# वनस्थली विद्यापीठ
# Banasthali University
University for Women : University with a difference

# SOFTWARE REQUIREMENT SPECIFICATION
On

# *Digital Library*



**GROUP ID: B-29**

*PROJECT GUIDE:*                                                                *SUBMITTED BY*:

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# 1.INTRODUCTION:

## 1.1 Purpose:
 The purpose of this document is to present the software requirement in developing the android application providing   facilities to read books online, download the same, and notify the intended users about the requested as well as new arrival of book. It will explain the features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to various levels of users. It provides the visibility in the design and provides information needed for software support.

## 1.2 Scope:
Android application for digital library is for readers where one can discover variety of books, spanning across different genres including classics, science and technology, general fiction, historical fiction, non-fiction, poetry, spiritual, others.

The term "*Digital Library*" has a variety of potential meanings, ranging from a digitized collection of material that one might find in a traditional *library* through to the collection of all *digital* information along with the services that make that information useful to all possible users.

Basically, this application will provide facilities for user to read and notify them about the new arrivals. This application contains a centralized NoSQL database containing mainly a list of registered users, authors, books, genres, requests.

## 1.3 Definitions, Acronyms, and Abbreviations:
**API:** It is a set of subroutine definitions, protocols, and tools for building application software.

**Firebase:** It is a mobile and web application development platform.

**SDK**: is typically a set of software development tools that allows the creation of applications for   a   certain software package, software   framework,   hardware platform, computer system, video game console, operating system, or similar development platform.

**Android SDK:** It is the process by which new applications are created for devices running the Android operating system.

**XML:** eXtensible Markup Language(XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

**APK:** It is the package file format used by the Android operating system for distribution and installation of mobile apps and middleware.

**NoSQL:** NoSQL database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases.

**OS:** An operating system (**OS**) is system software that manages computer hardware and software resources and provides common services for computer programs.

**RAM:** It is a form of computer data storage that stores data and machine code currently being used. A **random-access memory** device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory.

**Admin:** A **administrator**, or admin, is a person who is responsible for the upkeep, configuration, and reliable operation of systems.

**SRS**: A **software requirements specification** (**SRS**) is a description of a software system to be developed.

**App:** The term *app* is a shorter form of application program. An application program is a program designed to perform a specific function directly for the user or, in some cases, for another application program.

**IEEE:** Institute of Electrical and Electronics Engineers.

## 1.4 References

IEEE 830-1993 standard format is followed.

Software Engineering by-Roger S. Pressman,5th Edition(TMG)

Software Engineering by-K.K. Agrawal (2nd edition)

## 1.5 Overview:

The next section, overall description, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next section.

The third section, specific requirements, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the application, the functions of modules, their roles in the application and the constraints faced by the application and user characteristics.
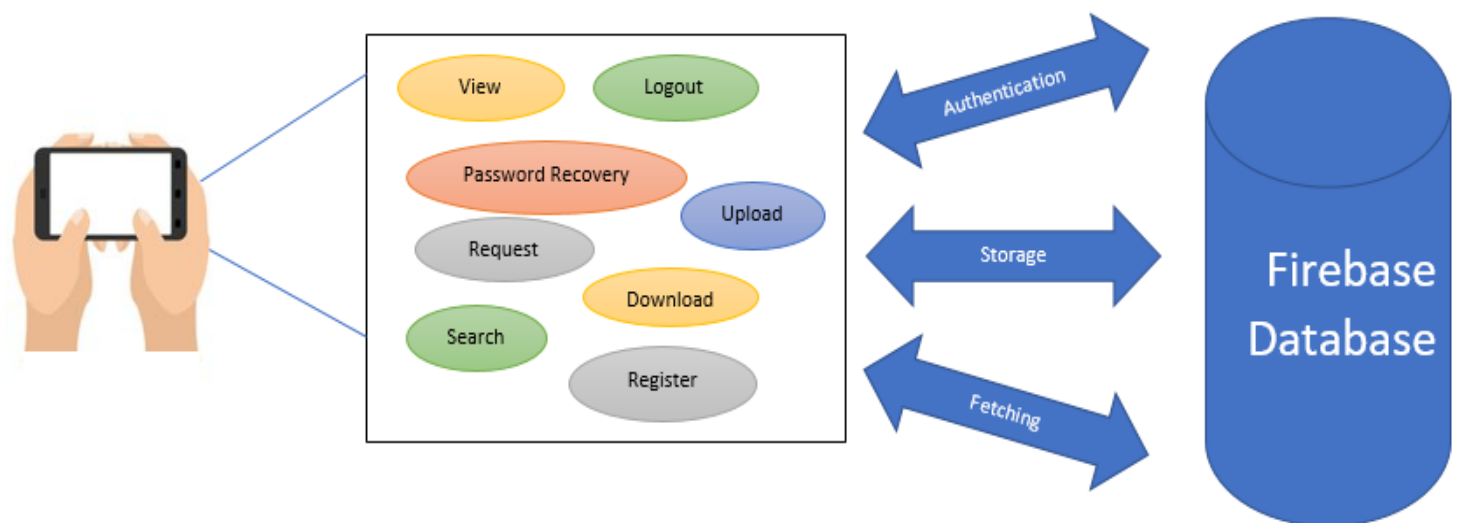
# 2. OVERALL DESCRIPTION

