Department of Computer Engineering

Academic Term: First Term 2023-24

Class: T.E /Computer Sem – V / Software Engineering

Practical No:	**1**
Title:	**Software Requirement Specification**
Date of Performance:	6/8/2023
Roll No:	9622
Team Members:	Soham Mane, Sanket Mane, Nishant Patil, Joshua Lewis

Rubrics for Evaluation:

Sr. No	Performance Indicator	Excellent	Good	Below Average	Total Score
1	On time Completion & Submission (01)	01 (On Time)	NA	00 (Not on Time)	
2	Theory Understanding(02)	02(Correct)	NA	01 (Tried)	
3	Content Quality (03)	03(All used)	02 (Partial)	01 (rarely followed)	
4	Post Lab Questions (04)	04(done well)	3 (Partially Correct)	2(submitted)	

Signature of the Teacher:

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Lab Experiment 01

Experiment Name: Software Requirement Specification (SRS) as per IEEE Format

Objective: The objective of this lab experiment is to guide students in creating a Software Requirement Specification (SRS) document following the IEEE (Institute of Electrical and Electronics Engineers) standard format. The IEEE format ensures a structured and consistent approach to capturing software requirements, facilitating effective communication among stakeholders and streamlining the software development process.

Introduction: Software Requirement Specification (SRS) is a formal document that precisely defines the functional and non-functional requirements of a software project. The IEEE standard format provides a systematic framework for organizing the SRS, making it comprehensive, clear, and easily understandable by all parties involved in the project.

Lab Experiment Overview:

1. Introduction to IEEE Standard: The lab session begins with an overview of the IEEE standard format for SRS. Students are introduced to the various sections and components of the SRS as per the standard.
2. Selecting a Sample Project: Students are provided with a sample software project or case study for which they will create the SRS. The project should be of moderate complexity to cover essential elements of the IEEE format.
3. Requirement Elicitation and Analysis: Students conduct requirement elicitation sessions with the project stakeholders to gather relevant information. They analyze the collected requirements to ensure they are complete, unambiguous, and feasible.
4. Structuring the SRS: Using the IEEE standard guidelines, students organize the SRS document into sections such as Introduction, Overall Description, Specific Requirements, Appendices, and other relevant subsections.

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5. Writing the SRS Document: In this phase, students write the SRS document, ensuring it is well structured, coherent, and adheres to the IEEE format. They include necessary diagrams, use cases, and requirements descriptions.
6. Peer Review and Feedback: Students exchange their SRS documents with their peers for review and feedback. This review session allows them to receive constructive criticism and suggestions for improvement.
7. Finalization and Submission: After incorporating the feedback received during the review session, students finalize the SRS document and submit it for assessment.

Learning Outcomes: By the end of this lab experiment, students are expected to:

· Understand the IEEE standard format for creating an SRS document.
· Develop proficiency in requirement elicitation, analysis, and documentation techniques. · Acquire the skills to structure an SRS document following the IEEE guidelines.

· Demonstrate the ability to use diagrams, use cases, and textual descriptions to define software requirements.
· Enhance communication and collaboration skills through peer reviews and feedback sessions.

Pre-Lab Preparations: Before the lab session, students should review the IEEE standard for SRS documentation, familiarize themselves with the various sections and guidelines, and understand the importance of clear and unambiguous requirements.

Materials and Resources:

· IEEE standard for SRS documentation
· Sample software project or case study for creating the SRS
· Computers with word processing software for document preparation
· Review feedback forms for peer assessment

Conclusion: The Software Requirement Specification (SRS) lab experiment in accordance with the IEEE standard format equips students with essential skills in documenting software

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requirements systematically. Following the IEEE guidelines ensures that the SRS document is well-organized, comprehensive, and aligned with industry standards, facilitating seamless communication between stakeholders and software developers. Through practical hands-on experience in creating an SRS as per the IEEE format, students gain a deeper understanding of the significance of precise requirement definition in the success of software projects. Mastering the IEEE standard for SRS documents prepares students to be effective software engineers, capable of delivering high-quality software solutions that meet client expectations and industry best practices.

