

Book Review Library



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Objective of the project designed

Create a site to provide users with an organized source of reviews for a list of novels, from a varied audience.

Cost Estimation

| | Function Category | Count | Complexity | | | Count x Complexity |
|---|--|-------|------------|---------|---------|--------------------|
| | | | Simple | Average | Complex | |
| 1 | Number of User Input | 13 | 3 | 4 | 6 | 52 |
| 2 | Number of User Output | 7 | 4 | 5 | 7 | 49 |
| 3 | Number of User Queries | 10 | 3 | 4 | 6 | 40 |
| 4 | Number of Data Files and Relational Tables | 5 | 7 | 10 | 15 | 75 |
| 5 | Number of External Interfaces | 0 | 5 | 7 | 10 | 0 |
| | | | | | GFP | 216 |

- (1) Does the system require reliable backup and recovery? **PC = 3**
- (2) Are data communications required? **PC = 2**
- (3) Are there distributed processing functions? **PC = 0**
- (4) Is performance critical? **PC = 1**
- (5) Will the system run in an existing, heavily utilized operational environment? **PC = 2**
- (6) Does the system require online data entry? **PC = 5**
- (7) Does the online data entry require the input transaction to be built over multiple screens or operations? **PC = 4**
- (8) Are the master files updated online? **PC = 1**
- (9) Are the inputs, outputs, files, or inquiries complex? **PC = 3**
- (10) Is the internal processing complex? **PC = 1**
- (11) Is the code designed to be reusable? **PC = 4**
- (12) Are conversion and installation included in the design? **PC = 1**
- (13) Is the system designed for multiple installations in different organizations? **PC = 0**
- (14) Is the application designed to facilitate change and ease of use by the user? **PC = 5**

Cost Estimation (continued)

Compute Processing Complexity Adjustment (PCA).

$PCA = 0.65 + 0.01 (PC1 + PC2 + \dots + PCn)$ where 0.65 is the empirical constant

