We Will Normalize the Review & Loan Tables:

The Tables Pre-Normalization with dummy Data:

Review Table:

| **ReviewID** | **Rating** | **Comments** | **ReviewDate** | **MemberID** | **BookIDs** |
| --- | --- | --- | --- | --- | --- |
| R01 | 4/5 | “Great read!” | 2024-01-01 | M01 | B01,B02 |
| R02 | 5/5 | “Amazing!” | 2024-01-03 | M02 | B03 |
| R03 | 2/5 | “Not my type” | 2024-01-05 | M03 | B02,B04,B05 |

Loan Table:

| **LoanID** | **LoanDate** | **DueDate** | **ReturnDate** | **Status** | **MemberID** | **BookID** | **LateFee** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| L01 | 2024-01-01 | 2024-01-21 | 2024-01-20 | Delivered | M01 | B01 | 0 |
| L02 | 2024-01-05 | 2024-01-25 | 2024-01-27 | Late | M01 | B02 | 10 |
| L03 | 2024-02-01 | 2024-02-21 | NULL | Ongoing | M02 | B03 | 0 |

### First Normal Form (1NF): Is making each cell have an atomic value.

1NF Review Table:

| **ReviewID** | **Rating** | **Comments** | **ReviewDate** | **MemberID** | **BookID** |
| --- | --- | --- | --- | --- | --- |
| R01 | 4 | “Great read!” | 2024-01-01 | M01 | B01 |
| R01 | 4 | “Great read!” | 2024-01-01 | M01 | B02 |
| R02 | 5 | “Amazing!” | 2024-01-03 | M02 | B03 |
| R03 | 2 | “Not my type” | 2024-01-05 | M03 | B02 |
| R03 | 2 | “Not my type” | 2024-01-05 | M03 | B04 |
| R03 | 2 | “Not my type” | 2024-01-05 | M03 | B05 |

1NF Loan Table would look the same:

### Second Normal Form (2NF): Must be in 1NF + No partial dependency

2NF Review Table will be split into two:  
The first will be called Review Table:

| **ReviewID** | **Rating** | **Comments** | **ReviewDate** | **MemberID** |
| --- | --- | --- | --- | --- |
| R01 | 4 | “Great read!” | 2024-01-01 | M01 |
| R02 | 5 | “Amazing!” | 2024-01-03 | M02 |
| R03 | 2 | “Not my type” | 2024-01-05 | M03 |

The Second ReviewBook:

| **ReviewID** | **BookID** |
| --- | --- |
| R01 | B01 |
| R01 | B02 |
| R02 | B03 |
| R03 | B02 |
| R03 | B04 |
| R03 | B05 |

Now each attribute depends fully on the whole key. The loan Table is already in 2NF

### Third Normal Form 3NF: Remove Transitive Dependencies

To accomplish that we need to split the loan table into three tables(Loan, LoanStatus, LoanFee). The Review tables are already in 3NF.

Loan:

| **LoanID** | **LoanDate** | **DueDate** | **ReturnDate** | **MemberID** | **BookID** |
| --- | --- | --- | --- | --- | --- |
| L01 | 2024-01-01 | 2024-01-21 | 2024-01-20 | M01 | B01 |
| L02 | 2024-01-05 | 2024-01-25 | 2024-01-27 | M01 | B02 |
| L03 | 2024-02-01 | 2024-02-21 | NULL | M02 | B03 |

LoanStatus:

| **LoanID** | **Status** |
| --- | --- |
| L01 | Delivered |
| L02 | Late |
| L03 | Ongoing |

LoanFee:

| **LoanID** | **LateFee** |
| --- | --- |
| L01 | 0 |
| L02 | 10 |
| L03 | 0 |