This section describes the general factors that affect the product and its requirements. It does not state specific requirements. Instead, it provides a background for those requirements, which are defined in the next section, and makes them easier to understand.
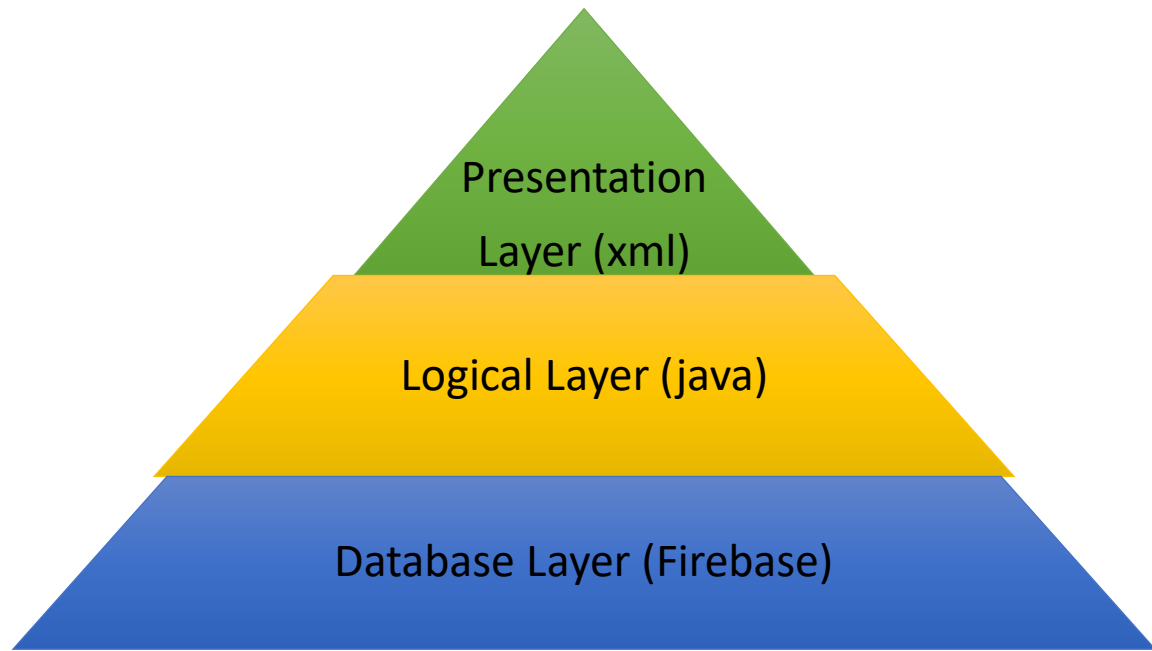
## 2.1 Product perspective

This is a project with proper user interface. The product uses the centralized database. Our product is an application accessible at any location through internet in India. There is no geographical limitation to access this software within India.

