COMPARISON OF SOFTWARE IMPLEMENTATIONS OF HOBBY JOURNALS

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Summary: After the invention of the Internet access to books, games, and movies has become more convenient and faster. More and more people are becoming interested in these types of hobbies. Databases of games, books, and movies are increasing every year, and therefore a person who is interested in them has a need to organize leisure time. A hobby journal can help in this situation, for example, a diary of reading, watching movies, or playing games. Apps that implement this functionality not only help users track their progress, but also help them search for new products, discuss with other users, and receive recommendations that are generated using various algorithms. This article examines some services that provide such solutions and compares them. Using twelve of the most popular resources, we researched and compared the main features of the systems. In addition, we wanted to determine whether compared services fully fulfill the needs of users.

Keywords: journal, hobbies, reviews, books, video games, movies, reader’s diary, recommendations.

A hobby is an activity that you do for pleasure when you are not working [1]. Today, people have increasingly started to fill their time with various activities in order to have a good time. It has been proven that engaging in hobbies helps people...
cope with stress and increase life satisfaction [2]. Some of the most popular hobbies include reading, watching movies and TV shows, and playing video games. With the emergence of new technologies, the entertainment industry has begun to offer consumers a wide variety of content. Currently, there is a large number of created movies, books, and games available for people to enjoy in their leisure time [3].

Over the past decade, home theaters and streaming services that allow people to watch movies, read books, and play games without leaving their homes have become very popular. According to Statista Research Department statistics, over 50% of people prefer watching movies or TV shows at home [4]. Furthermore, the number of streaming platform users continues to grow. Additionally, new forms of entertainment have emerged, such as video games. As of 2023, there are already over 3.09 billion active gamers worldwide, according to J. Clement's statistics [5]. Every year, the number of products in these categories continues to grow: in 2022, almost 11,000 games were released on the Steam platform [6], the number of movies on the IMDb platform exceeded 14,000 [7], and according to statistics from 2011, the number of books published per day exceeds 485, which is 177,000 books per year [8].

As a result, people have increasingly started to organize their hobbies systematically. For instance, for individuals interested in reading, there is a way to organize their passion through a reading journal, sometimes referred to as a book journal. It serves as an ideal method for students and book lovers to keep track of ideas, observations, and lessons they have learned from reading. Psychologists assert that journaling contributes to improving mental health, motivates reflection, and helps overcome depression [9][10]. Furthermore, the process of reading helps develop critical thinking skills and attention to detail [11].

Similarly, the idea of a reading diary can be adapted to other hobbies. Thus, watching movies and series or playing games can also be accompanied by keeping a diary. The structure of the diary can be made at the discretion of the user.

Modern technologies allow people to automate the process of keeping a diary and transfer it to a digital form. This ensures convenience and mobility of use, and algorithms provide analysis of processed information.

Over the past decades, many software solutions have appeared that allow the user to systematize his experience with the hobby and find something new for himself. Despite the common idea, they implement it in different ways. This work considers the most popular solutions:

- **Goodreads**
  Goodreads is a social network that is a subsidiary of Amazon and is aimed at book lovers. The network provides access to a database of more than 3.5 billion books and allows the user to save, track and review books, as well as exchange opinions with other readers.

- **IMDb**
  IMDb is one of the world's largest online sources of film and television information and offers users access to a wealth of information about the film industry.

- **StoryGraph**
  StoryGraph is a reader’s diary that allows a user to create an account and add books to collections, search for new books, and share users’ impressions.
IGN
IGN is a web resource that publishes news, information, guides, video reviews, reviews, and reviews about computer games, movies, television, and comics. In addition, IGN includes forums where users can discuss their favorite games, movies, and shows.

Rotten Tomatoes
Rotten Tomatoes is one of the most popular aggregators of reviews from film critics, and television journalists and provides an overall film score based on the percentage of positive reviews. It has a unique rating system in the form of a Tomatometer, collects reviews from the best critics, and has its own awards for the best films.

Games Radar
Games Radar is an informational web resource whose content is related to games, gaming news, previews, guides, and various videos. The service publishes a variety of articles daily, including official video game news, reviews, and interviews with publishers and developers.

