

| **TITLE:** Requirement **S**pecification Document |
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**AIM:** To learn and understand the way of analysing the gathered information in the previous phase for the development process and prepare requirement specification document. A concept of software engineering. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Expected Course outcome of Experiment:**

Process of gathering requirements and converting them into specifications.

Document created will be used by both, the customer and the developer, to understand WHAT is going to be developed.

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**Books/ Journals/ Websites referred:**

1. Roger Pressman, Software Engineering: A practitioners Approach, McGraw Hill, 2010 ,6th edition

2. Ian Somerville, Software Engineering , Addison Wesley,2011,9th edition

1. http://en.wikipedia.org/wiki/Software\_requirements\_specification

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**Pre Lab/ Prior Concepts:**

**Requirements analysis** in systems engineering and software engineering, encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product, taking account of the possibly conflicting requirements of the various stakeholders, such as beneficiaries or users. It is an early stage in the more general activity of requirements engineering which encompasses all activities concerned with eliciting, analyzing, documenting, validating and managing software or system requirements.

Requirements analysis is critical to the success of a systems or software project. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design.

Conceptually, requirements analysis includes three types of activities:

* **Eliciting requirements**: the task of identifying the various types of requirements from various sources including project documentation, (e.g. the project charter or definition), business process documentation, and stakeholder interviews. This is sometimes also called requirements gathering.
* **Analysing requirements**: determining whether the stated requirements are clear, complete, consistent and unambiguous, and resolving any apparent conflicts.
* Recording requirements: Requirements may be documented in various forms, usually including a summary list and may include natural-language documents, use cases or process specifications.

New systems change the environment and relationships between people, so it is important to identify all the stakeholders, taken into account all their needs and ensure they understand the implications of the new systems. Analysts can employ several techniques to elicit the requirements from the customer. These may include the development of scenarios, the identification of use cases, the use of workplace observation or ethnography, holding interviews, or focus groups (more aptly named in this context as requirements workshops, or requirements review sessions) and creating requirements lists. Prototyping may be used to develop an example system that can be demonstrated to stakeholders. Where necessary, the analyst will employ a combination of these methods to establish the exact requirements of the stakeholders, so that a system that meets the business needs is produced

Different types of Requirements

* Functional requirements
* Usability requirements
* Reliability requirements
* Performance requirements
* Security requirements

A typical SRS document template is shared subsequently. This document acts as a reference and will be used by both, the customer (for whom the software system is to be developed), and the organization which develops the solution. Typically, prepared by the development organization at the early stage of development by the professionals after interacting with the customer.

**Software Requirements Specification for:**

**<Project>**

**Version 1.0**

**Prepared by <author>**

**<Organization>**

**<Date created>**

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**Introduction**

**Purpose:**

Enable seamless and meaningful connections among individuals by implementing a comprehensive people connectivity solution. This project aims to leverage technology to foster communication, collaboration, and community building, ultimately enhancing relationships and promoting a sense of belonging within our target user base.

**Product Scope:**

* **Community building:**

Focusing on connecting people from diverse backgrounds,promoting inclusivity and breaking down social barriers.

* **Educational Platforms:**

Developing platforms that connect students, educators, and learners for collaborative learning experiences.

* **Skill Sharing:**

Creating networks that facilitate the sharing of skills and knowledge among individuals with different expertise.

* Somaiyans can be kept posted by the news feed.
* Also Somaiyans can compete with each other based on the contest.
* leaderboard will be provided and students will be compared acc to their score

**References:**

*<List any other documents or Web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.>*

**Overall Description**

**Product Perspective**

Your main challenge revolves around the difficulty individuals face when searching for

collaborators in specific professional domains, such as a web developer seeking a web

UI/UX designer. The conventional offline approach makes it cumbersome to find

suitable partners for projects. In response to this issue, you aim to create a virtual

platform where individuals can effortlessly discover potential collaborators based on

their project needs, skills, and project ideas. This platform aims to streamline the

process, making it easier for professionals like web developers to connect with

complementary skill sets, such as UI/UX designers, thus fostering efficient project

collaboration.

