PERSONALIZED BOOK RECOMMENDATION SYSTEM USING MACHINE LEARNING

MINI PROJECT REPORT

Submitted by

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To the APJ Abdul Kalam Technological University in partial

fulfilment of the requirement for the award of the Degree of

Master of Computer Application

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DECLARATION

I undersigned hereby declare that the project report **"PERSONALIZED BOOK RECOMMENDATION SYSTEM USING MACHINE LEARNING**", submitted for partial fulfilment of the requirements for the award of degree of Master of Computer Application of the APJ Abdul KalamTechnological University, Kerala is a bona-fide work done by me under supervision of **Prof DEEPA THOMAS (Assistant Professor) Department of Computer Science and Engineering**. This submission represents my ideas in my own words and ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained.

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CERTIFICATE

This is to certify that the report entitled **"PERSONALIZED BOOK RECOMMENDATION SYSTEM USING MACHINE LEARNING"** submitted by **ALFIYA NIZAM (Register no: MCK21MCA-2004)**, to the APJ Abdul Kalam Technological University in partial fulfilment of requirement for the award of Degree of Master of Computer Applications is a bona-fide record of the project work carried out by her, under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

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ABSTRACT

Personal recommendation systems that mine related books based on user rating and interest have developed as powerful search tools. The majority of these systems currently in use user ratings instead of collaborative or content-based learning techniques. This research provided a useful method for suggesting books to internet users who score books using decision trees and then look for books that are comparable to those books to suggest new books and also buy them from stores. The proposed method employed a decision tree to determine whether two books in a database were similar. In light of the findings, it can say that recommendations based on a specific book are more precise and effective than user-based recommendation systems.

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ABBREVIATIONS

NLP	Natural Language Processing
AI	Artificial Intelligence
KDD	Knowledge Discovery in Data

CHAPTER 1

INTRODUCTION

Most organizations have their recommendation system when they sell products online. However, almost all websites are not created with the interests of the customer in mind; instead, the and irrelevant things. An individual user can select fascinating and practical things from vast selection of products with the aid of personalized recommendation system(PRS).Customers now have a wide range of possibilities for products from e-commerce websites because to the expansion of the internet. It can be difficult for customers to locate the ideal products at the ideal moment.

Instead, e-marketplaces and e-libraries became popular hotspots. Users were able to find their favorite books from a wide selection thanks to e-book reading platforms and online shopping habits. Thus, users to get smart decisions from an unprecedented number of choices using expert systems. As a result, recommendation systems emerged to personalize users searches and provide the most advantageous outcomes from variety of possibilities

This paper proposed a decision tree-based recommendation system for books that uses different approaches, including collaborative, content-based, knowledge-based filtering. Recommended system focuses on the reviews and ratings by the others and filters books. A personalized book recommendation system is a book recommendation web application and it also allows the users to buy the book. This website is exclusively for the book lovers and any other individuals who wish to read books by different authors. Through this application users will be getting recommendation about the book based on the reviews made by others users. This application provides you a book just a click away. Facilitated with an advanced search, i.e., search with the book's name, author's name, publisher's name and also with the shop's name which registered with the website. This system also provides the facility to compare the price of a particular book in various shops. Through which the user will buy be able to buy the book at its best offer price. Payment information will be requested after adding any numbers of books in the cart. Purpose of this application is to provide E-books and buying of hard copy of books at a single site. This system uses a decision

tree-based algorithm to generate the recommendations. The core target of this research is to model an improved approach for customizing the recommendation system.

1.1 GENERAL BACKGROUND

Recommendation systems (RSs) or recommendation algorithm are widely used by both private individuals and businesses to conduct news and information searches, pursue online purchases, carry out search out search engine optimization. System that provides recommendations increase system usage effectiveness, user experience, and user adherence. Book recommendation system are important when selecting books because of the growing popularity of eBook reading and readers increasing demands for locating chosen books.

1.2 OBJECTIVE

The main objective of the project is the users find books to read. The system proposed works as a recommender system as well as a shopping site where user can get a recommendation list of books they can read as well they can search the shops where the books will be available and its rate. In order to execute effective searches that mine relevant publications based on user rating and interests, personal recommendation systems have emerged.

1.3 SCOPE OF THE PROJECT

This project offers a recommendation engine using machine learning. The project scope is to develop convenient and easy to use application software. Now such a kind of system is not available where users can get book recommendation as well as book shopping. This website is exclusively for the book lovers and any other individuals who wish to read books by different authors. It is accessible to all users.

1.4 EXISTING SYSTEM

The existing system uses manual method for the whole process such as going through a long list of books and shops, asking friends, here and there for book suggestion tec. There is no such option where users can get all the facilities in one click. This requires a lot of hard work and time consumption to complete the task. In the existing system, it is difficult to retrieve some particular

information. Most of the existing systems are uses user-based ratings where content and collaborative-based methods.

- Currently, users get recommendation based on ratings and from friends not based on the sentiments of reviews.
- Similarly, to buy a book user need to visit different sites or shops.
- Time consuming.

1.5 PROPOSED SYSTEM

The system proposed works as a recommendation system where user can get a recommendation list of books they can read as well they can search the shops where the books will be available and its rate. This project proposed a productive system for online users to recommending books that give ratings to a book using the decision tree method and then discover a similarity of that book to recommend a new book. And if needed they can order the book from the shop, User need to register the system initially to avail the advantages of the system. First time user needs to review and rate at least 5 6 books only then the recommendation list will be available.

CHAPTER 2

LITERATURE REVIEW

1. Personalized Book Recommendation System using machine learning algorithm: Dhiman Sarma1 *, Tanni Mittra2, Mohammad Shahadat Hossain3 Department of Computer Science and Engineering, Rangamati Science and Technology University, Rangamati, Bangladesh1 Department of Computer Science and Engineering, East West University, Dhaka, Bangladesh2 Department of Electrical and Electronic Engineering, University of Science and Technology Chittagong, Chittagong, Bangladesh3.

This project proposed a clustering-based book recommendation system that uses different approaches, including collaborative, hybrid, content-based, knowledge-based, and utility-based filtering. Clustering allows regrouping all books based on the rating and user preference datasets. Such clustering shows remarkable prediction capability for a personalized book recommendation system. The core target of this research is to model an improved approach for customizing the recommendation system. The system used the K-means Cosine Distance function to measure distance and Cosine Similarity function to find Similarity between the book clusters. Sensitivity, Specificity, and F Score were calculated for ten different datasets. The average Specificity was higher than sensitivity, which means that the classifier could re-move boring books from the reader's list. Besides, a receiver operating characteristic curve was plotted to find a graphical view of the classifiers' accuracy. Most of the datasets were close to the ideal diagonal classifier line and far from the worst classifier line. The result concludes that recommendations, based on a particular book, are more accurately effective than a user-based recommendation system. The limitations are required to know before the number of cluster to extract from the dataset and varying size.