Library Thing
Library Thing is a web application for storing and sharing catalogs of books and media. The main function is to catalog books, movies, music, and other media by importing data from libraries.

Rogerebert.com
Rogerebert is an American film review website, with an archive of reviews by film critic Roger Ebert for the Chicago Sun-Times, as well as reviews and essays by other critics. The site does not require registration, as only reviews from critics are published (as well as archived reviews from Roger Ebert himself).

Netflix
Netflix is a streaming platform for watching movies and series. They also create films, series, and television shows themselves. Access to Netflix content varies by region and may change over time.

Stash
Stash is a mobile application for tracking video games. The main functions of the application are tracking users’ progress in games and receiving personalized recommendations.

Rork
Rork is a mobile application for tracking the progress of reading books and tracking reading per month.

Metacritic
Metacritic is a site for writing reviews and feedback on movies, games, TV series, and music.

The comparison will be made according to the following criteria:

- Review and evaluation system
- Products localizations
- Users’ collections
- Lists of recommendations
- Algorithms of recommendations
- Search and filtering
- Interaction with other users
Review and evaluation system

- **Goodreads**
  The assessment is made on a 5-point scale from 1 to 5, where 1 is "not liked at all" and 5 is "liked a lot". A user can also leave the read book without a rating. The review is text only and has no built-in editor features such as hiding spoilers, highlighting text, etc.

- **IMDb**
  The rating system includes 10 stars, where 1 star is "terrible", and 10 stars is "masterpiece". The review contains a title, and the text of the review, which must exceed 600 characters and contain only Latin letters of the alphabet. A user can also mark whether the review contains spoilers.

- **StoryGraph**
  The system supports grading from 1 to 5 with the ability to set fractional grades in increments of 0.25. When leaving a review, the user answers a number of mandatory questions that will create a book rating and be displayed to other users. After providing answers, the user can provide expanded feedback, which supports formatting and hiding spoilers under the tag. It is also possible to tag the main topics of the book and warn other users about the content.

- **IGN**
  Both users and resource employees can rate games and write recommendations. The rating is presented in the system in the form of a 10-point scale, in which the user notes his rating and determines whether he recommends a particular game to other users of the service. When rating a game, the user can “like” the characteristics of the game, and indicate the status of interaction with the game and the platform on which the user played the game.
  
  The maximum length of the review is 450 characters. It may contain spoilers. There is an option to make the rating private and it will not be shown to other users.
  
  There is a “re-review” policy for reviews from critics, whereby reviews can be re-examined after changes to the game.

- **Rotten Tomatoes**
  The rating system consists of 2 ratings, namely the rating from critics and the rating from viewers. Critics’ rates form the site’s unique rating system - Tomatometer. Service workers collect reviews from critics, and writers who are members of various guilds or associations of critics. Workers will determine if it is a positive review using associations with tomatoes, i.e. a red tomato icon is a positive review, and a green icon is a negative one. After that, service employees analyze all reviews and calculate the percentage of positive reviews. If the share of positive reviews is 60% or more, then the film is considered “fresh”, otherwise "spoiled". In addition, an average score on a 10-point scale is calculated, and interesting passages from each review are cited.

  In addition, there is also the mark "Certified fresh". It is awarded to a film that has a Tomatometer value of more than 75% and has at least 80 critical reviews.

  Ratings from regular users are displayed separately and are calculated on a 5-point scale.
GamesRadar
Game evaluation takes place in the form of review articles. All reviews are written by resource employees. Each review contains the opinions of the critic, accompanied by photos and video material, his rate from 1 to 5 in increments of 0.5, and a description of the author: his position and brief information about him. In addition, it is possible to view all reviews from the author. Users of the resource can evaluate the review using the reactions "liked, fun, love". In addition, users can discuss the review in the comments.

Library Thing
Ratings and reviews are published only by users of the resource. The rating is based on 5 stars with a step of 0.5. Review without the possibility of additional text design, adding spoilers, hyperlinks, and the like. On review creation, the user indicates in which language he writes the review. Thanks to this, other users can filter reviews by the language of review. The ability to rate and write a review appears after adding a product to the collection.

rogerebert.com
Reviews are written by professional critics. The review itself includes a rate from 0.5 to 5 and a text description. A screenshot from the movie or a poster is added to the review. Mentioning people who worked on a film includes a hyperlink to view all of that person's films.