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Case Study- *GOOD FELLOWS*

1. Abstract:

According to the statement, there are approximately 15 million elderly individuals in India living alone, either due to the loss of a partner or their families moving away for unavoidable employment obligations. This loneliness and lack of companionship have become significant factors contributing to the decline in the mental and physical health of senior adults. To address this problem, a website has been developed with the goal of assisting senior adults in tackling their daily challenges, including medical assistance and psychological support.

The project takes a participatory methodology approach to develop Individual Senior Citizen Care Plans and integrate psychosocial care with existing services in collaboration with various stakeholders working in the field. The website acts as a platform connecting senior adults with volunteers called "Fellows," who can help them with their stated problems. Both senior citizens and volunteers have transparent profiles, allowing for a sense of trust and meaningful connections between them. Volunteers have the freedom to choose tasks from nearby senior citizens to assist.To combat feelings of isolation and boredom, the website also offers numerous entertainment features and activities to keep the elderly engaged and occupied. The ultimate aim is to improve the well-being of the targeted older population aged 80 and above. Through semi-structured interviews using the PPA method, the study sought to understand participants' personal projects and assess their well-being on eight dimensions, such as fun and stress.Qualitative data analysis revealed the types of websites preferred by this demographic and the environments in which they are utilized, highlighting the potential impact of the built environment on older people's well-being. Contrary to negative stereotypes about aging, the study suggests that the final decades of life can be a period of continuous growth, learning, and distinct character rather than a period of decline.By fostering collaborative working and integrating various aspects of the website, the project aims to minimize the challenges faced by older people and service providers in the care system. Strategies are also employed to simplify access to health and social care, thus enhancing the provision of services that elderly individuals require. By promoting a holistic approach to elderly care and empowerment through meaningful connections, the website aims to improve the overall quality of life for senior adults, allowing them to enjoy their lives to the fullest.

2.Introduction

The rapid development of new technologies and the spread of the Internet facilitates everyone to adjust to the new information society. According to reports, India’s population increased by 17% between 2001-2011 but several elderly in this period increased by a whopping 35%. Another survey conducted by IVH Senior Care was released on October 1st, the survey noted that only 10% of senior citizens consider their physical health to be a challenge whereas 66%

are worried about maintaining their social life and daily needs.People in old age are living longer than earlier and at the age of 60, they are expected to live for 25-30 years more. It means they have to spend almost 1/3rd of their life in old age. This is just because their daily needs and routine are not taken care of properly and they feel left out from their younger generation.

2.1 Purpose:

The major purpose of this project was that The “elderly staying alone” face the problems of lack of family, social, and financial support in their day-to-day life. They cope with these problems in a number of ways.

Reason Frequency across List
Feeling Lonely 42.3
Cannot Work 38.5
Nobody to take Care 34.6
Feeling Depressed 26.9
Brings their own daily needs 24.8
Cannot take part in social gatherings 21.6

This review also showed that in spite of the physical challenges faced, many older adults demonstrated a desire to cope with their illness and maintain independence. This was demonstrated in developing self-care strategies, using mobility aids and home adaptations equipment and continuing to perform activities despite them being physically difficult. The importance of maintaining independence and supporting older adults to remain mobile and care for themselves are, indeed, well- recognised priorities to official bodies, as well as to older adults themselves. Also, this review highlighted that managing multiple co-morbid conditions can be challenging and further complicated by lack of professional advice and poor coordination between services. Additionally, although many older adults were positive about the use of technology in facilitating their daily lives, some barriers were identified that interfered with its use such as lack of skills and information, cost of products and the device not being suitable for one of the co-morbid conditions. Some of these barriers were in line with previous research, emphasising the importance of addressing these barriers in order to increase technology adoption amongst older adults. Collectively, based on the evidence reviewed, there is a clear need to meet older adults’ needs in the area, as well as support them

with evidence-based self-care strategies to maintain their independence as long as possible. This is of particular importance, given the challenges facing the informal and formal care systems that are leaving many older adults with unmet needs in the areas of self-care, domestic life and mobility. This review highlighted the value of work to some older adults. The benefits of work to older adults and society as well as the importance of supporting work in later life have been acknowledged in several recent reports. However,this review highlighted that many older adults are still leaving work due to ill-health and a lack of support from employers. Being 60–65 years old is usually a requirement for becoming eligible for senior.