$PCA = 0.65 + 0.01 (3 + 2 + 0 + 1 + 2 + 5 + 4 + 1 + 3 + 1 + 4 + 1 + 0 + 5)$

$= 0.65 + 0.01 (32)$

$= \mathbf{0.97}$

$FP = GFP * PCA$

$GFP = 216$

$PCA = 0.97$

$FP = 216 * 0.97 = \mathbf{209.52}$

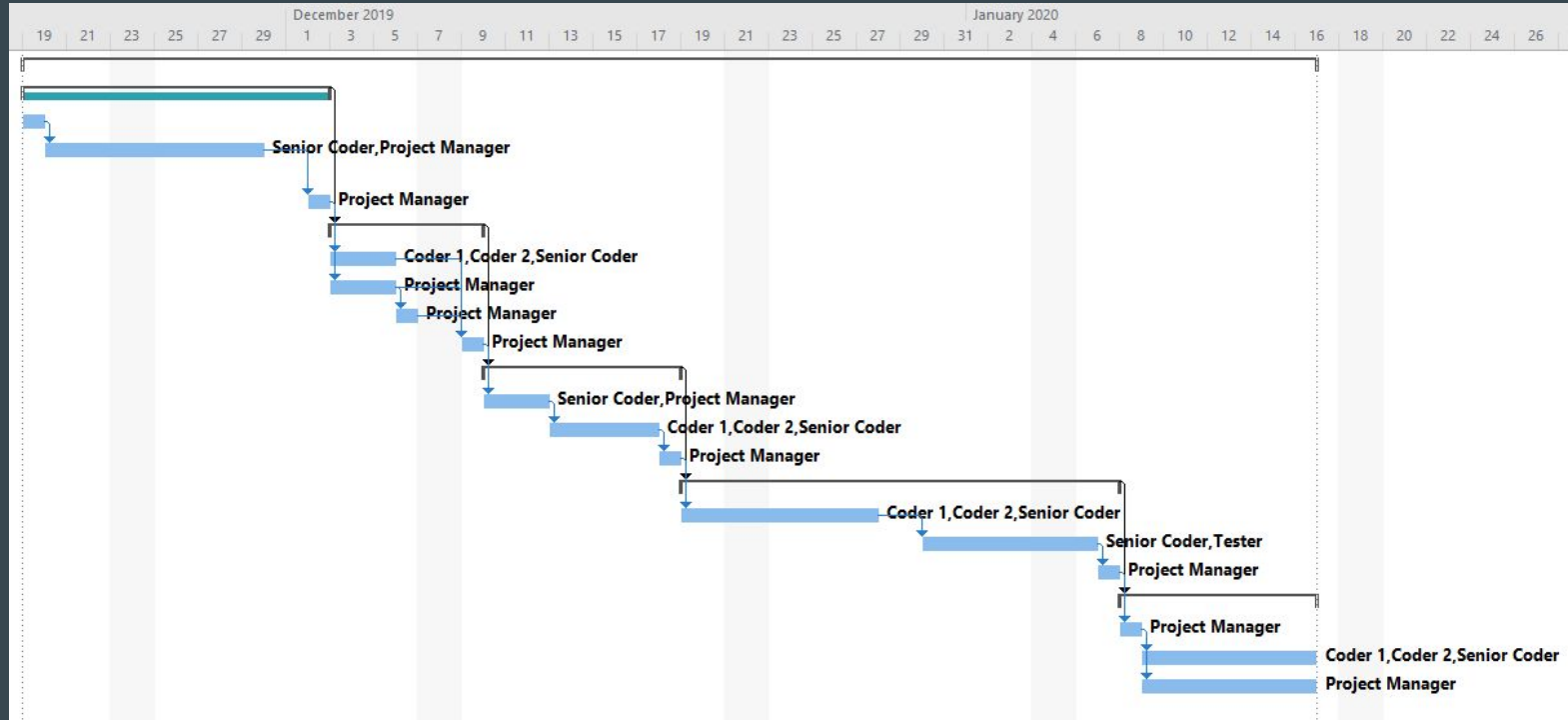
Cost Estimation (continued)

Estimated Cost of Hardware Products: \$3,500 per year

Estimated Cost of Software Products: \$0

Estimated Cost of Personnel: \$6732.80 dedicated to the development of the software.

Project Timeline



Functional and Non-Functional Requirements

Functional Requirements:

1. Search for a book database for a specific book. (Title, Author name, ISBN)
2. View all published reviews about chosen book.
3. Type a review and add it to the list of reviews.
4. “like” reviews
5. Uniquely identified by a chosen username.
6. Access the system by entering their user-name and chosen password.
7. Search for other users by username, and view all reviews published by that user.

Functional and Non-Functional Requirements (continued)

- Product Requirements
 - Usability
 - Website shall be available for Android and iOS phones.
 - Website shall be available in the following languages: (Mandarin, Spanish, English, Hindi, Bengali, Portuguese, Russian, Japanese, French, German)
 - Website shall be accessible to users with poor eyesight or colorblindness.
 - No tutorial should be required prior to using the Website, but will be available by request.
 - Efficiency
 - Performance
 - Website must load in less than 2 seconds.
 - Search results must return within 2 seconds of request.
 - Website should not crash or have any bugs that would reduce functionality.
 - Service should be available to 10,000 concurrent users within a 5 second timeframe.
 - Space
 - Any file sizes stored on User device should not exceed 30 MB.

Functional and Non-Functional Requirements (continued)

- Product Requirements
 - Dependability
 - Downtime/Maintenance should not last more than 3 hours per week.
 - Downtime/Maintenance should be done during off-peak hours (~3AM)
 - Database should be backed up during downtime/maintenance.
 - Security
 - End users' data shall be encrypted.
 - User data is confidential, will not be sold to 3rd parties.