Netflix
There is an opportunity to rate films and write comments on the site. The assessment is simple - like or dislike.

Stash
In the Stash mobile application, a user can rate a game immediately after adding it to the played games. Evaluation is carried out on a 10-point scale, but a review can be written without a rating. When writing a review, the user can indicate which part of the game has been completed, four options are available: “Not selected”, “Main story completed”, “Main story and side quests” and “100% completed”. The review is a text response of any length. Promotion of feedback in the rating is carried out with the help of likes.

Rork
In the Rork mobile application, books are rated on a 5-point scale. A user can rate the book after adding the book to "Read" or after finishing the book in reading mode. It is only possible to rate a book without writing a review.

Goodreads
The system supports searching in different languages and has versions of the book in different editions. For each version, the abstract is displayed in the language that was used to search for the book. A user can configure the display of reviews in a specific language of the user's choice.

IMDb
The resource supports 8 system languages. Each movie product has only one page that is displayed in the selected language. Search in different languages is supported, there are pages of film products of countries whose localization is not supported.
– StoryGraph
  The resource contains only a few of the most popular books in other languages, but all the information about the book is in English. There is no localization.
– IGN
  Pages with games are not localized. It is possible to change the region in the system, after which the user will be redirected to the page with the specified region, which has limited functionality and shows news and guides in the language of the selected region. This is the case for most regions except English-speaking regions.
– Rotten Tomatoes
  Pages with movies and reviews are not localized.
– GamesRadar
  The site offers users to view content taking into account the user's region. The system supports the following regions: the UK, the US, Canada, and Australia.
– Library Thing
  The product is not duplicated except for different parts of the same series. There is no duplication of the product in versions in other languages (pages with information about the product in another language are available on other domains).
– rogerebert.com
  All films and their reviews are presented in one copy in English.
– Netflix
  Netflix offers content in different languages for different regions.
– Stash
  The language of the application is determined by the system language of the device. English is the default language. Game titles are always displayed in their original language, but searches can be made by localized game titles. Recommendations promote reviews in the language installed on the device's system, even when the application itself does not have such a localization. All reviews will be displayed in the language in which they were written. It is not possible to filter reviews by language.
– Rork
  A user can search for books in different languages. Also, books can have several different pages in the same language - they are considered separate books. The application is available only in the Ukrainian language and does not involve changes.
– Metacritic
  The site supports the English language and does not have localization in other languages. There is no possibility to choose the desired languages for viewing reviews. A user can search only in English.

Users' collections
– Goodreads
  The social network provides default collections: "Reading", "Want to read" and "Read". A user can also browse books from all collections together and create his own collection. Collections contain the following fields: date of addition to the collection and date of reading. Collections can be edited.
IMDb
There is only one collection offered by the service - "watch list". A user can create their own collection and edit it after creation. The collection only has the date the movie product was added.

StoryGraph
StoryGraph contains its own collections: "want to read", "reading", "read", and "unread". The service does not support the creation of users` collections.

IGN
The user can create his own collection in which to specify games. But collections are visible only to users who created them.

Rotten Tomatoes
The user can add the movie to the "What to watch" list, in addition, it is possible to view the lists of other users.

GamesRadar
Resource users cannot create their collections and share them with other users. Collections are presented in the form of articles and recommendations.

Library Thing
Collections are created by users themselves. Other users can also see them. By default, there are "wish list", "favorite", and "to read" collections.

rogerebert.com
There are no collections.

Netflix
There are "I want to see", "I'm watching" and similar collections. There is also a custom list called "My List".

Stash
The user can add the game to the personal collection, the standard ones for each user are: "Will play", "Playing", "Completed" and "Archive". Also, the user can independently create collections, both private and public.

Rork
The user can add books to personal collections: "Saved", "I want to read", "Reading now", "Read" and "Postponed". The user can also create his own collections.