3.General Description

3.1 Product Functions Overview:

Our testing with middle-aged users has shown that between the ages of 25 and 60 people's ability to use websites declines by 0.8% per year. On one hand side, we need to consider the impacts of human ageing on usability long before age 65. However, on the other hand, in some contexts, 65 is too young to be considered a senior citizen. As we live longer, people in many countries retire later in life. In our most recent round of research, mainly recruitment was done to study participants who were at least 70 years old. since we first conducted usability studies with seniors 18 years ago, both the digital landscape and the characteristics of older adults have changed. (While common prejudice might suggest that seniors are slow to change, there have also been substantial changes in the findings since our follow-up user research with seniors in 2013.) Seniors are growing skilled at using the internet and apps. Their expectations for digital products are evolving and the devices that they use to access the internet have changed. The Baby Boomer generation is now reaching retirement age. This generation, born between 1946 and 1964, is far more likely than past generations of seniors to have had more substantial experience with information technology. In years past, very few of the seniors we recruited for our studies had used computers during their working careers. In our most recent study, many seniors had used computers and the internet at work for years before retiring. Although technical proficiency among all users is fairly limited, digital literacy among seniors is rising.Because of this higher level of digital literacy, today’s seniors exhibit very different patterns of behaviour than cohorts as studied in past research. When we conducted research with senior citizens in 2001, we observed that many participants were apprehensive and hesitant in their behaviour online. Today’s seniors are more confident and more likely to adapt their actions online to avoid common annoyances such as irritating advertisements, time-wasting apps, and services that collect too much personal data. Some of the behavioural changes reflect seniors’ increasing digital.

2. User Characteristic

The objective of this project is to assess the fast-changing needs of older persons, the current

status of support mechanisms available for them and future challenges through an in-depth qualitative study by making a website that will assist all the tasks for them.

• The aim is to know the perceptions of old age people about the causes of problems and negative
attitudes towards life and also to identify the field in which there is a need of social work Intervention

• The secondary objective is to understand the opinions of old age people regarding care and treatment given by family members and other relatives which can help the team in making the website more suitable for elder people and easy to use. • Activities of Daily Living (ADL) are the basic tasks of everyday life such as feeding, bathing, dressing, mobility, use of the toilet and continence and when older persons are not able to perform these activities, they require assistance. • Among the activities, the highest proportion of the elderly faces some difficulty in bringing groceries, followed by going to the park, dressing and mobility where assistance can help them carry out their tasks.In summary, the characteristics of old age emerging from the goal-orientated literature indicate a decline in goal striving in the older old and a turning to spiritual and health-orientated projects.To further explore and understand the realism, the following is a set of specific objectives that have been framed to undertake research on the conditions of the older persons in the study area which will be looked onto while creating a project:

• Connecting them to other people of their age nearby
• To assess the need for skill development / re-skilling in old age
• To review changing needs & rights of older people
• Purchase of basic needs(groceries, medicines) with the help of

volunteers.

3. General Constraint

Hardware and Software Platforms:

Developers work with modern personal computers running Windows, macOS, or Linux.Up-to-date versions of web development tools and frameworks are used for efficient development.

Cross-Browser Compatibility:

Rigorous testing is conducted on the web application.Compatibility is ensured across popular web browsers, including:

Google Chrome
Mozilla Firefox
Microsoft Edge
Safari

Users can access the application seamlessly on their preferred browser. ***Mobile Responsiveness:*** The web application is optimized to be responsive on various mobile devices.Compatibility and functionality are ensured on smartphones and tablets. ***Database***

Management: An appropriate database system is chosen to meet project requirements.The database is fully compatible with the selected web development stack. Efficient data storage, retrieval, and management contribute to the application's reliability and scalability.