2. N. Grover, "Enabling shift in retail using data: Case of Amazon," 2019.

The purpose of this creative component project is to increase knowledge and understanding of the leader in retail, Amazon, to study the ways it implements customer relationship management and its business model. In this report, a case study of Amazon is performed where Amazon’s journey from an online book store to a retail giant, its value proposition, and CRM strategy, and recommendation algorithm is described. Real data of toy products sold on Amazon is used to perform exploratory data analysis and to build a recommendation engine using multiple

approaches. The report also presents an example of one of the victims of the retail shift, “Toys R Us” that went bankrupt. The study of Toys R Us would highlight the firm’s journey and some of the reasons that led to the demise of the firm because of the shift in retail. The main two recommendation engine that is content-based and collaborative-based filtering are used. A lot of Amazon's developments, innovations, services, and strategies are customer focused which gives an edge to Amazon because it has the platform to provide the best-personalized experience a customer has seen. Service, Software Advisory. “Case Study: How CRM Is The Secret Behind Amazon’s Success.” The limitations are these type of filtering techniques need vast amount of real time data and can’t directly shop from the site.

3. Y. Lee, C. Wei, P. Hu, T. Cheng, and C. Lan, "Small Clues Tell: a Collaborative Expansion Approach for Effective Content-Based Recommendations," Journal of Organizational Computing and Electronic Commerce, pp. 1-18, 2020.

Content-based recommendation techniques usually require a large number of training examples for model construction, which however may not always be available in many real-world scenarios. To address the training data availability constraint common to the content-based approach, we develop a collaborative expansion-based approach to expand the size of training examples, which could lead to improved content-based recommendations. We use a book rating data set collected from Amazon to evaluate our proposed method and compare its performance against those of two salient benchmark techniques. The results show that our method outperforms the benchmark techniques consistently and significantly. Our method expands the size of training examples for a focal customer by leveraging the available preferences of his or her referent group, and thereby better supports personalized recommendations than existing techniques that solely follow content-based or collaborative filtering, without incurring costs to identify, collect, and analyze additional information. This study reveals the value and feasibility of collaborative expansion as a viable means to increase training size for the focal customer and thus address the training data availability constraint that seriously hinders the performance of content-based recommender systems.

4. A. Gazdar and L.Hidri, "A new similarity measure for collaborative filtering based recommender systems," Knowledge-Based Systems, vol. 188, p. 105058, 2020.

The project is a new simple and efficient similarity measure. Its mathematical expression is transforming some intuitive and qualitative conditions, that should be satisfied by the similarity measure, into relevant mathematical equations namely: the integral equation, the linear system of differential equations and a non-linear system and resolving the equations to achieve the kernel function of the similarity measure. The extensive experimental study driven on a benchmark dataset shows that the proposed similarity measure is very competitive, especially in terms of accuracy, with regards to some representative similarity measures of the literature. May be false similarity computation, ignore the proportion of common rating.

5. S.S. Sohail, J. Siddiqui and R. Ali, "Book recommendation system using opinion mining technique," 2013 International Conference on Advances in Computing, Communications and informatics (ICCACCI),Mysore, 2013.

In this project, presented a recommendation technique based on opinion mining to propose top ranked books on different discipline of the computer science. Based on the need of the customers and the reviews collected from them, we have categorized features for the books. We analyze the features on the basis of several characteristics that we have categorized and reviews of the users. Weights are assigned to categorized features according to their importance and usage, and accordingly the ranks are given. Finally, top ten ranked books are listed. This method is expected to be helpful for millions of the users who seek for desired books. Limited books are recommended and the challenges are encountered in opinion mining are verifying the authencity of the users posting reviews or opinion.

CHAPTER 3

METHODOLOGY

The waterfall model is one of the earliest models of software development in which tasks are executed sequentially, starting from the top with feasibility and flowing down through various tasks with implementation into the live environment. Requirements flow into the design, which flows into building or implementation, and finally into tests. As the testing process occurs at the end of the model, getting feeds passed back up the waterfall has been challenging. The waterfall model works hierarchy from top to bottom, with one phase completed with full verifications and then switching to another phase, including phase processes like Conception, Initiation, Analysis, Design, Construction, Testing, Production/Implementation, and Maintenance.

Data mining, also known as knowledge discovery in data (KDD), is the process of uncovering patterns and others valuable information from large data sets. Given the evolution of data warehouse technology and the growth of big data, adoption of data mining techniques has rapidly accelerated over the last couple of decades, assisting companies by transforming their raw data into useful knowledge.

Natural language processing (NLP) is a subfield of Artificial Intelligence (AI). This is a widely used technology for personal assistants that are used in various business fields/areas. This technology works on the speech provided by the user, breaks it down for proper understanding and processes accordingly. This is a very recent and effective approach due to which it has a really high demand in today's market. Natural Language Processing is an upcoming field where already many transitions such as compatibility with smart devices, interactive talks with a human have been made possible. Knowledge representation, logical reasoning, and constraint satisfaction were the emphasis of AI applications in NLP

Sentiment analysis is the process of classifying whether a block of text is positive, negative, or, neutral. Sentiment analysis is contextual mining of words which indicates the social sentiment of a brand and also helps the business to determine whether the product which they are manufacturing is going to make a demand in the market or not. The goal which Sentiment analysis tries to gain is to analyze people's opinion in a way that it can help the businesses expand. It focuses not only on

polarity (positive, negative & neutral) but also on emotions (happy, sad, angry, etc.). It uses various Natural Language Processing algorithms such as Rule-based, Automatic, and Hybrid.

The proposed system used a decision tree to develop the recommender system. The decision Tree algorithm is a supervised machine learning algorithm used for both classification and regression problems. It is based on a sequential decision process. The Decision Tree algorithm is based on a sequential decision process that works like a flowchart-like tree structure

3.1 MACHINE LEARNING BASED BOOK RECOMMENDATION

The proposed system analyses the sentiments in review posted by the user for a particular book using which rating is calculated. NLP combines computational linguistics—rule-based modeling of human language—with statistical, machine learning, and deep learning models. Together, these technologies enable computers to process human language in the form of text or voice data and to 'understand' its full meaning, complete with the speaker or writer's intent and sentiment.

Sentiment analysis, also known as opinion mining or emotion artificial intelligence, is a natural language processing (NLP) technique that determines whether a piece of content is positive, negative, or neutral. By analyzing text and statistics, a sentiment analysis tool can understand what customers are saying, how they're saying it, and what they really mean—both from an individual's and the public's perspective. In the recommendation system review is done on the rating calculated by the system. The average of rating is taken and using a cut off value book are recommended

3.2 TECHNICAL REQUIREMENT OF THE SYSTEM

SOFTWARE REQUIREMENTS

A software requirement specification (SRS), a requirements specification for a software system, is a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. In addition, it also contains

non-functional requirements. Non-functional requirements impose constraints on the design or implementation (such as performance engineering requirements, quality standards, or design constraints) the software requirements specification document enlists all necessary requirements that are required for the project development. To derive the requirements, we need to have clear and thorough understanding of the products to be developed. This is prepared after detailed communications with the project team and customer.

