**Comments** (<u>Comment-ID</u>, Text, User-ID)

    **Keys**: Comment-ID
    **Primary Key**: Comment-ID
    **FDs**:
    Comment-ID ➜ Text, User-ID
    **The relation is in 3NF.**


**Comments-on-comments** (<u>Comment-ID</u>, Commented-ID)

    **Keys**: Comment-ID
    **Primary Key**: Comment-ID
    **FDs**:
    Comment-ID ➜ Commented-ID
    **The relation is in 3NF.**


**Comments-on-products** (<u>Comment-ID</u>, Order-ID, Product-name, Shop-name)

    **Keys**: Comment-ID, {Order-ID, Product-name, Shop-name}
    **Primary Key**: Comment-ID
    **FDs**:
    Comment-ID ➜ Order-ID, Product-name, Shop-name
    Order-ID, Product-name, Shop-name ➜ Comment-ID
    **The relation is in 3NF.**


**Complaint** (<u>Complaint-ID</u>, Status, Text, Filing-date-time, Employee-ID, User-ID, Addressed-date-time)

    **Keys**: Complaint-ID, {User-ID & Filing-date-time}, {Employee-ID & Addressed-date-time}
    **Primary Key**: Complaint-ID
    **FDs**:
    Complaint-ID ➜ Status, Text, Filing-date-time, Employee-ID, User-ID, Addressed-date-time
    User-ID, Filing-date-time ➜ Complaint-ID
    Employee-ID, Addressed-date-time ➜ Complaint-ID
    Assumption: A user can only file and an employee can only address one complaint at any one time.
    **The relation is in 3NF.**


**Complaint-on-products** (<u>Complaint-ID</u>, Product-name)

    **Keys**: Complaint-ID
    **Primary Key**: Complaint-ID
    **FDs**:
    Complaint-ID ➜ Product-name
    **The relation is in 3NF.**

**Complaint-on-shops** (<u>Complaint-ID</u>, Shop-name)

   **Keys**: Complaint-ID
   **Primary Key**: Complaint-ID
   **FDs**:
   Complaint-ID ➔ Shop-name
   **The relation is in 3NF.**

**Complaint-on-comments** (<u>Complaint-ID</u>, Comment-ID)

   **Keys**: Complaint-ID
   **Primary Key**: Complaint-ID
   **FDs**:
   Complaint-ID ➔ Comment-ID
   **The relation is in 3NF.**

**Employees** (<u>Employee-ID</u>, Salary, Employee-name)

   **Keys**: Employee-ID
   **Primary Key**: Employee-ID
   **FDs**:
   Employee-ID ➔ Salary, Employee-name
   **The relation is in 3NF.**

**Orders** (<u>Order-ID</u>, Order-date-time, User-ID)

   **Keys**: Order-ID, {User-ID & Order-date-time}
   **Primary Key**: Order-ID
   **FDs**:
   Order-ID ➔ Order-date-time, User-ID
   User-ID, Order-date-time ➔ Order-ID
   Assumption: A user can only submit one order at any one time.
   **The relation is in 3NF.**

**Products** (<u>Product-name</u>, Maker, Category)

   **Keys**: Product-name
   **Primary Key**: Product-name
   **FDs**:
   Product-name ➔ Maker, Category
   **The relation is in 3NF.**

**Products-in-orders** (<u>Order-ID</u>, <u>Product-name</u>, <u>Shop-name</u>, Status, Delivery-date, User-ID, Rating, Rating-date-time)

> **Keys**: {Order-ID & Product-name & Shop-name}, {User-ID & Rating-date-time}
> **Primary Key**: {Order-ID & Product-name & Shop-name}
> **FDs**:
> Order-ID ➜ User-ID
> User-ID, Rating-date-time ➜ Order-ID, Product-name, Shop-name
> Order-ID, Product-name, Shop-name ➜ Rating-date-time, Rating, Status, Delivery-date
> Assumption: A user can only rate a product from an order once
> **The relation is in 3NF.**

**Products-in-shops** (<u>Product-name</u>, <u>Shop-name</u>, Price, Stock)

> **Keys**: {Product-name & Shop-name}
> **Primary Key**: {Product-name & Shop-name}
> **FDs**:
> Product-name, Shop-name ➜ Price, Stock
> **The relation is in 3NF.**

**Price-history** (<u>Start-date</u>, <u>Product-name</u>, <u>Shop-name</u>, Price, End-date)

> **Keys**: {Product-name & Shop-name & Start-date}, {Product-name & Shop-name & End-date}
> **Primary Key**: {Product-name & Shop-name & Start-date}
> **FDs**:
> Product-name, Shop-name, Start-date ➜ Price, End-date
> Product-name, Shop-name, End-date ➜ Price, Start-date
> Assumption: We can derive the start-date and price from the end-date as well.
> **The relation is in 3NF.**

**Shops** (<u>Shop-name)</u>

> **Keys**: Shop-name
> **Primary Key**: Shop-name
> **FDs**: NIL
> **The relation is in 3NF.**

**User** (<u>User-ID</u>, Name)

> **Keys**: User-ID
> **Primary Key**: User-ID
> **FDs**:
> User-ID ➜ Name
> **The relation is in 3NF.**