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Milestone #2 - Normalization Justification

1. Relation: AUTHOR
   1. Description: Contains information on a specific author.
   2. PK(s): AUTH\_ID
   3. FK(s): None
   4. Attributes:
      1. AUTH\_FIRST\_NAME
      2. AUTH\_LAST\_NAME
      3. AUTH\_CITY
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
2. Relation: BOOK
   1. Description: Contains information for a specific book.
   2. PK(s): BOOK\_ISBN
   3. FK(s): USER\_SELLER\_ID
      1. Used as foreign key into USER table to lookup seller information
   4. Attributes:
      1. BOOK\_TITLE
      2. BOOK\_EDITION\_NUM
      3. BOOK\_SHORT\_DESC
      4. BOOK\_LONG\_DESC
      5. BOOK\_GENRE
      6. BOOK\_COVER\_TYPE
      7. BOOK\_PRICE
      8. BOOK\_PUBLISHER
      9. BOOK\_PUBLISH\_YEAR
      10. BOOK\_LANGUAGE
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
3. Relation: BOOK\_AUTHOR
   1. Description: A linking entity for the M:N relationship between BOOK and AUTHOR.
   2. PK(s): BOOK\_ISBN, AUTH\_ID
   3. FK(s): BOOK\_ISBN, AUTH\_ID
   4. Attributes:
      1. None
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
4. Relation: BOOK\_CART
   1. Description: A linking entity for the M:N relationship between BOOK and CART.
   2. PK(s): BOOK\_ISBN, CART\_ID
   3. FK(s): BOOK\_ISBN, CART\_ID
   4. Attributes:
      1. None
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
5. Relation: BOOK\_REVIEW
   1. Description: Contains individual book reviews written by users.
   2. PK(s): BR\_ID
   3. FK(s): BOOK\_ISBN, USER\_ID
   4. Attributes:
      1. BR\_RATING
      2. BR\_COMMENT
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
6. Relation: CART
   1. Description: Holds information related to a user’s active shopping cart.
   2. PK(s): CART\_ID
   3. FK(s): USER\_ID
   4. Attributes:
      1. CART\_SHIPPING\_SPEED
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
7. Relation: CREDIT\_CARD
   1. Description: Holds a user’s credit card information.
   2. PK(s): CC\_ID
   3. FK(s): USER\_ID
   4. Attributes:
      1. CC\_HOLDER\_NAME
         1. Keeping as a single string because the name could be a company or contain a middle initial.
      2. CC\_NUM
      3. CC\_EXP\_DATE
      4. CC\_CCV
      5. CC\_BILL\_STREET\_ADDR
      6. CC\_BILL\_ZIP\_CODE
      7. CC\_BILL\_STATE
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
8. Relation: LINE\_ITEM
   1. Description: Represents one line item in an order which stores the price at which it was purchased and the quantity ordered.
   2. PK(s): ORDER\_ID, LINE\_ITEM\_NUM
   3. FK(s): BOOK\_ISBN, ORDER\_ID
   4. Attributes:
      1. LINE\_ITEM\_PRICE
      2. LINE\_ITEM\_QUANTITY
      3. LINE\_ITEM\_TOTAL
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
9. Relation: ORDER
   1. Description: Contains information for a specific order.
   2. PK(s): ORDER\_ID
   3. FK(s): CART\_ID
   4. Attributes:
      1. ORDER\_DATE
      2. ORDER\_SHIPPING\_COST
      3. ORDER\_SUBTOTAL
      4. ORDER\_TAX
      5. ORDER\_TOTAL
   5. Justification:
      1. 1NF
         1. There are no repeating groups
         2. All data fields are atomic
         3. Each field has a unique name
         4. A primary key exists
      2. 2NF
         1. Table already in 1NF
         2. All non-key attributes are dependent on all parts of the primary key
      3. 3NF
         1. Table already in 2NF
         2. All non-key attributes are not dependent on any other non-key attributes
10. Relation: ORDER\_STATUS
    1. Description: Contains status information related to a specific order.
    2. PK(s): OS\_ID
    3. FK(s): ORDER\_ID
    4. Attributes:
       1. OS\_PAYMENT\_STATUS
       2. OS\_SHIPPING\_STATUS
       3. OS\_EST\_ARRIVAL\_DATE
    5. Justification:
       1. 1NF
          1. There are no repeating groups
          2. All data fields are atomic
          3. Each field has a unique name
          4. A primary key exists
       2. 2NF
          1. Table already in 1NF
          2. All non-key attributes are dependent on all parts of the primary key
       3. 3NF
          1. Table already in 2NF
          2. All non-key attributes are not dependent on any other non-key attributes
11. Relation: SHIPPING\_ADDRESS
    1. Description: Contains a user’s shipping address.
    2. PK(s): SHIP\_ID
    3. FK(s): USER\_ID
    4. Attributes:
       1. SHIP\_STREET\_ADDR
       2. SHIP\_ZIP\_CODE
       3. SHIP\_STATE
    5. Justification:
       1. 1NF
          1. There are no repeating groups
          2. All data fields are atomic
          3. Each field has a unique name
          4. A primary key exists
       2. 2NF
          1. Table already in 1NF
          2. All non-key attributes are dependent on all parts of the primary key
       3. 3NF
          1. Table already in 2NF
          2. All non-key attributes are not dependent on any other non-key attributes
12. Relation: USER
    1. Description: Contains individual user information.
    2. PK(s): USER\_ID
    3. FK(s): None
    4. Attributes:
       1. USER\_FIRST\_NAME
       2. USER\_LAST\_NAME
       3. USER\_USERNAME
       4. USER\_PASSWORD
       5. USER\_EMAIL
       6. USER\_TYPE
    5. Justification:
       1. 1NF
          1. There are no repeating groups
          2. All data fields are atomic
          3. Each field has a unique name
          4. A primary key exists
       2. 2NF
          1. Table already in 1NF
          2. All non-key attributes are dependent on all parts of the primary key
       3. 3NF
          1. Table already in 2NF
          2. All non-key attributes are not dependent on any other non-key attributes