**SOFTWARE ENGINEERING PROBLEM SPECIFICATION TABLE, IDENTIFYING THE FOLLOWING ELEMENTS**

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| CUSTOMER | ReadX |
| USER | Customers and employees from ReadX |
| FUNCTIONAL REQUIREMENTS | The software must allow:  RF0: Register users  RF1: Register bibliographic products in the system.  RF2: Delete bibliographic products in the system.  RF3: Modify bibliographic products.  RF4: The user to acquire a bibliographic product.  RF5: The user to unsubscribe from a magazine at any time.  RF6: Present a Library of Bibliographic Products to the user.  RF7: The user to simulate a reading session.  RF8: Create reports. |
| CONTEXT | ReadX, an Egyptian conglomerate, must develop a software prototype to enable them to run its publishing business globally. For this, the company requires 2 types of premium and non-premium users in addition to 2 products, books, and magazines. Apart from this, the company wants to be able to generate reports and allow users to have reading sessions. |
| NON-FUNCTIONAL REQUIREMENTS | The software must have:  RFN1: The program must have an initialized program.  RFN2: The system has to be scalable |

| Name or identifier | RF0: Register User | | |
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| Summary | The prototype must have, for now, two types of users:   * Regular   This user must be able to:   * + - Buy 5 books.     - Subscribe to up to 2 magazines.     - During their reading session this user will be presented with advertisements. * Premium.   + - * Purchase books       * Subscribe to magazines.   To register users on the platform, the following information is needed:   * + - * name       * ID       * date of connection | | |
| Input | Entry name | Data type | Selection or repetition condition |
| name | String | REQUIRED |
| ID | String | It must have a unique ID |
| typeOfUser | Int | It must be either 1 or 2. |
| Result or postcondition | The software will solicit the current user to insert their name, ID, and type of user (It can be either premium or standard). The software will create a user and save it in the system. After validating all the information and adding it to the system, the system will output a message indicating the state of the operation. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| msg | String | A message indicating the state of the operation. |

| Name or identifier | RF1: Register bibliographic products in the system | | |
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| Summary | For now, the company's business model is based on selling two types of bibliographic products**: books and magazines.**  Each bibliographic product has a:   * unique identifier (3 hexadecimal characters)/ (3 alphanumeric characters) * name * number of pages * publication date * URL leading to a repository with the book's/magazine cover. * The value of retail/subscription (in dollars) * Number of copies sold/active subscriptions. * The accumulated number of pages read.   Each book has a:   * short review * genre (Science Fiction, Fantasy, and Historical Novel.)   Each journal has a:   * category (Varieties, Design, and Scientific.) * the frequency of issuance | | |
| Input | Entry name | Data type | Selection or repetition condition |
| uniqueIdentifier | String | It has to be 3 hexadecimal characters for a book and 3 alphanumeric characters for a magazine. |
| bookOrMagazine | Int | It has to be a number between 1 and 2. |
| name | String | REQUIRED |
| numberOfPages | Int | It has to be a number greater than 0. |
| publicationDate | Calendar | REQUIRED |
| URL | String | REQUIRED |
| value | double | REQUIERED |
| review | String | REQUIRED if it is a book |
| frecuencyOfIssuance | String | REQUIRED if it is a magazine |
| genre | String | It has to be either Science Fiction Fantasy or Historical Novel if it is a book. |
| category | String | It must be either Varieties or Design or Scientific if it is a magazine. |
| Result or postcondition | The system will ask for all the information and check if it is valid, if it is the system Will create a book and store it in the library. The system then will print a message indicating the status of the operation. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| msg | String | A message indicating the state of the operation. |

| Name or identifier | RF2: Delete bibliographic products in the system. | | |
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| Summary | The system has to be able to delete a bibliographic product so it will ask for the name of the product and then delete it from the database of the library. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| name | String | REQUIRED |
| Result or postcondition | The system will find the book or magazine that has the name and delete it from the library. If the operation is complete, it will output a message indicating so. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| msg | String | A message indicating the state of the operation. |

| Name or identifier | RF3: Modify bibliographic products. | | |
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| Summary | The software must have the possibility to delete a bibliographic product, for this reason, it will ask for the name of the product and then display a menu indicating what things are modifiable, the user will then select what aspect of the product he wants to modify and the software will output a message with the state of the operation. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| name | String | REQUIRED |
| optionToChange | int | It has to be a number greater than 0 and less than the option available for change. |
| Result or postcondition | The software will find the product with the name and then display a menu indicating the option that the user can change, after the user modifies the bibliographic product, the software will output a message indicating the state of the transaction. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| menuWithOptons | String | A menu with all the attributes that the user can change. |
| msg | String | A message indicating the state of the operation. |