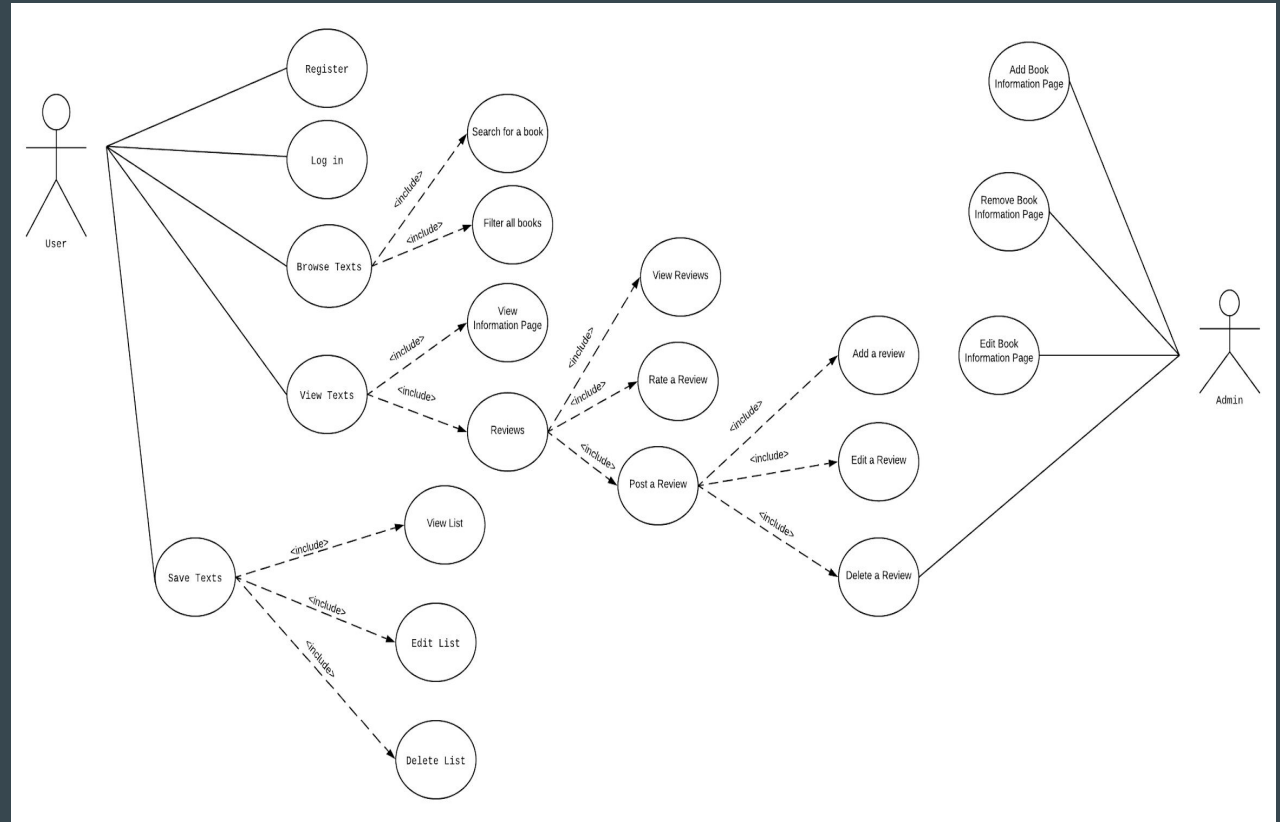
Functional and Non-Functional Requirements (continued)

- Organizational Requirements
 - Environmental
 - All communication with stakeholders will be through paperless communications.
 - Operational
 - End users must log in to the Website via unique username and password
 - Each End User may only create one review for each book.
 - End Users may like or dislike other User reviews only once per review.
 - Development
 - Code will be written in the Java programming language
 - Website will be designed according to the MVC software architecture pattern