Operating System: WINDOWS 8 or above for better performance

Front end: Python (For web application)

Back end: MYSQL

Software: Visual studio, Navicat for MySQL

Web Browser: Internet Explorer/Google Chrome/Firefox

Web Server: Apache

HARDWARE REQUIREMENTS

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application.

Processor: Intel Pentium or above.

Hard Disc: 320GB.

Display Type: PC Display.

Keyboard: PC/AT Enhanced PS/2Keyboard (110/10Key).

Mouse: First/Pilot Mouse Serial (c48).

Input Device: Mouse, keyboard

Output Device: Monitor, Mobile Display

3.3 LANGUAGE SPECIFICATION

HTML

Hypertext Markup Language, commonly referred to as HTML, is the standard markup language used to create web pages. Along with CSS, and JavaScript, HTML is a cornerstone technology used to create web pages, as well as to create user interfaces for mobile and web applications. Web browsers can read HTML files and render them into visible or audible web pages. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language, rather than a programming language.

HTML can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages. HTML markup can also refer the browser to Cascading Style Sheets (CSS) to define the look and layout of text and other material.

Web browsers can also refer to Cascading Style Sheets (CSS) to define the appearance and layout of text and other material. The W3C, of CSS over explicit presentation HTML markup.

PYTHON

Python is a widely used high-level programming language for general-purpose programming, created by Guido van Rossum and first released in 1991. An interpreted language, Python has a design philosophy that emphasizes code readability (notably using whitespace indentation to delimit code blocks rather than curly brackets or keywords), and a syntax that allows programmers to express concepts in fewer lines of code than might be used in languages such as C++ or Java. The language provides constructs intended to enable writing clear programs on both a small and large scale. Python features a dynamic type system and automatic memory management and supports multiple programming paradigms, including object-oriented, imperative, functional programming, and procedural styles. It has a large and comprehensive standard library. Python interpreters are available for many operating systems, allowing Python code to run on a wide variety of systems. C Python, the reference implementation of Python, is open source software and has a community-based development model, as do nearly all of its variant implementations. C Python is managed by the non-profit Python Software Foundation. Python is a multi-paradigm programming language: object-oriented programming and structured programming are fully

supported, and many language features support functional programming and aspect-oriented programming (including by meta programming and meta objects (magic methods)). Many other paradigms are supported via extensions, including design by contract and logic programming. Python uses dynamic typing and a mix of reference counting and a cycle-detecting garbage collector for memory management. An important feature of Python is dynamic name resolution (late binding), which binds method and variable names during program execution. The design of Python offers some support for functional programming in the Lisp tradition. The language has filter (), map (), and reduce () functions; list comprehensions, dictionaries, and sets; and generator expressions. The standard library has two modules that implement functional tools borrowed from Haskell and Standard ML.

SQL DATABASE

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network (including the Internet). Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and for workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.

Structured Query Language is a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS).

Originally based upon relational algebra and tuple relational calculus, SQL consists of a data definition language, data manipulation language, and data control language. The scope of SQL includes data insert, query, update and delete, schema creation and modification, and data access control. Although SQL is often described as, and to a great extent is, a declarative language (4GL), it also includes procedural elements.

SQL was one of the first commercial languages for Edgar F. Codd's relational model, as described in his influential 1970 paper, "A Relational Model of Data for Large Shared Data Banks". Despite not entirely adhering to the relational model as described by Coded, it became the most widely used database language.

SQL became a standard of the American National Standards Institute (ANSI) in 1986, and of the International Organization for Standardization (ISO) in 1987. Since then, the standard has been revised to include a larger set of features. Despite the existence of such standards, most SQL code is not completely portable among different database systems without adjustments.

3.4 MODULE DESCRIPTION

1. ADMIN:

- Admin can login and accept or reject users and shops.
- Admin verifies users and shops details.
- Also, books detail added by shop is verified by Admin and also admin can add books details.
- Admin can view order and rating that is given by user.

2. USER:

- User can register and registered user can login
- After logging in into the user account user can search and read books.
- User can view the shop details where the books are available.
- User can also search the books in shopping section and find which all shops the book is available.
- User can add books to cart and then place the order.
- User can view the order status.
- Add payments.

3. SHOP

- Shop can register and login if Admin will verify their account.
- Shop can add their books details.
- Shop can view order details.

- Shop can view rating that given by the user.

3.5 FEASIBILITY ANALYSIS

The feasibility study proposes one or more conceptual solutions to the problem set for the project. The conceptual solution gives an idea of what the new system will look like. They define what will be done on the computer and what will remain manual. It also indicates what input will be needed by the system and what outputs will be produced. These solutions will be proven feasible and a preferred solution is accepted.

All projects are feasible if it is offered with unlimited resources and infinite time. The development of project is done by scarcity of resources and difficulty in completion dates. The feasibility can be defined in three major areas namely.

- Economic
- Technical
- Functional

In the economic side, it is generally the bottom line consideration of the project. It will increase the efficiency and decrease the man-hour to achieve the result. It will provide hassle free platform for user to interact with scrap dealer and RTO. So the process can be completed faster than the manual process.

In the technical side, it is most difficult area to access because objectives, functions performance are somewhat hazy; anything seems to be possible if right assumptions are made. The considerations that are normally associated with technical include development risk, technology and resource availability.

In the functional side, it is faster and efficient than the existing system. From all these, we can conclude that this system is feasible economically, technically and functionally.

Normally, the central endeavor of feasibility study is the cost benefit analysis of various alternatives. It can be defined as a systematic comparison between the cost of carrying out a service or activity and the value of that service or activity. The main benefits are quantitative and qualitative.

A feasibility study is really a small-scale system analysis. The job of analyst is to put on information together and present it to the client in the form of a coherent report.

The main section of feasibility report includes:

Background

- Terms of reference
- Reasons for study

The current situation

- Overview of current situation
- Problem and requirements identified

PROPOSED SOLUTION

- This provides an effective system for recommending books for online users that rated a book using the decision tree method and then found a similarity of that book to suggest a new book.
- Through this application users will be getting recommendation about the book based on the reviews made by others users.
- The major parties involved in the system are the Admin, user, and shop.
- Also, user can view the shop details where the books are available and place the order.

3.6 SYSTEM DESIGN

INPUT DESIGN

Input design is the process of converting user-oriented inputs to the computer base format. The input media is keyboard and mouse. Details are entered through different data entry screens. Also, each click events generated are converted and processed to generate outputs for those input. The following are the features of the data entry screen of the proposed system.

- User friendly.

