**Internet has led to discussion of e-democracy and online voting. Many peoples think that the internet could replace representative democracy, enabling everyone to vote on everything and anything by online voting. Online voting could reduce cost and make voting more convenient. This type of voting can be done for e-democracy, or it may be used for finalizing a solution, if many alternatives are present. Online voting make’s use of authentication, hence it needs security, and the system must be able to address obtaining, marking, delivering and counting ballots via computer. Advantage of online voting is it could increase voter turnout because of convenience, and it helps to reduce fraud voting3.**

Identifying and Specifying the Functional Requirements.

1. First FR
   1. **User’s Registration**: A candidate or user wishes to vote online has to register with the system by providing details. The details has to be validate by the admin.
   2. **User Login:** The registered user has to login in order to cast vote. Addition- ally, a candidate can login and view the candidate specific details.
   3. **Publish Manifesto:** A candidate can login and publish the election mani- festo.
2. Second FR
   1. **Vote:** A user can cast vote in favor of a particular candidate.
   2. **Count Votes:** System must be able to count votes received by each candidate based on polling.
   3. **Publish Results:** Administrator can publish polling results at the designated time.
3. Third FR
   1. **Prevent Fraud Voting:** Only valid users (registered and verified) can par- ticipate in the polling process.
   2. **Only one vote:** A valid user can vote only once.

There could be others FRs like **email notifications, error handling and so on**. Similarly, one has to identify the nonfunctional requirements also. For the above example, the system must remain accessible to thousands of users at a time.

**As the size and capacity of the institute (ISM) is increasing with the time, it has been proposed to develop a Library Information System (LIS) for the benefit of students and employees of ISM. LIS will enable the members to borrow a book (or return it) with ease while sitting at his desk/chamber. The system also enables a member to extend the date of his borrowing, if no other booking for that particular book has been made. For the library staff, this system aids them to easily handle day-to-day book transactions. The librarian, who has administrative privileges and complete control over the system, can enter a new record into the system when a new book has been purchased, or remove a record in case any book is taken off the shelf. Any non-member is free to use this system to browse/search books online. However, issuing or returning books is restricted to valid users (members) of LIS only. The final deliverable would a web application (using the recent HTML 5), which should run only within the institute LAN. Although this reduces security risk of the software to a large extent, care should be taken no confidential information (eg. passwords) is stored in plain text.**

**New user registration:** Any member of the institute who wishes to avail the facilities of the library has to register himself with the Library Information System. On successful registration, a user ID and password would be provided to the member. He has to use this credentials for any future transaction in LIS.

**Search book:** Any member of LIS can avail this facility to check whether any

particular book is present in the institute’s library. A book could be searched by its:

1. Title
2. Authors name
3. Publisher’s name

A registered user of LIS can login to the system by providing his employee ID and password as set by him while registering. After successful login, “Home” pagefor the useris shown from where he can access the different functionalities of LIS: search book, issue book, return book, reissue book. Any employee ID not registered with LIS cannot access the “Home” page – a login failure message would be shown to him, and the login dialog would appear again. This same thing happens when any registered user types in his password wrong. However, if incorrect password has been provided for three time consecutively, the security question for the user (specified while registering) with an input box to answer it are also shown. If the user can answer the security question correctly, a new password would be sent to his email address. In case the user fails to answer the security question correctly, his LIS account would be blocked. He needs to contact with the administrator to make it active again.

**Issue book:** Any member of LIS can issue a book against his account provided that:

The book is available in the library i.e. could be found by searching for it in LIS.

No other member has currently issued the book.

Current user has not issued the maximum number of books.

If the above conditions are met, the book is issued to the member.

**Note** that this FR would remain **incomplete** if the “maximum number of books that can be issued to a member” is **not defined**. We assume that this number has been **set to four** for students and research scholars, and to **ten** for professors.

**Return book:** A book is issued for a finite time, which we assume to be a period of 20 days. That is, a book once issued should be returned within the next 20 days by the corresponding member of LIS. After successful return of a book, the user account is updated to reflect the same.

**Reissue book:** Any member who has issued a book might find that his require- ment is not over by 20 days. In that case, he might choose to reissue the book, and get the permission to keep it for another 20 days. However, a member can reissue any book at most twice, after which he/she has to return it. Once a book has been successfully reissued, the user account is updated to reflect the information.

# Performance Requirements:

This system should remain accessible 24x7.

At least 50 users should be able to access the system altogether at any given time.

# Security Requirements:

This system should be accessible only within the institute LAN.

The database of LIS should not store any password in plain text

– a hashed value has to be stored.

# Software Quality Attributes

**Database Requirements**

**Non functional requirement**

**Design Constraints:**

The LIS has to be developed as a web application, which should work with Firefox 47, Internet Explorer 9, Google Chrome 52, Opera 11.

The system should be developed using HTML 5