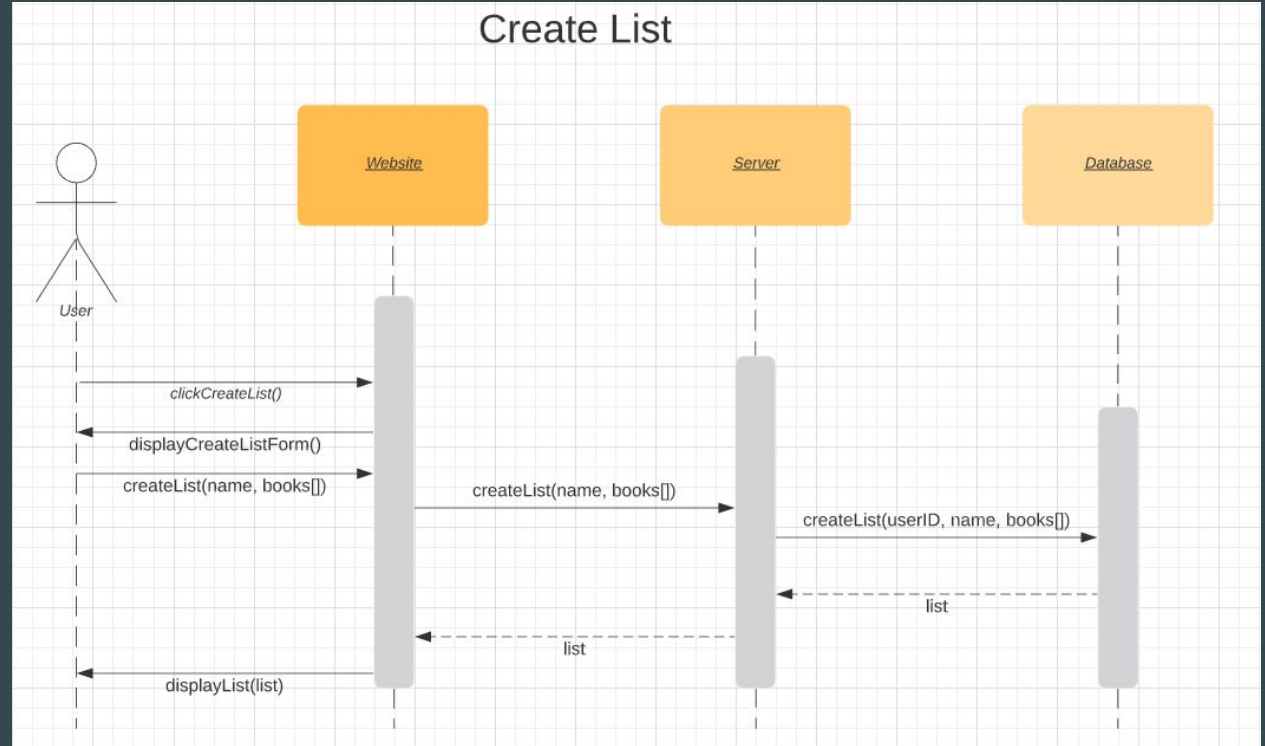
Functional and Non-Functional Requirements (continued)

- External Requirements
 - Regulatory
 - Website will abide by all laws and regulatory requirements where its services will be available.
 - Ethical
 - Book reviews will be moderated to ensure legitimacy/appropriateness of user reviews.
 - Legislative
 - Safety
 - Website shall not have any vulnerabilities which would compromise the end user's mobile device or computer.