- Data evaluation.
- Menu driven

OUTPUT DESIGN

Computer output is the most important and direct source of information to the user. Designing the computer output should proceed in an organized, well- throughout manner. The correct output must be developed while ensuring that each output element is designed so that people will find the system easy to use efficiently. During the analysis computer output identify the specific output is needed to meet the information requirements.

DATABASE DESIGN

One of the most important tasks involved in the design phase is the design of data storage. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently.

The general objective is to make access easy, quick and inexpensive and flexible for the users. Relationships are maintained between the data terms. Normalization is done to get an internal consistency of data and have to minimum redundancy and maximum stability. This ensures minimizing data storage required, minimizing chances of data consistencies and optimizing for updates. That is visible for users of the system. The overall objective is development of database and treats data as original resources.

3.7 TABLES USED

Table 3.7.1 Login

Fields no	Fields	Type	Description
1	uid	Int	Login id
2	Uname	varchar	To specify username
3	upass	varchar	To specify password
4	utype	varchar	To specify type

Table 3.7.2 User data

Fields no	Fields	Type	Description
1	Uid	Int	To specify userid
2	Name	Varchar	To specify name
3	Address	Varchar	To specify address
4	Place	Varchar	To specify place
5	District	Varchar	To specify district
6	Pincode	Varchar	To specify pin
7	Phno	Varchar	To specify phone no
8	Email	Varchar	To specify email

Table 3.7.3 Shop details

Fields no	Fields	Type	Description
1	sid	Int	scrap id
2	name	varchar	To specify shopname
3	place	varchar	To specify place
4	district	varchar	To specify district
6	pincode	Int	To specify pincode
7	phno	Int	To specify phone no
8	licenceNo	varchar	To specify licenceno:

9	email	varchar	To specify email address

Table 3.7.4 Add Book

Fields no	Fields	Type	Description
1	aid	Int	Complaint id
2	uid	Int	User id
3	bookname	varchar	To specify book name
4	summary	varchar	To specify summary
5	author	varchar	To specify author name
6	year	Varchar	To specify year
7	category	Varchar	To specify book category
8	publisher	Varchar	To specify publisher
9	amount	Int	To specify amount

Table 3.7.5 Category

Fields no	Fields	Type	Description
1	cid	Int	Category id
2	category	varchar	To specify category

Table 3.7.6 Review

Fields no	Fields	Type	Description
1	rid	Int	Review id

2	review	Varchar	To specify the review

Table 3.7.7 Cart

Fields no	**Fields**	**Type**	**Description**
1	cartid	Int	User id
2	uid	Int	User id
3	aid	Int	To specify add book id
4	quantity	Int	To specify quantity

Table 3.7.8 Order master

Fields no	**Fields**	Type	**Description**
1	oid	Int	Order id
2	odate	date	To specify date
3	uid	Int	User id
4	tamt	Int	To specify total amount
5	status	Varchar	To specify status

Table 3.7.9 OrderC

Fields no	**Fields**	**Type**	**Description**
1	ocid	Int	scrap id
2	oid	Int	Login id
3	aid	varchar	To specify first name
4	quantity	varchar	To specify last name

3.8 PROCESS DESIGN

DATA FLOW DIAGRAM

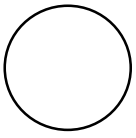
A data flow diagram (DFD) is a graphical representation of the 'flow' of the data through an information system, modelling its process aspects. Often, they are preliminary step used to create an overview of the system which can later be elaborated.

A DFD shows what kind of information will be input to and output from the system ,where the data will come from and go to, and where the data will be stored. It does not show information about the timing of processes, or information about whether processes will operate in sequence or in parallel.

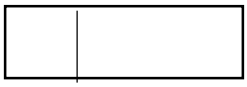
Data Flow Diagram is a logical representation of the data flow of the project. Various symbols are used for drawing DFD. It has a source and destination. The process is represented using circles and source and destination using squares. The data flow is represented using circles and source and destination are represented using squares. The data flow is represented using arrows. One reader can easily get the idea about the project through Data Flow Diagram.

-Source rectangle, which defines or destination.

- Arrow, which shows dataflow.



- Circle, which represents a process that transforms incoming data into outgoing flow.



- Open rectangle, which shows a data storage

3.9 DATA FLOW DIGRAM

LEVEL 0 ()

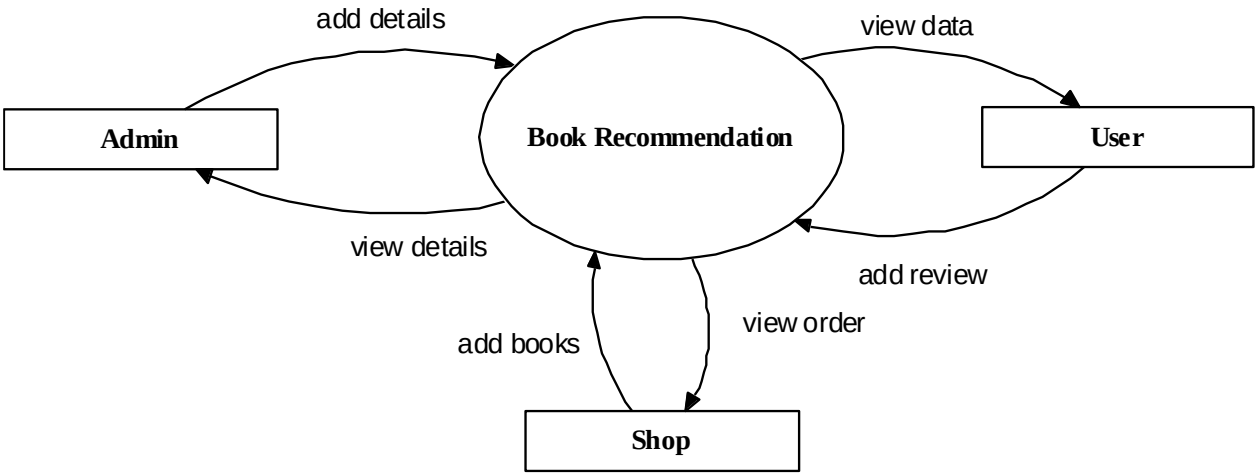


Fig: 3.9.1 (Level 0)

LEVEL 1 (ADMIN)

