DINNER NUM** | **FOOD CODE** |
| 214 | D0001 | EN3 |
| 214 | D0001 | DE8 |
| 235 | D0002 | EN5 |
| 235 | D0002 | DE8 |
| 250 | D0003 | SO1 |
| 250 | D0003 | EN5 |
| 300 | D0004 | DE2 |
| 300 | D0004 | SO1 |

|  |  |
| --- | --- |
| **VENUE CODE**  1 | VENUE DESCRIPTION  1 |
| B01 | Grand Ball Room |
| B02 | Petit Ball Room |
| C01 | Café |
| E10 | Petit Ball Room |