It enables the users to browse books of any genre. User can also upload or download the desired material by their own account.

Architecture Design

Presentation
Layer (xml)

Logical Layer (java)

Database Layer (Firebase)

## 2.1.1 User Interfaces

All pages of the system are following a consistent theme and clear structure. The occurrence of errors should be minimized using checkboxes, radio buttons and scroll down to reduce the amount of text input from user. Different Layouts are used to display information to give a clear structure that can be easily understood by the user. Error messages are displayed to the corresponding error input which clearly indicate and tell the user how to solve it.

The user is given the option to download the desired material. the user will not be allowed to edit, highlight, or add comments to the textual files provided. But once they are downloaded the user can perform operations on it according to his/her wish.

## 2.1.2 Hardware Interfaces

**Developer Side:** Intel® Core™ i3 [2 GHz (or faster)]

**Client Side:** Possession of an Android Device.

## 2.1.3 Software interfaces

**For Developer***:*

- Microsoft® Windows® 7/8/10 (32- or 64-bit)

***Front end***: Java1.8

***Back end***: Firebase 11.8.0

***Other Tools and Technologies used***: Android Studio 2.3.2, XML, Android Emulator

## 2.1.4 Memory Constraints

**For Developer***:*

*Windows*

- 3 GB RAM minimum, 8 GB RAM recommended; plus 1 GB for the Android Emulator.
- 2 GB of available disk space minimum, 4 GB Recommended.

**For Client***:*

- The recommendation for Android 4.4 is to have at least 512 MB of RAM.
- For Devices running Android 7.1 RAM ranges from 2GB down to 1GB minimum.

## 2.1.5 Operations

There are mainly 3 users of the system:

1.Admin

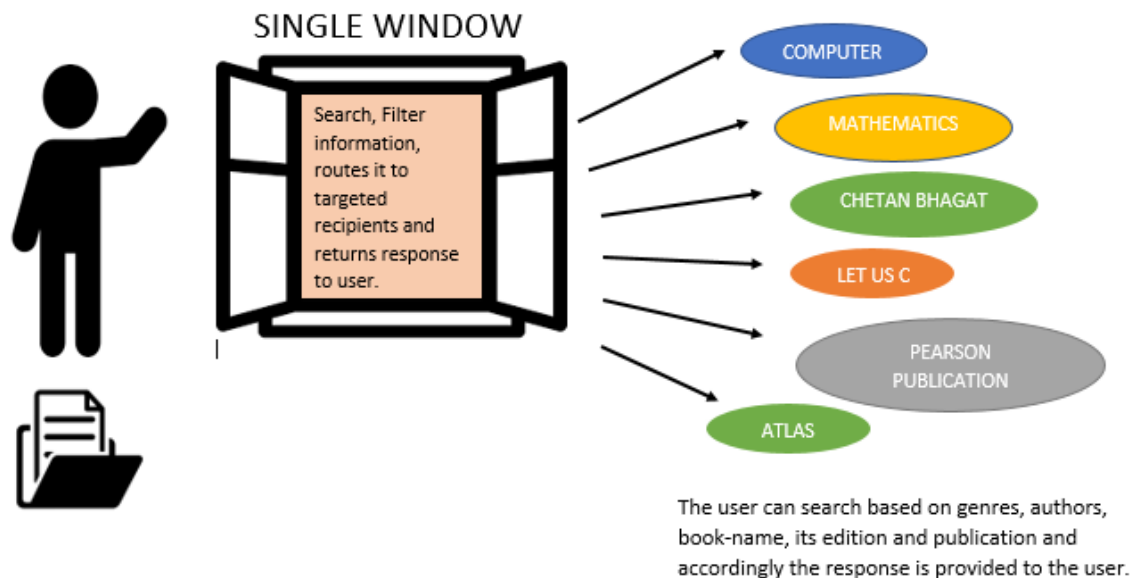2.Registered user

3.Guest user

- The **admin** can log in to the system and keep a check on the files that an registered user wants to upload in the app for other readers.
- The **registered user** can enjoy all the facilities of the app like he can read and upload his own document in the digital library for other readers.
- The **guest user** can only browse the material online and will have no privilege to download it until and unless he has registered himself.