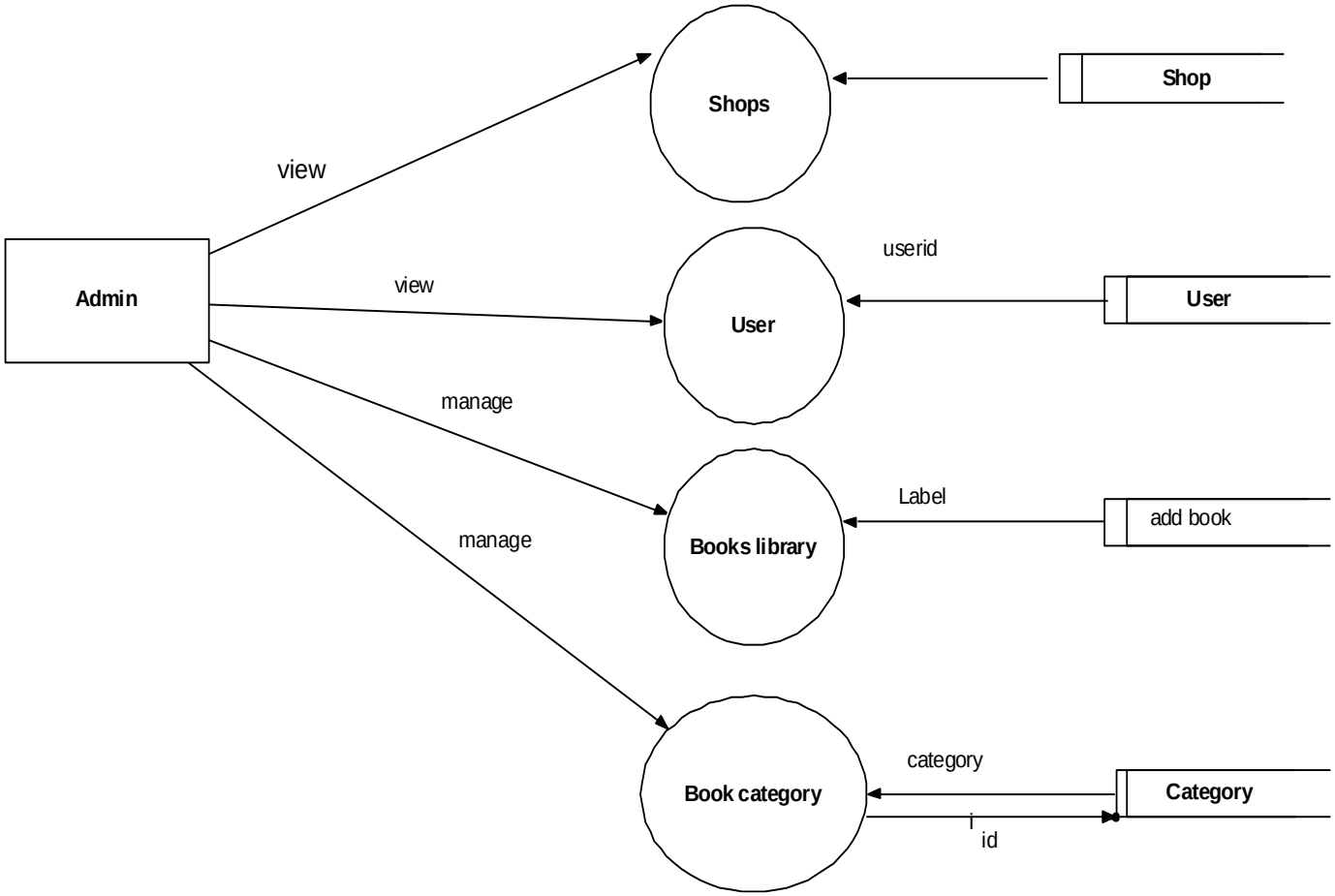
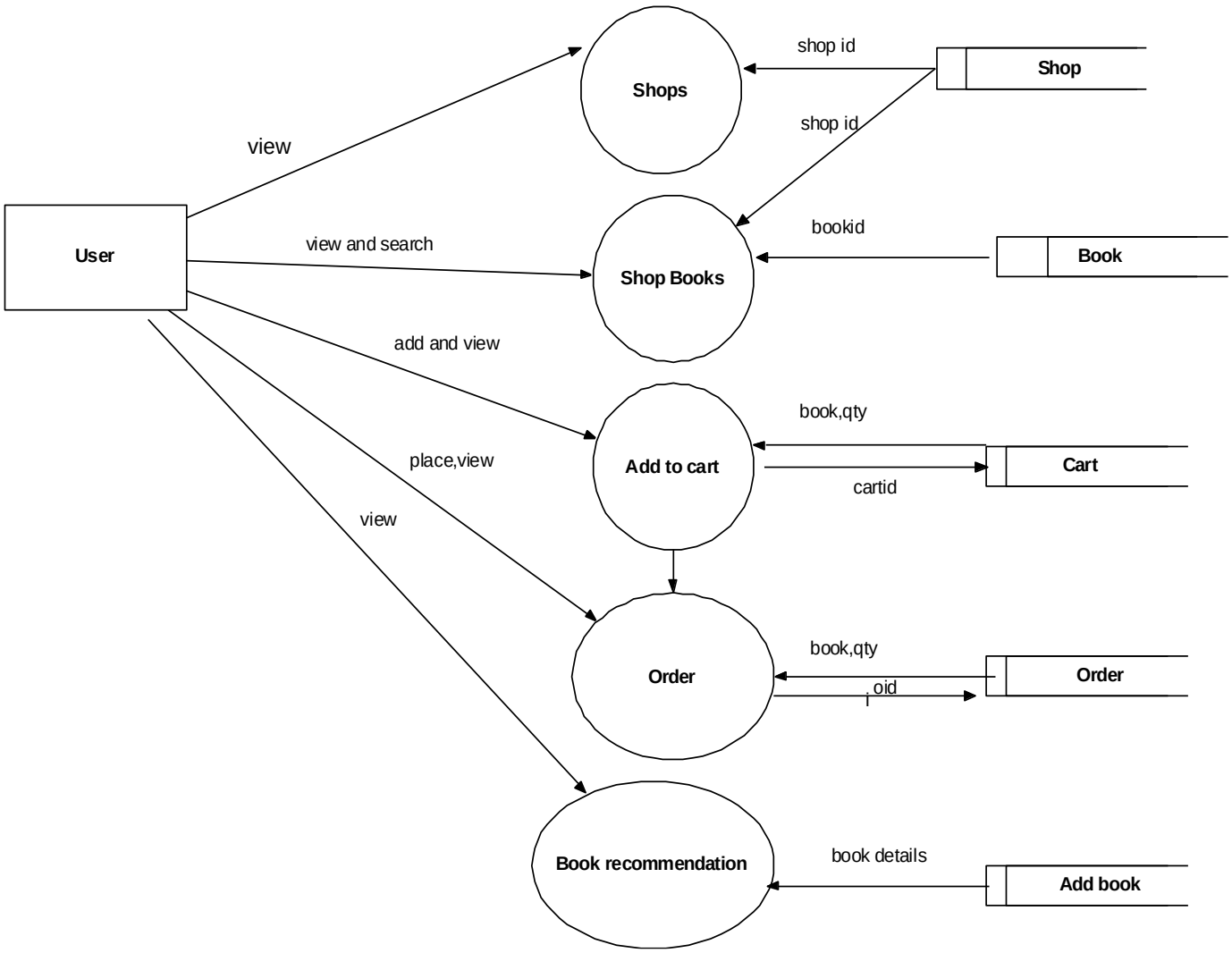