**Product Functions**

1. User Registration and Profile Creation:

- Students can sign up using their Somaiya email addresses to ensure that the platform

is exclusive to Somaiya students.

- Profiles should include details such as skills, interests, and academic background.

2. News Feed:

- A central hub for news, updates, and announcements relevant to Somaiya students.

- Integration with relevant RSS feeds or manual curation to ensure information

accuracy.

3. Contests and Leaderboard:

- Regular contests or challenges organized within the platform.

- A leaderboard showcasing top-performing students based on their participation and

performance in these contests.

- Categories could include coding challenges, academic quizzes, or project

showcases.

4. Search bar:

- users can search for other users by just entering their user id or mail id and contact them through their different contact details provided by the user while profile creation.

**Operating Environment**

*<Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.>*

**Design and Implementation Constraints**

*<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer’s organization will be responsible for maintaining the delivered software).>*

**User Documentation**

*<List the user documentation components (such as user manuals, on-line help, and tutorials) that will be delivered along with the software. Identify any known user documentation delivery formats or standards.>*

**Assumptions and Dependencies**

*<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document or the project plan).>*

**External Interface Requirements**

**User Interfaces**

*<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>*

**Hardware Interfaces**

*<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>*

**Software Interfaces**

*<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>*

**Communications Interfaces**

*<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>*

**System Features**

*<This template illustrates organizing the functional requirements for the product by system features, the major services provided by the product. You may prefer to organize this section by use case, mode of operation, user class, object class, functional hierarchy, or combinations of these, whatever makes the most logical sense for your product.>*

**System Feature 1**

*<Don’t really say “System Feature 1.” State the feature name in just a few words.>*

4.1.1 Description and Priority

*<Provide a short description of the feature and indicate whether it is of High, Medium, or Low priority. You could also include specific priority component ratings, such as benefit, penalty, cost, and risk (each rated on a relative scale from a low of 1 to a high of 9).>*

4.1.2 Stimulus/Response Sequences

*<List the sequences of user actions and system responses that stimulate the behavior defined for this feature. These will correspond to the dialog elements associated with use cases.>*

4.1.3 Functional Requirements

*<Itemize the detailed functional requirements associated with this feature. These are the software capabilities that must be present in order for the user to carry out the services provided by the feature, or to execute the use case. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Use “TBD” as a placeholder to indicate when necessary information is not yet available.>*

*<Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.>*

REQ-1:

REQ-2:

**System Feature 2**

**Other Nonfunctional Requirements**

**Performance Requirements**

*<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.>*

**Safety Requirements**

*<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product’s design or use. Define any safety certifications that must be satisfied.>*

**Security Requirements**

*<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>*

**Software Quality Attributes**

*<Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.>*

**Business Rules**

*<List any operating principles about the product, such as which individuals or roles can perform which functions under specific circumstances. These are not functional requirements in themselves, but they may imply certain functional requirements to enforce the rules.>*

**Other Requirements**

*<Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalization requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>*

**Appendix A: Glossary**

*<Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple projects or the entire organization, and just include terms specific to a single project in each SRS.>*

**Appendix B: Analysis Models**

*<Optionally, include any pertinent analysis models, such as data flow diagrams, class diagrams, state-transition diagrams, or entity-relationship diagrams*.>

**Post Laboratory Activity:**

1. You are required to prepare SRS document for any project. ( It could be the mini project you have completed in semester IV
2. Prepare questionnaire for the allotted project considering your lab instructor is the client for requirement gathering.
3. Consider following scenario: An institute is interested in developing 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 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.

Prepare SRS document for the same in the format discussed in the write-up.

**Post Lab Descriptive Questions answers must be handwritten and to be submitted BEFORE the next tern**.

* 1. What are different techniques to gather information for software development?
  2. List verification and validation techniques for requirements.