## 2.1.6 Site adaption requirements

- Internet speed.
- Android version of user's device: 4.4.2, KitKat (API 19) [minimum].

## 2.2 Product Functions

This application develops a framework of virtual repository of learning resources with a single-window search facility.



SINGLE WINDOW

Search, Filter information, routes it to targeted recipients and returns response to user.

COMPUTER
MATHEMATICS
CHETAN BHAGAT
LET US C
PEARSON PUBLICATION
ATLAS

The user can search based on genres, authors, book-name, its edition and publication and accordingly the response is provided to the user.

Filtered searching facilitates learners to find out right resource with least effort and in minimum time. It provides support for all academic level including researchers, students to book-lovers and all disciplines.

Features:

- It helps user to browse material by book-name, author, its edition or publication, genre.
- It enables the registered user to download the file and upload material.
- Registered User can mark books as "favorites" according to his interest.
- The app provides facility of password recovery to Admin and registered user, in case he/she forgets it.
- The app prevents the user from dumping irrelevant material in the storage of the application as the admin is to first permit it before it gets available to other users.

## 2.3 User Characteristics

The user should be acquainted with the working of android phones. All the users are expected to be internet literate and must have some knowledge of the app.

The admin must be conscious of what kind of files are to be uploaded.

## 2.4 Constraints

- The phones having the application should be connected over Internet.
- Sign in and password are used for the identification of the user.
- Admin needs to update the database periodically.
- Guests user can only view the resources and cannot download it.
- Users cannot edit the files available in the application.

## 2.5 Assumptions

- There is no change in user requirements.
- The user will submit valid mobile number during authentication.
- The registered user will submit valid files for uploading it in the application.
- The admin has basic knowledge of Firebase database.
- The admin has detailed knowledge of all the functions, data entry and reports.
- The user is running the app in an Android phone
- The user demands for textual material only.
- The user's phone is having a connection to internet.
- The user is looking for material in English only.

## 2.6 Apportioning of requirements

The app is expected to handle visual aids in future where the user can search for video tutorials as well. The app can be expanded to handle other languages. The future version of the app is expected to have the feature of sharing medias among the users.

## 3. SPECIFIC REQUIREMENTS:

It enables the designer / developer to understand the system in detail.

## 3.1 External Interfaces:

**Authentication:**
Login screen: user can log in according to its role and fields.
Login id: Phone Number
Password: alphanumeric
Role: Admin, Registered User, Guest User

- ❖ Essentially:

- ➢ *User Information consist of:*

- ✓ User Name
- ✓ User Password
- ✓ User Phone Number

➢ ***Book Information consist of:***
- ✓ Book Name
- ✓ Related Authors
- ✓ Publication
- ✓ Edition
- ✓ Genre
- ✓ Its Description

➢ ***Author Information consist of:***
- ✓ Author Name
- ✓ Books written by the author

NOTE: The above information is subject to change as per the future requirement.