Fig:3.9.2 (Level 1) ADMIN

USER

Fig: 3.9.3 (Level 1) User



SHOP

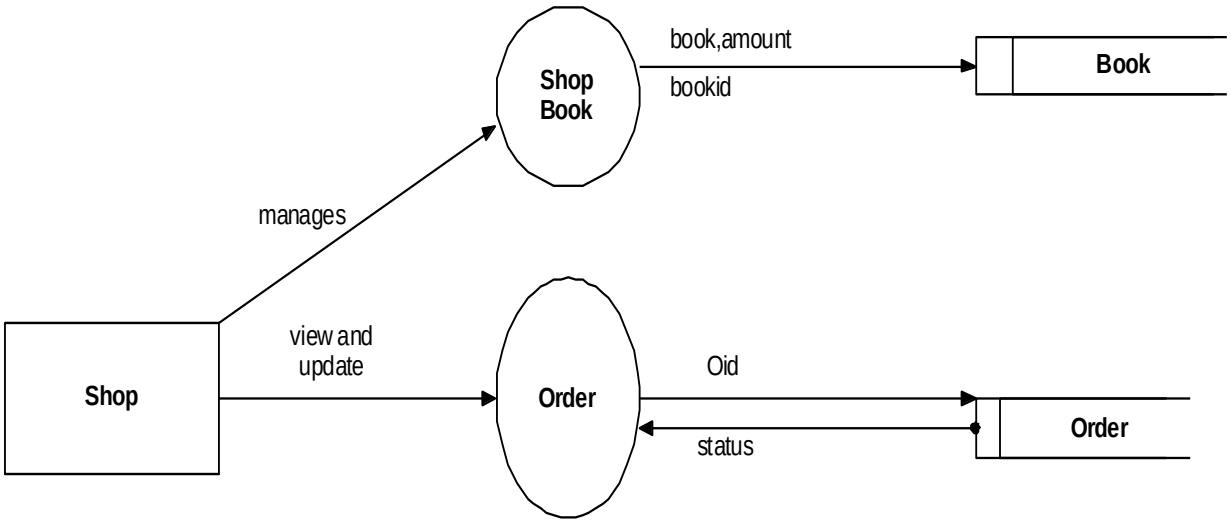


Fig: 3.9.4 (Level 1) Shop

CHAPTER 4

4.1 SYSTEM ARCHITECTURE

The system architecture is similar to an object's blueprint. It is a theoretical framework for the systematic integration of physical systems and business logic. It illustrates the system's structure, viewpoint, behavior, features, and functionalities. It is a method of picturing the desired system so that people can easily understand it. The system architecture is the fundamental framework for a system that incorporates its constituent parts, how they are related, and the science behind their creation. The system proposed works as a recommender system where user can get a recommendation list of books they can read as well they can search the shops where the books will be available and its rate. And if needed the can order the book from the shop User need to register the system initially to avail the features of the system. The suggested solution incorporates machine learning and decision tree technology. The admin, the shop owner, and the user are the three parties included in the system. The users must first register with his information, the admin will validate his information and grant him access to the network. Second, the shop owner must register with his information and add the book details. users can searching the books and read it. First time user needs to review and rate at least 5 6 books only then the recommendation list will be available. Based on the review perform sentimental analysis. User can add the books to cart, place the order and view the order status.