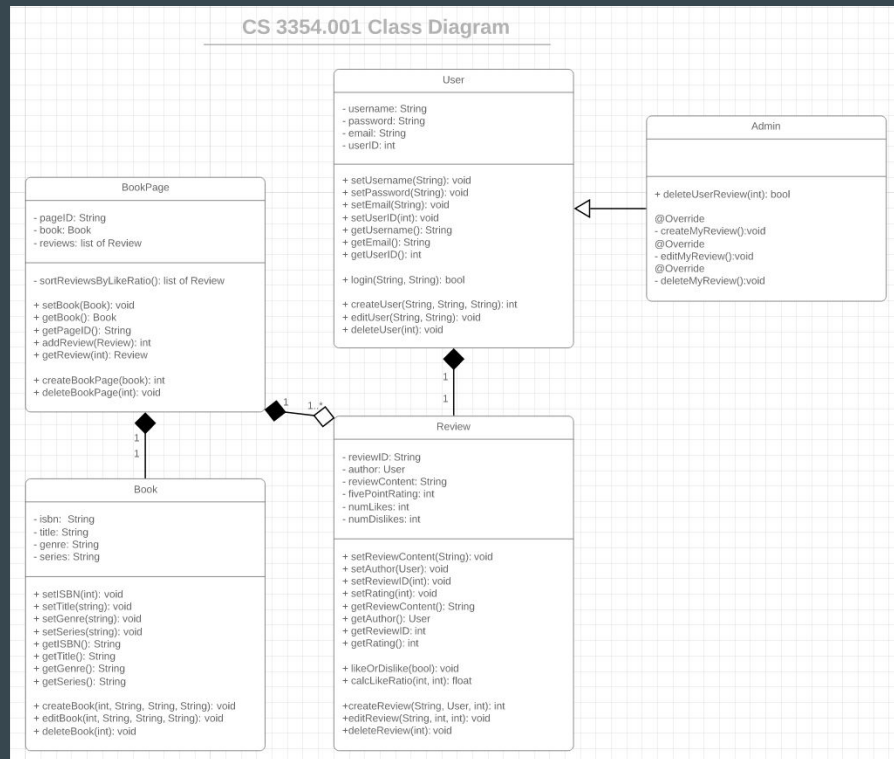
Use Case Diagrams



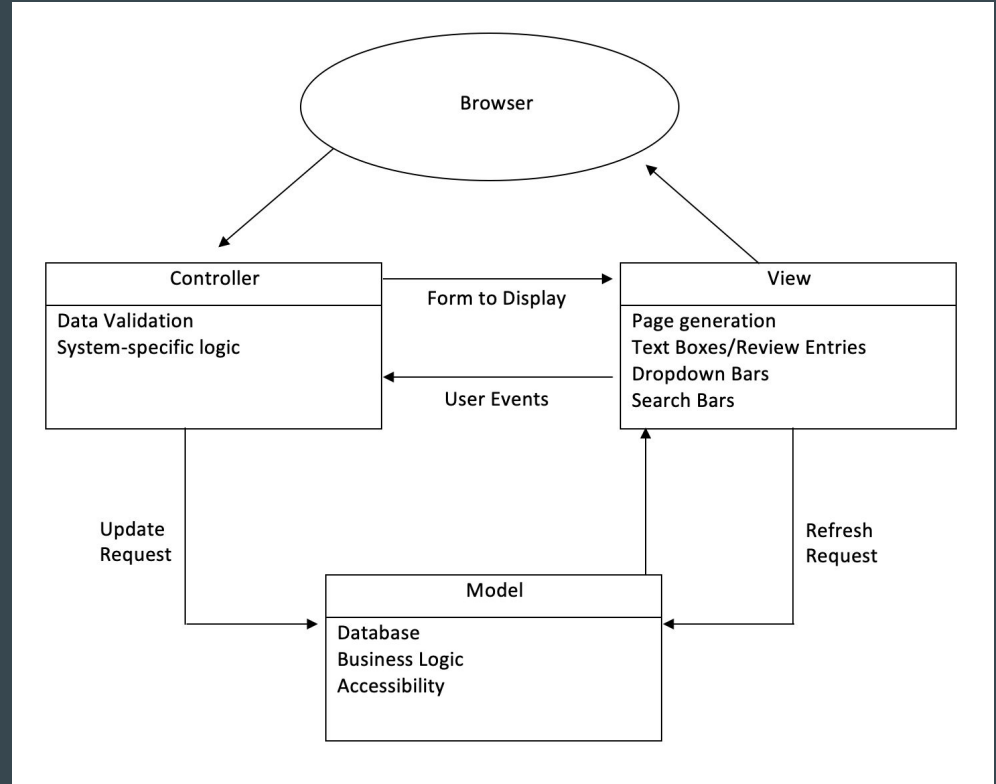
Sequence Diagram




Class Diagram




Architectural Design : Model View Controller (MVC)




User Interface Design





Book Review Library







Book Review Library






Search




+ Add List

+ Add Review



Book Review Library



Novel Cover Image

Review Author User Name

Review Text

Like Review

Test Plan - searchISBN(String): String

Search the database via a book's ISBN.