| Name or identifier | RF4: The user to acquire a bibliographic product. | | |
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| Summary | When users purchase a book or subscribe to a journal the software should save:  The date of the transaction and the amount paid must be in an invoice.  The number of copies sold, or active subscriptions must be updated. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| nameOfTheProduct | String | REQUIRED |
| IDofTheUser | String | It must be an existing ID |
| Result or postcondition | The software will assign the product inserted to the specific user and will save in the system the date of the transaction and the amount paid as an invoice and the application will modify the number of copies sold or active subscriptions. The software will output the invoice and a message indicating the state of the operation. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| msg | String | A message indicating the state of the operation. |
| invoice | String | An invoice containing the date of the purchase and its price. |

| Name or identifier | RF5: The user to unsubscribe from a magazine at any time. | | |
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| Summary | The software must allow a user to unsubscribe from a magazine at any time so it will ask which user wants to unsubscribe and the magazine name. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| nameOfTheProduct | String | REQUIRED |
| IDofTheUser | String | It must be an existing ID |
| Result or postcondition | The software will find the user and the magazine and will unsubscribe the user from it. If the transaction was successful it will output a message indicating so. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| msg | String | A message indicating the state of the operation. |

| Name or identifier | RF6: Present a Library of Bibliographic Products to the user. | | |
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| Summary | ReadX requires that its prototype have a menu that allows the user to quickly view its collection of bibliographic products.  The Library must be represented through 5x5 matrices that graphically present the code of the bibliographic products associated with the user's account.  The products must be ordered by publication date, from the oldest to the newest.  As the user expands his collection, the user should be allowed to navigate in it (previous or next page).  The user should be able to select a bibliographic product either by its x,y coordinate in the presented matrix or the 3-character identifier of the product to initiate a reading session. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| IDofTheUser | String | It must be an existing ID |
| userOption | Char | If the user wants to change between views he must type A to go to the previous page, S to go to the next page, and E to exit |
| Xcordinate | int | If the user wants to start a reading lecture it must type the X coordinate in the matrix. |
| Ycordinate | int | If the user wants to start a reading lecture it must type the Y coordinate in the matrix. |
| Result or postcondition | The software will create a 5x5 matrix that graphically presents the code of the bibliographic products associated with the user's account. The products will be ordered by publication date, from the oldest to the newest. Besides this, the user will be able to move between pages. And ht will have the option to type the x,y coordinate to start a reading lecture. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| matrix | String | A matrix with all the products of a specific user. |
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| Name or identifier | RF7: Allow the user to simulate a reading session. | | |
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| Summary | The simulation of the reading session must:   * Present the name of the bibliographic product. * The current page being read. * Navigation options to read the previous page, the next page, and to return to the library.   Each page read in the simulation increases the number of pages read for the corresponding bibliographic product on the platform.  Regular users must be presented with advertisements at two moments: at the beginning of the reading session and after every 20 pages of a book or 5 pages read from a magazine.   * Subscribe to Combo Plus and get Disney+ and Star+ at an incredible price! * Now your pets have a favorite app: Laika. The best products for your furry. * We are celebrating our anniversary! Visit your nearest Éxito and be surprised by the best offers. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| uniqueIdentifier | String | It must be 3 hexadecimal characters for a book and 3 alphanumeric characters for a magazine. |
| userOption | Char | If the user wants to change between views he must type A to go to the previous page, S to go to the next page, and B to go back to the library. |
| Result or postcondition | The software will present a reading session in the console, it will present the name of the product, the current page being read, and some navigation options. Each page that is read must increase the number of pages read in the book. If the user that is in a reading session is a regular user, he will be presented with advertisements at two moments: at the beginning of the reading session and after every 20 pages of a book or 5 pages read from a magazine. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| readginSesion | String | It must be a String containing all the necessary information in the reading session. |

| Name or identifier | RF8: Create reports. | | |
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| Summary | To generate targeted content, ReadX requests that the prototype be able to generate the following reports in real-time:   * For each type of bibliographic product, book, and magazine, report the accumulated total number of pages read on the entire platform (type of product and number of pages read). * Report the most read book genre and magazine category for the entire platform (genre or category name and the number of pages read). * Inform the Top 5 books and the Top 5 most-read magazines on the platform (name of the book, name of the genre or category, and number of pages read). * For each genre, report the number of books sold and the total value of sales ($). * For each category, report the number of active subscriptions and the total value paid for subscriptions. | | |
| Input | Entry name | Data type | Selection or repetition condition |
| typeOfReport | Int | A number greater than – and smaller than the number of possible reports |
| Result or postcondition | The system will receive which report it has to generate and then create and display it. | | |
| Outputs | Entry name | Data type | Selection or repetition condition |
| report | String | The corresponding report with all the information required. |
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