Metacritic
The user cannot create collections or save movies, series, games, or music in a collection.

Lists of recommendations

Goodreads
The resource has built-in lists such as "books most read this week", and "recently added" for each genre.

IMDb
There are lists of "Top 250 Movies", "Top 250 TV Shows", "Top Movies", "Top TV Shows".

StoryGraph
The resource does not have thematic lists of recommendations.

IGN
Recommendation lists on the service are presented as the system`s lists and users` lists. Each user can create a list with a certain name and fill it with games.
In addition, IGN editors provide their recommendations with information, articles, videos, and photos. There is also a section like “Best of the best”, where the user can find lists of the best games, movies, or TV shows.

- Rotten Tomatoes
  The site includes lists of recommendations from the system, such as “Top of the best films”. The "What to watch" section, contains lists of recommendations from the site’s employees, such as: "what to watch this week", films with a certain actor or actress, and others. In addition, video content and news related to movies are recommended to the user in the form of various tops.

- GamesRadar
  Recommendations are made through the site workers’ articles.

- Library Thing
  Recommendation lists are divided into two types: system lists and user lists. The site itself makes the recommendation lists thanks to artificial intelligence and user analysis.

- rogerebert.com
  The site contains a variety of recommendation lists, the largest of which is “Great Films,” which contains films with 4+ critic rates. There are also lists by category, such as "The best comedies of 2022".

- Netflix
  Netflix offers the most suitable content based on the views and preferences of a particular user. Artificial intelligence is used for recommendations.
  Netflix has many different categories and lists such as “Most Popular”, “Recommended for You”, “What's New”, “Best TV Shows”, “Romantic Comedies”, and many more. Netflix also has special lists created for various holidays and events, such as "Halloween", "Christmas", "Birthday", "Mother's Day" and many others. Most lists are created based on genre, mood, theme, and other criteria to help users find something they'll enjoy.

- Stash
  Recommendations are presented to the user on the main page. The user can find a recommended list of popular games that are most often searched for in the application. The collection "For you" is based on the user's tastes, namely on the games that the user has added to his personal collections. The user can also find a list of the latest games that have been released recently. Also, the user can find a list of future announced but not released games. Standard recommendation lists are "Best Games" and "Most Anticipated Games". Lists group games by more specific characteristics, such as "Steam Awards 2022 Winners" or "Most Popular VR Games".

- Rork
  A user can find recommendations for similar books when viewing information about the book, but there are no other recommendation lists in the application.

- Metacritic
  Metacritic has many recommendation lists. For games, there are lists such as "Coming Soon", "New Releases", "Best Games of the Decade", "Worst Games of 2022" and many others. Movies have lists like "Now in Theaters", "Coming Soon", and "Watch Now". There are other interesting lists on the news page, such as "10 shows like Breaking Bad that you should watch".
Algorithms of recommendations

Modern services usually use the following types of recommendation algorithms: Collaborative Filtering, Content-Based Filtering, and combinations or various modifications of these approaches.

The Collaborative Filtering algorithm works as follows:
1) Data Collection: The system collects data about user's browsing history, including products they have read, viewed, or played, product reviews they have rated, and product collections they have added to their profile.
2) Data processing: The system transforms data about users and their products into vectors that can be mathematically processed. This helps to find similarities between users and products.
3) Similarity calculation: The system compares vectors of users and products to find users with similar interests and products they liked.
4) Providing recommendations: The system provides recommendations to users about products that may be of interest to them based on the similarities found.

The Content-Based Filtering algorithm uses product information to provide user recommendations. For example, keywords, genres, authors, and other parameters of the resource can be taken into account. A comparison of the algorithms of the considered software solutions for hobby diaries is shown below (table 1).

