IT314
Lab 5
Group 32

Q.1. Discover ambiguities or omissions in the following statement of requirements for part of a ticket-issuing system:

An automated ticket issuing system sells rail tickets. Users select their destination, and input a credit card and a personal identification number. The rail ticket is issued and their credit card account charged with its cost. When the user presses the start button, a menu display of potential destinations is activated along with a message to the user to select a destination. Once a destination has been selected, users are requested to input their credit card. Its validity is checked and the user is then requested to input a personal identifier. When the credit transaction has been validated, the ticket is issued.

Ambiguities and omissions:

- Can the user book tickets from only the place where the machine is located or can the source of the journey be some other place?
- Can multiple tickets be booked in a single transaction?
- What happens when the user inputs the wrong identification number?
- Can the ticket be cancelled midway through the process?
- Can the ticket once booked be cancelled using the system?
- Can the user book round trip tickets?
- Can this system be useful for blind people?
- Can the user get the arrival and departure time for the trip for which he/she bought a ticket?
- Can the user book multi-stop tickets where the user has stops at multiple stations?
- Can the user add different filters to book the tickets?
- Would the system inform the user if the railway line to their destination is blocked because of some reason(weather, maintenance etc)?
- Would the system tell the user for what date and time the ticket is available if it is not available for the required date and time?
- What if a customer tries to insert their card in the machine before even selecting the destination, would the system show an error message?
- How would the ticket be issued? Would it be printed or an email/SMS would be sent?

- If the transaction fails, does the system let the user initiate the transaction again or does the user need to redo the whole process from the start?
- Can the system issue tickets for the destination where the automated ticket issuing system isn't installed?
- Will the system show the price of the tickets?

Q.2. **Case Study:** Identify the functional and non-functional requirements for the given problem specification.

The institute has been recently set up to provide state-of-the-art research facilities in the field of Software Engineering. Apart from research scholars (students) and professors, it also includes quite a large number of employees who work on different projects undertaken by the institution. As the size and capacity of the institute is increasing with the time, it has been proposed to develop a Library Information System (LIS) for the benefit of students and employees of the institute. 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 be 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 (e.g., passwords) is stored in plain text.

Functional requirements:

Non-members :

1. Searching for a book/browsing through all books
2. Registration of new users - Functions like issuing and returning books become available only after registration. User ID and password should be entered. A member cannot register again.

Members only:

1. Logging in for existing users
2. Verification of users logging in (or error message if user isn't registered)
3. Searching for a book/browsing through all books - To search for new books, the user would not have to visit the library in person to check but they can do it directly using LIS by using the details of the book.

4. Issue books if nobody else has issued them
5. Return books (on or before the expiry date)
6. Reissue books (if no other member has issued it for that day)
7. Members can update their profile and change their password.

Non-functional requirements:

1. **Design constraints:** A web application has to be developed. The application should be on the latest HTML5.
2. **Compatibility:** The application should work on common web browsers like Chrome, Firefox, Opera, Edge etc.
3. **Recoverability (data retention):** Even if the system crashes because of some reason the data about the books should not be lost.
4. **Availability:** The system should be available to use everywhere and anytime on every device on the campus LAN.
5. **Performance and scalability:** Irrespective of how many users are accessing the system at once the system should be able to perform the required functionality very quickly.
6. **Security:** Only people with administrative privileges would be able to enter information about new books. The password and other confidential information should not be stored in plain text. It should work on the institute LAN only.
7. **Reliability:** Correct and valid information about the searched books should be returned.