

Business Rules:

Book:

- Each book must have a title.
- Each book must have multiple editions but must have at least one, and each edition belongs to one and only one book.
- Each edition must have one unique ISBN.
- Each book can have multiple authors, but must have at least one.
- Each book must belong to at least one genre, and every genre can have many books.
- Each edition must have a publication year, and that publication year cannot be in the future.
- A book can be in multiple formats, but at least one (hardcover, paperback, ebook, audiobook, ect). An edition can have only one format.
- Each edition must have at least one cover image.
- Each edition must have a language it is written in.
- An edition must have one and only one publisher.
- A book can belong to multiple shelves, but may belong to none.
- A book can have many reviews, but may have none.
- Each book has an average rating, if it has at least one review, or it is marked with unrated.
- Each book has one community, and each community belongs to one book.
- Each book can be read by many book clubs, or may be read by no book clubs.

Authors:

- An author may have authored multiple books, but must have authored at least one.
- An author must have a name, biography and image.

Publisher:

- A publisher may have published multiple books, but must have published at least one.
- A publisher must have a name and contact information.

Users:

- Each user account must be associated with one and only one valid email address, but an email address can be changed.
- Each account must have one and only one password, and that password must be secured securely.
- A user must have one and only one unique identifier (username), but that username may be changed.
- A user may have one and only one profile image, and that image must be in a valid format (JPG, PNG, WebP).
- A user can have many shelves or have none.
- Each user has a set of special shelves, called 'owned', 'want to read', 'reading' and 'read'.

- Each unique book on a user's shelf may have statuses such as 'owned', 'want to read', 'reading', and 'read'. These options, with the exception of 'owned' are radioed -- a user can only choose one for each book.
- Each unique book on a user's shelf which has the status 'reading' may have an associated. updatable, page number
- A user can be a part of many communities, but may be a part of none.
- A user can be a part of many clubs, but may be a part of no clubs.
- A user can have many other users as followers, but may be followed by no one.
- A user can follow many other users, but may follow no one.
- A user can have many achievements but may have none.
- A user can have made many reviews, but may have made none.
- A user may have their name, contact information, links to other social media pages, general location, and profile description attached to their account.
- A user has a list of their privacy, security, and personalization settings.
- Each user has a trust level determined by account and lending history.

Shelves:

- A user can create many shelves, but a shelf must belong to only one user.
- A shelf name must be unique for that user.
- A shelf can have multiple books, or have no books.
- Each edition can only appear once per shelf
- Each shelf can either be private or public.
- Each user has a set of special shelves, called 'owned', 'want to read', 'reading' and 'read'.

Lending:

- A user can only lend books they have marked as 'owned'.
- A book may have either of two statuses, 'Available' and 'Lent out'.
- A lending request must be approved or rejected within 7 days, or it expires.
- A book that has been lent out, must have an agreed upon return day.
- Borrowers must confirm when they return a book, and the lender must verify before marking it 'Available' again.

Book clubs:

- A user can create multiple book clubs, but each club must have a unique name.
- Each book club is either marked as private or public.
- Each book club can have many users, but must have at least one user.
- Each book club has one and only one discussion hub.
- Each book club must have at least one moderator.

Communities:

- Each book has one and only one community page, and each community page belongs to one and only one book.
- A community page may have many posts, or may have no discussion posts.

Discussion Posts:

- Each discussion post belongs to one and only one community page or book club discussion hub.
- Each discussion post has one and only one user account associated with it.
- Each post has a record of the number of times it has been flagged for violating ToS.
- A post may have an associated page number, to symbolize what part of a book the post is for.

Reviews:

- Each review is associated with one and only one user account.
- Each review is associated with one and only one book.
- Each review must have a rating, ranging between 0.0 and 5.0 at 0.5 increments.
- Each review has a record of the number of times it has been flagged for violating ToS.

Book Vendors:

- Each vendor must have an account page.
- Each vendor must be verified to upload inventory.
- Each vendor must have at least one non empty shelf.
- Each vendor must have a location verifiable with google maps.
- Each vendor must have contact information.

Book Availability:

- A book's availability must be updated at least once per day.
- A book's price must be stored as a decimal price.
- Online and library availability is read only, fetched via API, and is cached for performance.