## 3.2 Functions:
The Functions of different modules and users are described in this section.

**USE CASES:**

***Admin Use Case:***
**Actor:** Administrator
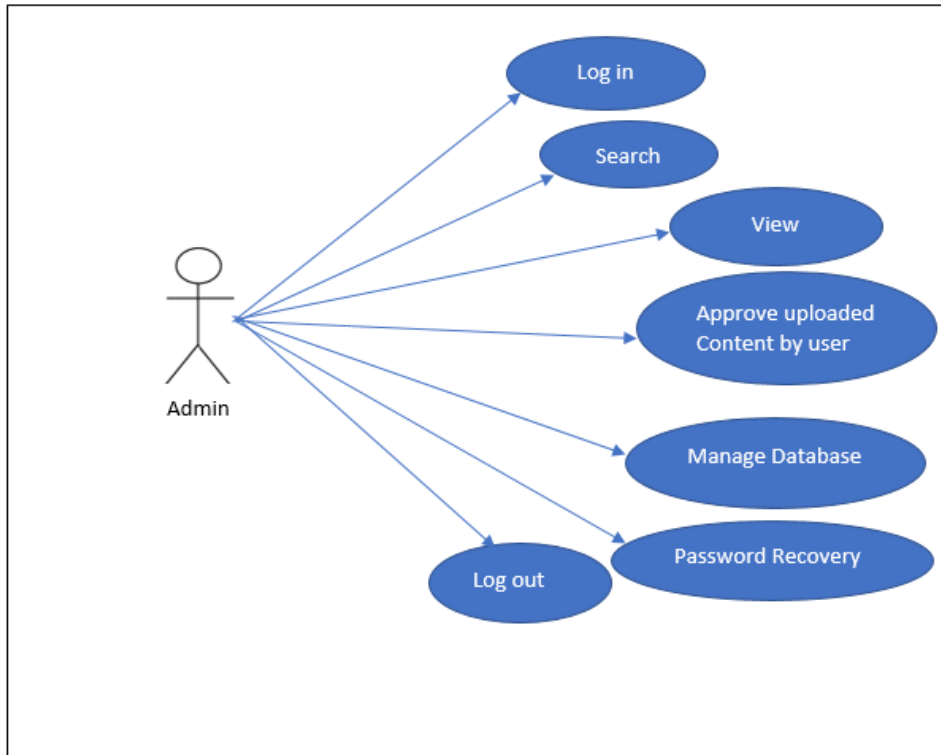**Preconditions:** The admin is logged into the system.
The admin has already undergone initial checks to verify that he is a registered user or not.
**Post Conditions:** If the admin is authenticated he will be allowed to make any changes in the database.
**Basic Flow:** Initial Step-By-Step Description
1. The admin will have a check on all the uploaded documents and will have the right to delete or make it visible to the general user.
2. If he finds anything to be updated he can make change accordingly.
3. The changes will then be saved in the database.
**Alternative Flow:** Null

### _Registered User Use Case:_
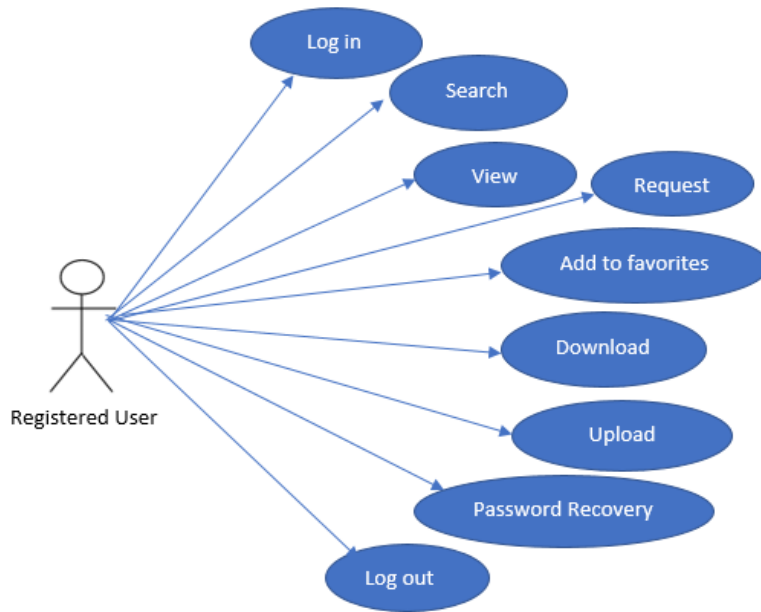
**Actor:** Registered User

**Preconditions:** The user is logged into the system.

**Post Conditions:** After the user is logged into the system he is allowed to view the books available in the library and also to upload any book or document in the specified format. He will also be able to download the document.

**Basic Flow:** Initial Step-By-Step Description

1. The user searches for the book.

2. The system will open the Activity showing all the books of the related search

3. The user selects the book and can view or download it.

4. The user will also be allowed to upload a document in the specified format.

5. The user can bookmark any document he wishes.

6. The user is also allowed to request for a book that is not present in the storage. He will then be notified whenever it is available.