Returns the pageID of the BookPage which contains the desired book, if found.

ISBNs consist of digits only, and are either ten or thirteen digits in length.

This requirement allows the searchISBN() String parameter to be easily divided into disjoint subsets

Test Plan - searchISBN(String): String

Equivalence Partitioning Black-Box Testing Technique

Valid Input

A range of consecutive strings

0000000000-9999999999

or

00000000000000-99999999999999

Invalid Input

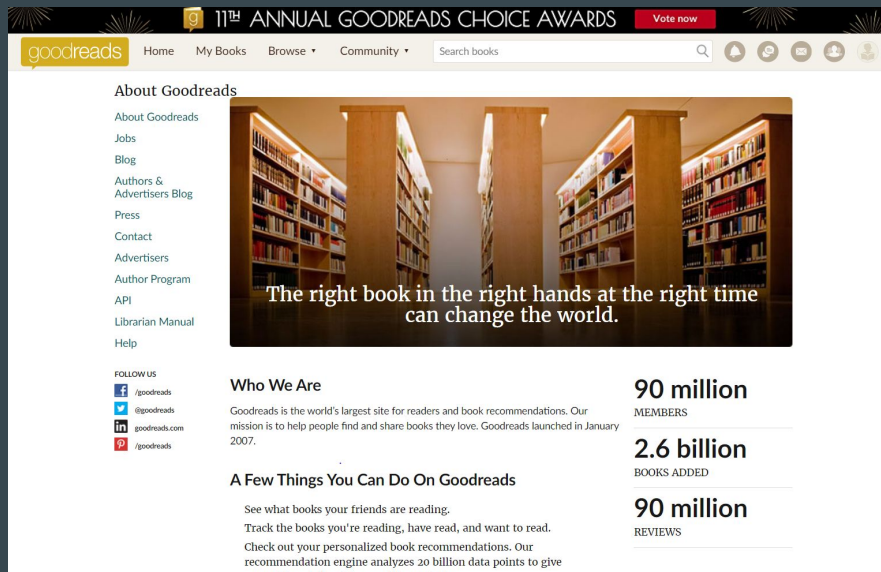
All strings except those consisting of either ten or thirteen character digits only

Test Cases: N is number of characters

- | | | |
|-----|-------------|--------------------------------|
| 1) | N = 10 | digit characters |
| 2) | N = 13 | digit characters |
| 3) | N < 10 | digit characters |
| 4) | 10 < N < 13 | digit characters |
| 5) | 13 < N | digit characters |
| 6) | N = 10 | non-digit characters |
| 7) | N = 13 | non-digit characters |
| 8) | N < 10 | non-digit characters |
| 9) | 10 < N < 13 | non-digit characters |
| 10) | 13 < N | non-digit characters |
| 11) | N = 10 | digit and non-digit characters |
| 12) | N = 13 | digit and non-digit characters |
| 13) | N < 10 | digit and non-digit characters |
| 14) | 10 < N < 13 | digit and non-digit characters |
| 15) | 13 < N | digit and non-digit characters |

Comparison with similar work (if any), or emphasizing its significance and uniqueness (if there is not any)

- GoodReads
 - Book Reviews
 - Purchase a Book
 - Challenges
 - Awards
 - Community



References

- [1] Fiberadmin, “Goodreads Case Study,” *NetHosting*, 19-Apr-2013. [Online]. Available: <https://nethosting.com/goodreads-case-study/>. [Accessed: 15-Nov-2019].
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