Table 1

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<thead>
<tr>
<th>Comparison of recommendation algorithms used in compared services</th>
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<td>Goodreads</td>
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<td>GamesRadar</td>
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<td>IGN</td>
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<td>Rotten Tomatoes</td>
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<td>Librarything</td>
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<td>Rogerebert</td>
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<td>Netflix</td>
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</table>

- Goodreads
  The main algorithm used to provide recommendations is Collaborative Filtering.
- IMDb
  IMDb uses a hybrid approach to recommendations, combining Collaborative Filtering and Content-Based Filtering algorithms.
  It also uses machine learning and data analytics to improve recommendation accuracy.
StoryGraph's recommendation algorithm is based on a combination of collaborative and content-based approaches. In addition, it also uses contextual descriptions and recommendations from other users to generate recommendations.

IGN
Most of the recommendations are created manually by the site editors, but some sections of the site use recommendation algorithms to show the user potentially interesting materials.

The IGN service has a contextual recommendation algorithm that uses a user's browsing history to suggest similar games or movies.

There are also social recommendations that can be obtained by following a user or their recommendation lists.

In addition, certain sections use collaborative filters to suggest content that other users with similar interests have liked.

Rotten Tomatoes
Rotten Tomatoes uses a combination of algorithms to recommend movies. The service uses a collaborative filtering and content recommendation algorithm.

GamesRadar
There is no recommendation algorithm.

Library Thing
LibraryThing's recommendation system is based on data entered by users of the service, such as a list of books they have read or would like to read, rates, and reviews of books.

It uses content-based machine learning algorithms as well as a collaborative filtering algorithm. The system takes into account a variety of factors such as genre, author, language, publisher, and more to find books that are most likely to be interesting to read.

Netflix
Machine learning algorithms, such as collaborative filtering or matrix factorization, are used to build the model to predict which movies and TV shows a user will like based on their viewing history and other data.

Stash
The Stash mobile app uses a recommendation algorithm that applies collaborative filtering. The algorithm uses connections between users to recommend content that matches their interests. This algorithm is based on analyzing the actions of users with similar tastes. Thus, the algorithm is based on the statement that users who have similar tastes tend to prefer the same games.

Rork
The Rork application does not have a recommendation system, the user searches for books on his own.

Metacritic
Metacritic uses a combination of different algorithms to generate recommendations. In particular, they use collaborative filtering algorithms and content-based approaches.
Search and filtering

– Goodreads
  The system allows users to search in any language, it is possible to search for books by genre, author. There are no additional filters.
  – IMDb
  Search can be performed by genre, by title, and by the names of actors and directors.
  – StoryGraph
  The search can be performed by the title of the book, by the author, or by tags.
  – IGN
  The service has a basic search, which contains names, descriptions, keywords, and others.
  In addition, there are filters on the resource pages.
  – Rotten Tomatoes
  It is possible to search by movie title, actors, and keywords.
  There is an option to filter movies by rates, genre, critic or user rates, status, release location, and year of release.
  – GamesRadar
  Site users can search by the name of the game and keywords. The result of the search contains all news, guides, and reviews that match the search. This result can be filtered by type of materials, sorted by relevance. In addition, quick filters are available with the names of games that are currently in trend and are very actively discussed.
  – Library Thing
  There are two types of search: normal and based on artificial intelligence. AI search can search for phrases such as "fiction books about the Middle Ages". Runs on OpenAI's GPT3 API.
  Filtering is represented by the ability to choose in which category the search takes place: books, video, audio, etc.
  – rogerebert.com
  There is a global (reviews, blog articles, etc.) and standard search with filtering by movie release date (between and to a specific year), review authors, rate (range), and genres.
  – Netflix
  Netflix has several ways to search and filter movies and TV shows to find content a user would like.
  – Stash
  The application is searched by name only. By default, the search results are sorted from most popular game to least popular, a user can optionally sort from least popular to most popular, by rate (from best to worst and vice versa), by release date (from old to new and vice versa), and alphabetically. Filtering is done by category, genres, platforms, and years of release.
  – Rork
  The search is carried out by the title of the work. The application does not have tools for filtering search results, the sorting is alphabetical.
– Metacritic

In Metacritic users can search by title, publisher for games, studio for movies and TV shows, and artist for songs. Movies and series can be filtered by genre, and sorted by relevance, rate, and newness. Games are sorted in the same way, and a user can filter them by genre and platform. Albums are filtered by genre. When searching for a person or company, users can filter by type, whether it is involved in movies, series, games, or music. Trailers and reports are not subject to further filtering.