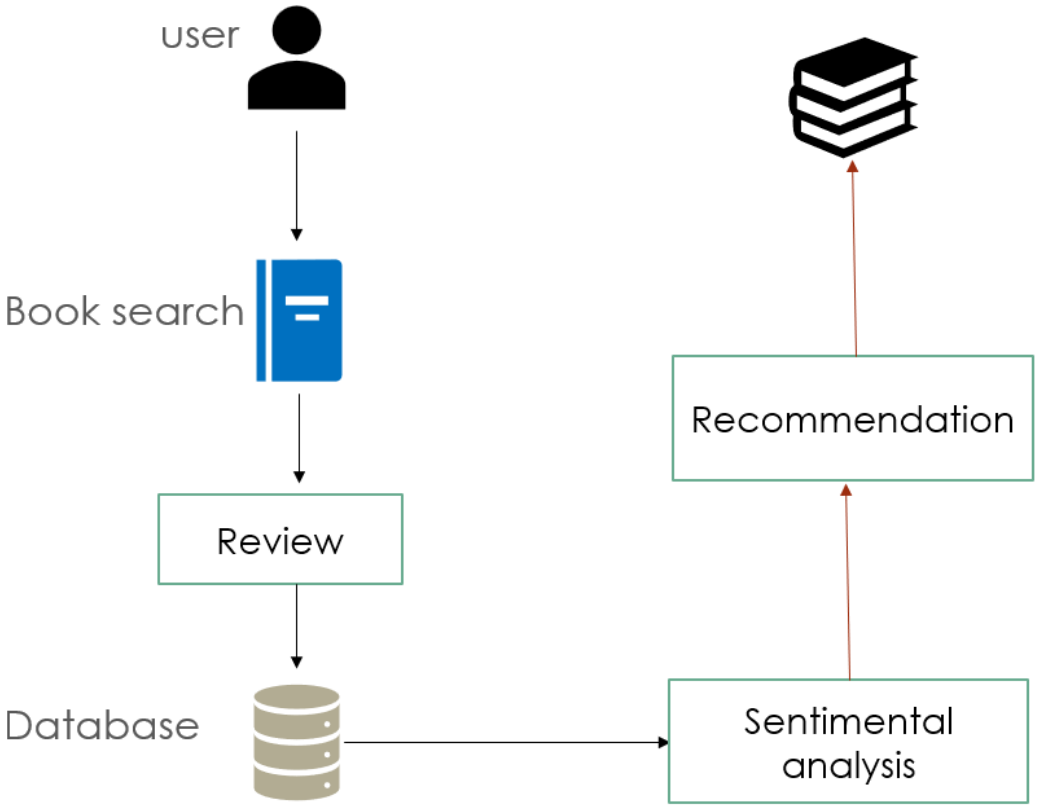


Fig: 4.1.1 System Architecture

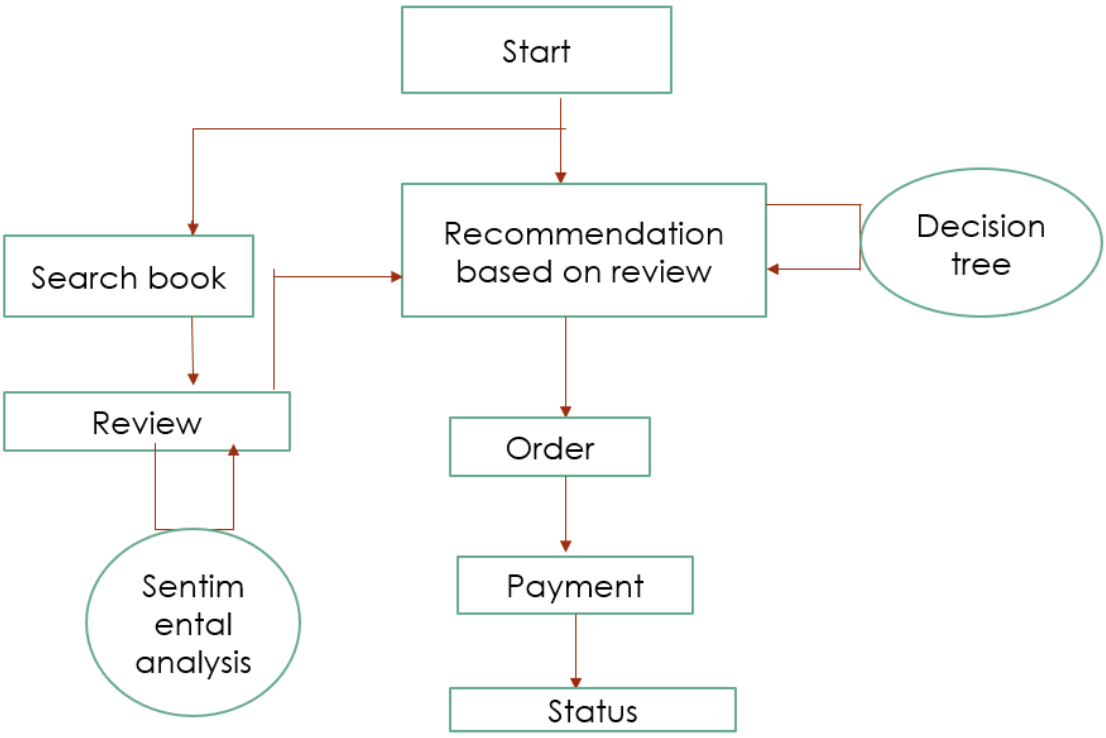


Fig: 4.1.2 Work flow

4.2 IMPLEMENTATION

The system is implemented by Visual studio and Navicat forSQL. After the ordinary user has successfully logged in, they can click the recommended engine in the navigation bar to jump to the personal recommendation system page. A successful system should be delivered and users should have the confidence that the system would work efficiently and effectively. The more complex the system being implemented the more involved will be the system analysis and design effort required for implementation. Implementation is the stage of the system when the theoretical design is turned into working system. In the implementation involves careful planning, investigation of the previous and current system. The design of methods to achieve the changeover, training of user over procedure and evaluation change over method. New users can get the recommended books through the expert recommendation page, or can browse the latest books

through the new book recommendation page. In the borrowing history page, the readers can view personal borrowing records.

4.3 SYSTEM TESTING

System Testing is a level of the software testing where a complete and integrated software is tested. The purpose of this test is to evaluate the systems compliances with the specified requirements.

System Testing: The process of testing an integrated system to verify that it meets specified requirements

ANALOGY: During the process of manufacture a ballpoint pen, the cap, the body, the tail, the ink cartridge and the ballpoint are produced separately and unit tested separately. When two or more units are ready, they are assembled and integration test is performed. When the complete pen is integrated, system testing is performed.

System Testing is performed after integration testing and before acceptance testing.

ACCEPTANCE TESTING

Acceptance testing is a level of the software testing where a system is tested for acceptability. The purpose of this test is to evaluate the systems compliance with the business requirements and access whether it is acceptable for delivery.

ANALOGY: During the process of manufacturing a ballpoint pen, the cap, the body, the tail, the ink cartridge and the ballpoint are produced separately and unit tested separately. When two or more units are ready, they are assembled and Integration Testing is performed. When the complete pen is integrated, system Testing is performed. Once System Testing is performed so as to confirm that the ballpoint pen is ready to be made available to the end-users.

METHOD: Usually, Black box testing method is used in Acceptance Testing. Testing does not normally follow a strict procedure and is not scripted but is rather ad-hoc.

Acceptance Testing is performed after System Testing and before making the system available for actual use.

- Internal Acceptance Testing is performed by members of the organization that developed the software but who are not directly involved in the

project (Development or Testing). Usually, it is the members of Product Management, Sales or Customer Support.

- External Acceptance Testing is performed by people who are not employees of the organization that developed the software.

4.4 COMPARISON AND RESULTS

The majority of these systems currently in use involve user ratings and collaborative and content-based learning strategies. The rating method used by these systems, which counts customers who have already unsubscribed from the services and are no longer rating books, is what makes them unreasonable. This project offered an efficient mechanism for internet users to recommend new books after rating a book using the decision tree method. As a result, recommendation system emerged to personalized users searches and provide the most advantageous outcomes from a variety of possibilities.

The system proposed works as a recommender system as well as a shopping site where user can get a recommendation list of books they can read as well they can search the shops where the books will be available and its rate. And if needed the can order the book from the shop User need to register the system initially to avail the features of the system. The suggested solution incorporates machine learning and decision tree technology. The admin, the shop owner, and the user are the three parties included in the system. The users must first register with his information, the admin will validate his information and grant him access to the network. Second, the shop owner must register with his information and add the book details. The user can search for the books and read it. First time user needs to review and rate at least 5 6 books only then the recommendation list will be available. Based on the review perform sentimental analysis. User can add the books to cart, place the order and view the order status.

CHAPTER 5

5.1 CONCLUSION

This paper constructs a personalized book recommendation system based on decision tree algorithm, and uses the expert recommendation function to recommend books for new readers and to recommend new books to readers, which is helpful to improve the utilization rate of books and the quality of information service, and realize the unification of personalization. This research used decision tree algorithms to increase the prediction capacity of the recommendation system. Most recommendation systems try to anticipate the buyer's interest and the n suggest books in that vein. This book recommendation system has doing sentimental analysis of ratings by the buyers and based on these recommend the books to users. These results show that our proposed system can remove boring or uninterested book from the recommendation list more efficiently.

5.2 SCOPE FOR FUTURE WORK

This project offers a recommendation engine using machine learning. The scope is to develop convenient and easy to use application software. Now such a kind of system is not available where users can get book recommendation as well as book shopping. This website is exclusively for the book lovers and any other individuals who wish to read books by different authors. It can accessible by any users. Sentiment analysis on customers reviews can be performed to understand customers review on the books which can prove to be beneficial to know the customers better and the results can be uses to predict the negatives and positives about the products. These results show that our proposed system can remove boring books from the recommendation list more efficiently.