**Alternative Flow**: null

## *Guest User Use Case:*
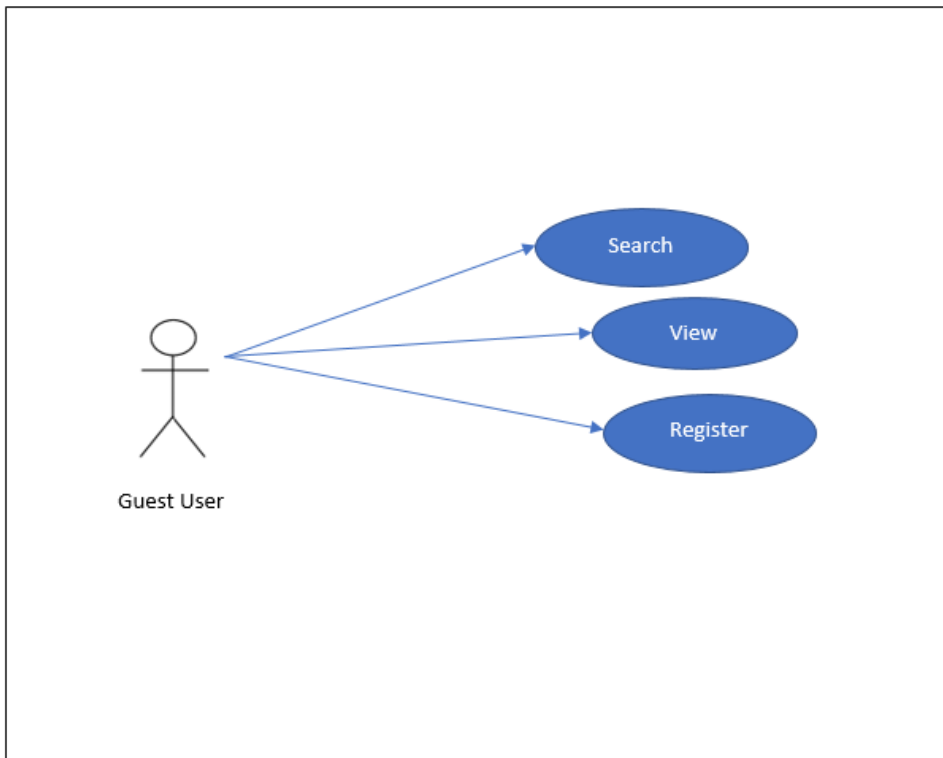
**Actors:** Guest User

**Preconditions:** The user is allowed to enter the system.

**Post Conditions:** After the user has entered into the system he is allowed to view the books available in the library.

**Basic Flow:** Initial Step-By-Step Description

1. The user searches for the book.

2. The system will open the Activity showing all the books of the related search

3. The user selects the book and can view it.

**Alternative Flow**: null

## 3.3 Performance Requirement: Null

**3.4 Logical Database Requirements:**

**User Info:** User Phone Number, Password, Bookmarks

**Book Info:** Book Name, Authors, Publication, Description, Genre, Edition, Visibility, downloads

**Genre:** Genre, Books

**Notification:** User Phone, Message

**Request:** Book Name, Authors, Users, Fulfilled

## 3.5 Design Constraints: Null

## 3.6 Software System Attributes:

### 3.6.1 Reliability:

When user wants to call the system over a given period of time, the system should correctly deliver services as expected by the user. The reliability of the system shall be good if it delivers services as specified. The product provides security and better performance.

### 3.6.2 Availability:

Server will be in working state for 24x7.When the system has any request at any given time, system should be available, it should be up and running and able to deliver useful service at this time.

### 3.6.3 Security:

The system needs to make sure that only an registered user is able to access the data. A guest user shall be allowed to read the data but not to add anything to the existing database.

### 3.6.4 Maintainability:

When the system is used, new requirements may emerge. When these requirements are emerged, the system should be changeable to accommodate the requirements for maintaining the usefulness of the system.

### 3.6.5 Portability:

The .apk file can be transferred from one android device to another if it meets the requirements. The data base is available online 24x7.