User's interaction

– Goodreads

It is possible to add users to friends, join discussion groups, and exchange letters within the system to interact with other users. There is also an opportunity to comment on users' reviews.

– IMDb

IMDb has various forums where users can discuss movies, series, actors, and other topics. The service has a "chat" function that allows users to interact with each other in real-time. It allows users to discuss movies and series, share recommendations, and communicate with each other.

– StoryGraph

The resource supports compatible readings.

– IGN

IGN users can subscribe to other users' recommendation lists, see user rates, and discuss them in the chat. Moreover, it is possible to see the user's activity and comments.

– Rotten Tomatoes

Users can create reviews and rate movies. These reviews and rates can be seen by other users of the service.

Moreover, it is possible to see the user's profile, all his reviews and rates, and filter them by the type of material that was reviewed. In addition, users can see "Want to see" lists of other users.

– Games Radar

Users of the resource can discuss the site's publications using the chat at the end of the pages. In addition, users can evaluate the review using the option "liked, fun, love"

– Library Thing

The service allows interaction between users. Users can be added as friends, write and receive private messages, and be added to a group. Group discussion is possible in groups, however separate topics within the group must be created for this.

– rogerebert.com

There is a possibility to add comments to reviews and blog articles and to respond to other users' comments.

– Netflix

Netflix allows sharing recommendation lists as well as writing comments on movies. There is also an opportunity to create clubs and discuss movies and series with other users.
Interaction with other users is implemented through the system of subscriptions and subscribers. The application does not provide the ability to send messages to other users. Instead, there is an option to subscribe to follow the user’s reviews and games. Interaction with reviews includes the ability to share, like, complain and block the review.

Users can interact using the community. Users can follow each other to keep track of reading. The community also includes a “Now Reading” tab, which displays all users who are currently reading using the app. It is possible to set reading reactions, the user will receive notifications about these reactions. If a user has hidden their reading, it will appear in the community as hidden.

User interaction occurs by evaluating the usefulness of reviews or reporting violations of the rules. Besides that users do not have the opportunity to interact with each other. The comparison of the functionality of the product page of the first group (table 2).

**Table 2**

### Comparison of the functionality of the product page of the first group

<table>
<thead>
<tr>
<th>Feature</th>
<th>Goodreads</th>
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<th>StoryGraph</th>
<th>Metacritic</th>
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<tr>
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<tr>
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The comparison of the functionality of the product page of the first group (table 3).

**Table 3**

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<th>Rotten Tomatoes</th>
<th>Librarything</th>
<th>Rogerebert</th>
<th>Netflix</th>
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</table>

**Conclusions.** In the modern world, more and more people began to spend their free time on hobbies. It helps people relax, overcome stress and enjoy life. Over the past decades, a large number of products have been created to help people organize the time spent with their hobbies and find something new for themselves. In this study, the most popular services were systematically compared, according to defined criteria. These include a review system, presentation of products in different languages, availability of selections, recommendations, search, filtering, and interaction between users.

Despite the common idea and certain similarities, our comparison showed that they implement it in different ways. Most services use similar approaches to implementing the recommendation algorithm. Some of the services provide opportunities for the systematization of spending time with hobbies not fully, for example, not having the functionality of hobby experience statuses and collection by
statuses. In addition, some services do not allow users to view recommendations. Regarding the possibility of localization of products into different languages, almost every service considered does not provide the possibility of viewing information in different languages.

Therefore, none of the considered solutions offers functionality that fully covers all the considered functions potentially needed by the user. Evaluation of the functionality of the compared systems (table 4).

### Evaluation of the functionality of the compared systems

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<tr>
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<th>Products localizations</th>
<th>Users’ collections</th>
<th>Lists of recommendations</th>
<th>Algorithms of recommendations</th>
<th>Search and filtering</th>
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### References:


[9] Link to external site, this link will open in a new window, & Link to external site, this link will open in a new window. (2022). Efficacy of journaling in the management of mental illness: a systematic review and meta-analysis. ProQuest, 10(1). https://doi.org/10.1136/fmch-2021-001154