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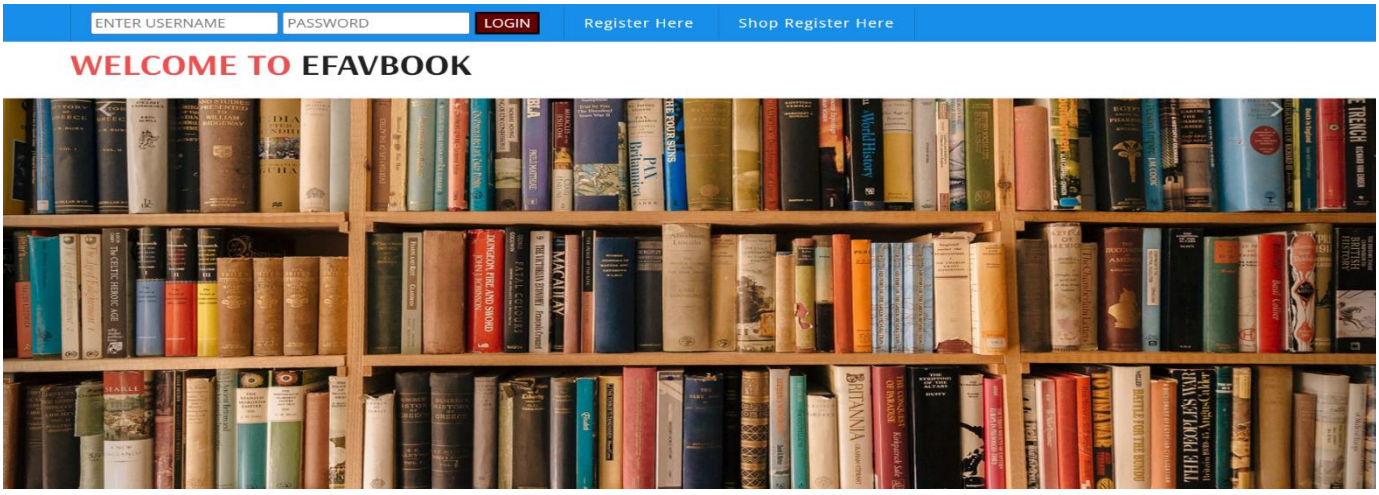
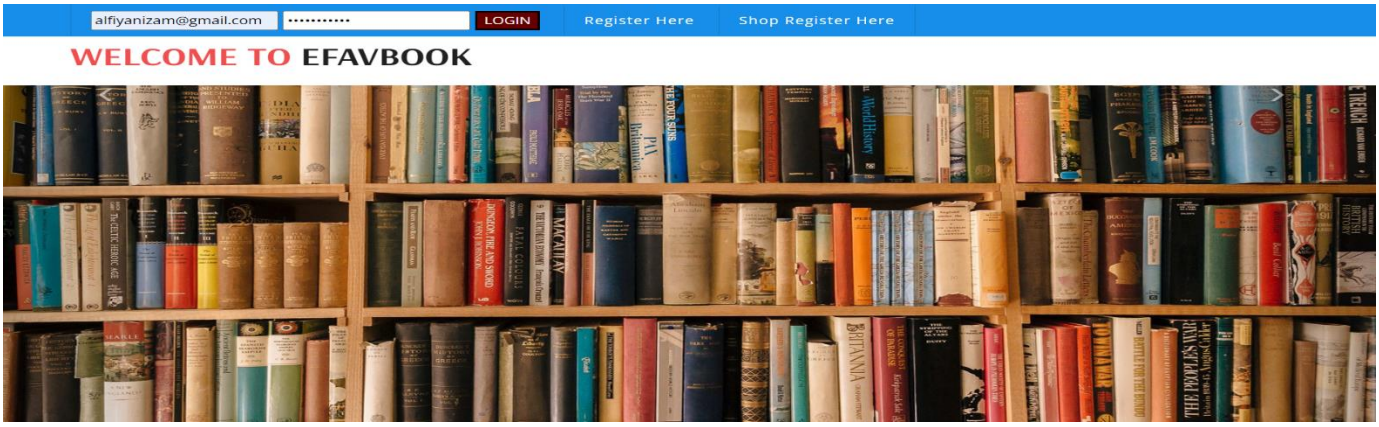
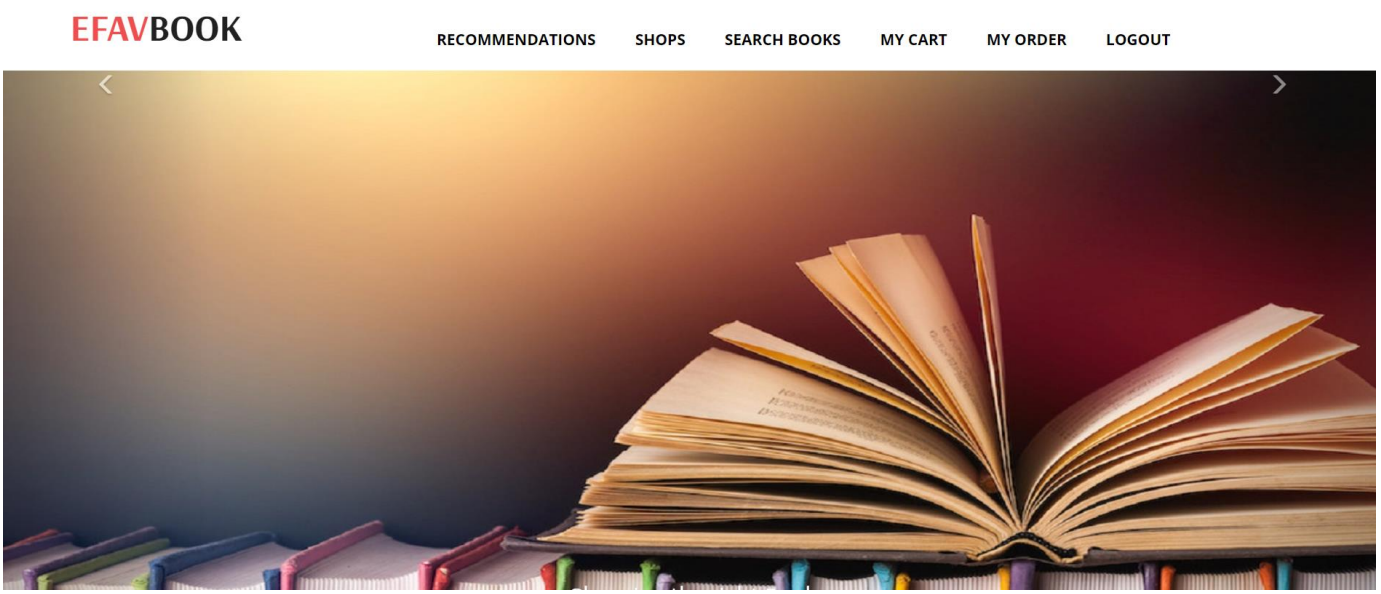
APPENDIX

SCREEN SHOTS







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