4. Specific Requirements

- Web design software focuses on the visual aspect of websites, offering a visual editor for easy design without coding.
- Good software includes templates to provide a starting point for designing the website.
- Compatibility with the current website builder or CMS, such as CSS HUB or WordPress, is essential.
- Visual Studio Code is a suitable choice for writing and editing HTML and CSS code, with a wide range of extensions available for additional functionality.
- MERN Stack is a powerful technology stack consisting of MongoDB, Express.js, React, and Node.js, facilitating efficient full-stack web application development. ● Bootstrap is a popular front-end development framework, allowing the creation of responsive mobile-first websites with pre-built components and styles that can be customised as needed.

4.1. General Constraint.

1.Vision Impairment:

- With vision loss being a prevalent disability in the United States, designers must prioritize visual accessibility to ensure that websites can be accessed by older adults with impaired vision.
- As the aging population grows, the number of older adults visiting websites is increasing, making it essential to cater to their needs and provide an inclusive user experience.
- Common changes in vision for older adults include the use of reading glasses and a preference for larger font sizes. Shades of blue may appear faded, reducing contrast, which designers should consider when using blue elements in their designs.
- To address this, designers should increase color contrast in websites and applications targeting older adults to improve readability and usability.

2.Font and Button Size:

- Text and button sizes play a crucial role in enhancing usability for older adults. Keeping fonts at a minimum of 16px ensures legibility, and larger sizes are even better for clarity.
- Sans serif typefaces are preferred for on-screen readability as they provide better visual

clarity and distinction between characters.

● Websites and web apps should undergo thorough testing with screen readers to identify and fix any potential accessibility issues before making them public. **3.Size and Spacing of Hypertext Links:**

- Hypertext links are essential for navigation, but they need to be designed with larger text sizes for easy visibility and clicking for older users.
- Ensuring sufficient white space between links prevents clustering and reduces the risk of accidental clicks on neighboring links.
- The same design principles should be applied to calls-to-action and navigation buttons, making them bigger and more noticeable for ease of use.

4.Use of Different Colors:

● Studies have shown that seniors can lose track of their navigation history if websites fail to use different colors to distinguish between visited and unvisited links. ● Providing clear visual cues, such as color changes, helps users understand their browsing history and avoid revisiting the same pages repeatedly.

- The same design approach should be applied to other important elements like calls-to-action and navigation buttons to enhance usability.

5.Icons with Text:

- When using icons, designers should include text labels to ensure clarity and avoid confusion among users, particularly for those who may not be familiar with standard icon meanings.
- While many older adults are tech-savvy, it's essential to make all text easily interpretable to aid in better understanding for all users.
- In forms or search fields, providing specific instructions on required information can help older web users complete tasks more effectively.

6.Clear Error Messages:

- Error messages should be straightforward and provide concise information on the problem and how to resolve it.
- Keeping error messages simple helps older users comprehend issues quickly and take appropriate actions to correct them.
- Designers should ensure error messages are placed prominently and avoid vague wording that may confuse users.

7.Interaction for Older Adults:

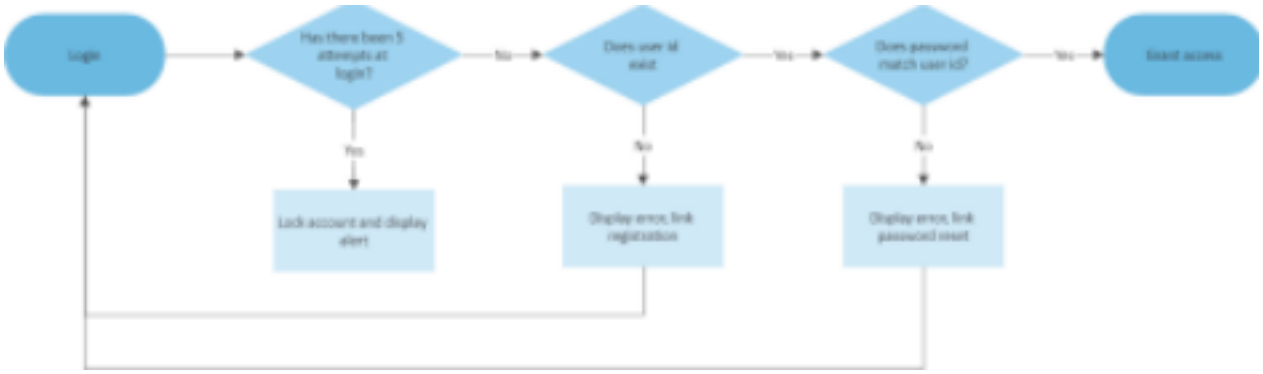
- Interaction design should focus on providing clear visual cues that are easy to decipher and interact with, catering to the potential decline in motor skills among older adults.
- Simple gestures that involve horizontal, vertical, or diagonal movements are more

natural and user-friendly for older users.

- Avoid incorporating complex gestures that require multiple fingers or quick movements, as these can frustrate older adults with declining motor function.

8.Memory and Concentration:

- Designers should consider cognitive declines that may affect memory and concentration in older adults.
- Allowing more time for information absorption and decision-making is essential to accommodate the slower processing of information that comes with aging. ● Complex tasks that require quick intake and processing of information should be simplified to ensure older users can navigate through the website or application comfortably.



Conclusion and Summary

The website ‘GOOD FELLOWS’ will aim to connect senior citizens with volunteers who can provide various forms of assistance and support. This platform will provide an easy-to-use interface where senior citizens can request help with tasks such as grocery shopping,transportation, and household chores. Volunteers can then view these requests and offer their assistance.

The website will be user-friendly and accessible, providing seniors with a simple way to request assistance and connect with volunteers. The ultimate goal of the website is to improve the quality of life for seniors by providing them with the support and resources they need to age in place and maintain their independence.

Overall, the website for senior citizens aims to improve their quality of life by providing access to a supportive community of volunteers and resources. It will promote social connections, increase accessibility to necessary services, and empower seniors to lead fulfilling and independent lives.

Post Lab
Importance of SRS in Software Development and Requirement Elicitation Techniques

A) Importance of a well-defined Software Requirement Specification (SRS):

SRS facilitates clear communication between stakeholders, reducing misunderstandings and ambiguities.
It defines the project scope, preventing scope creep and managing expectations.
Establishes requirement traceability, ensuring customer needs are met and validating the final product.
Provides a basis for estimations, aiding in project planning and resource allocation.
Enables risk mitigation by identifying potential issues early in the development process.
Facilitates change management, helping assess proposed changes' impact.
Improves quality assurance by enabling comprehensive testing.

B) Analysis and Improvements of SRS:

Common ambiguities: vague language, lack of completeness, conflicting requirements, missing assumptions, inconsistent terminology, ambiguous use cases.
Proposed improvements: conduct stakeholder reviews, use diagrams, define acceptance criteria, document assumptions, address non-functional requirements.

C) Comparison of Requirement Elicitation Techniques:

Interviews: Effective for understanding specific needs but time-consuming and resource-intensive.
Surveys: Efficient for gathering a broad overview of user needs but may lack detailed insights.
Use Case Modeling: Aids in identifying functional requirements and system interactions, requires a clear understanding of system boundaries.

Effectiveness in Gathering User Needs:

Interviews capture detailed requirements but are more suitable for critical projects.
Surveys provide quantitative data from a larger audience but lack qualitative depth.
Use case modeling complements other techniques and visually represents system behavior.
Ultimately, a combination of these techniques can ensure a comprehensive understanding of user needs and contribute to a successful software development project.