Deliverable #1 Template : Software Requirement Specification (SRS)

SE 3A04: Software Design II – Large System Design

Tutorial Number: T0x
Group Number: Gx
Group Members:

- Group Member Name (as listed in Avenue)
- You do not need to use student #s or macid (keep those private).

IMPORTANT NOTES

- Be sure to include all sections of the template in your document regardless whether you have something to write for each or not
  - If you do not have anything to write in a section, indicate this by the *N/A*, *void*, *none*, etc.
- Uniquely number each of your requirements for easy identification and cross-referencing
- Highlight terms that are defined in Section 1.3 (**Definitions, Acronyms, and Abbreviations**) with **bold**, *italic* or underline
- For Deliverable 1, please highlight, in some fashion, all (you may have more than one) creative and innovative features. Your creative and innovative features will generally be described in Section 2.2 (**Product Functions**), but it will depend on the type of creative or innovative features you are including.

1 Introduction

- Provide an overview of the document/SRS.

1.1 Purpose

- Specify the purpose of the SRS.
- Specify the intended audience for the SRS.

1.2 Scope

- Identify the software product(s) to be produced, and name each (e.g., Host DBMS, Report Generator, etc.)
- Explain what the software product(s) will do (and, if necessary, also state what they will not do).
- Describe the application of the software being specified, including relevant benefits, objectives, and goals.

1.3 Definitions, Acronyms, and Abbreviations

- Provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS.
- This should be in alphabetical order.

1.4 References

- Provide a complete list of all documents referenced elsewhere in the SRS.
- Identify each document by title, report number (if applicable), date, and publishing organization.
- Specify the sources from which the references can be obtained.
- Order this list in some sensible manner (alphabetical by author, or something else that makes more sense).

1.5 Overview

- Describe what the remainder of the document/SRS contains.
  (e.g. "Section 2 discusses...Section 3...")

2 Overall Product Description

- This section should describe the general factors that affect the product and its requirements.
- It does not state specific requirements.
- It provides a *background* for those requirements and makes them easier to understand.

2.1 Product Perspective

- Put the product into perspective with other related products, i.e., context
- If the product is independent and totally self-contained, it should be stated here
- If the SRS defines a product that is a component of a larger system, then this subsection should relate the requirements of that larger system to the functionality of the software being developed. Identify interfaces between that larger system and the software to be developed.
- A block diagram showing the major components of the larger system, interconnections, and external interfaces can be helpful

2.2 Product Functions

- Provide a *summary* of the major functions that the software will perform.
  - **Example**: An SRS for an accounting program may use this part to address customer account maintenance, customer statement, and invoice preparation without mentioning the vast amount of detail that each of those functions requires.
- Functions should be organized in a way that makes the list of functions understandable to the customer or to anyone else reading the document for the first time
- Present the functions in a list format - each item should be one function, with a brief description of it
- Textual or graphical methods can be used to show the different functions and their relationships
  - Such a diagram is not intended to show a design of a product, but simply shows the logical relationships among variables

2.3 User Characteristics

- Describe those general characteristics of the intended users of the product including educational level, experience, and technical expertise
- Since there will be many users, you may wish to divide into different user types or personas

2.4 Constraints

- Provide a general description of any constraints that will limit the developer's options

2.5 Assumptions and Dependencies

- List any assumptions you made in interpreting what the software being developed is aiming to achieve
- List any other assumptions you made that, if it fails to hold, could require you to change the requirements
  - **Example**: An assumption may be that a specific operating system will be available on the hardware designated for the software product. If, in fact, the operating system is not available, the SRS would then have to change accordingly.

2.6 Apportioning of Requirements

- Identify requirements that may be delayed until future versions of the system

3 Use Case Diagram

- Provide the use case diagram for the system being developed.
- You do not need to provide the textual description of any of the use cases here (these will be specified under "Highlights of Functional Requirements").

4 Highlights of Functional Requirements

- Specify all use cases (or other scenarios triggered by other events), organized by Business Event.
- For each Business Event, show the scenario from every Viewpoint. You should have the same set of Viewpoints across all Business Events. If a Viewpoint doesn't participate, write N/A so we know you considered it still. You can choose how to present this - keep in mind it should be easy to follow.
- At the end, combine them all into a Global Scenario.
- Your focus should be on what the system needs to do, not how to do it. Specify it in enough detail that it clearly specifies what needs to be accomplished, but not so detailed that you start programming or making design decisions.
- Keep the length of each use case (Global Scenario) manageable. If it's getting too long, split into sub-cases.
- You are *not* specifying a complete and consistent set of functional requirements here. (i.e. you are providing them in the form of use cases/global scenarios, not a refined list). For the purpose of this project, you do not need to reduce them to a list; the global scenarios format is all you need.
- Red text below is just to highlight where you need to insert a scenario - don't actually write it all in red.

Main Business Events: List out all the main business events you are presenting. If you sub-divided into smaller ones, you don't need to include the smaller ones in this list.

Viewpoints: List out all the viewpoints you will be considering.

Interpretation: Specify any liberties you took in interpreting business events, if necessary.

BE1. Business Event Name #1

VP1. Viewpoint Name #1
Insert Scenario Here

VP2. Viewpoint Name #2
Insert Scenario Here

Global Scenario:
Insert Scenario Here

BE2. Business Event Name #2

VP1. Viewpoint Name #1
Insert Scenario Here

VP2. Viewpoint Name #2
Insert Scenario Here

Global Scenario:
Insert Scenario Here

5 Non-Functional Requirements

- For each non-functional requirement, provide a justification/rationale for it.
  Example:
  SC1. *The device should not explode in a customer's pocket.*
  Rationale: Other companies have had issues with the batteries they used in their phones randomly exploding [insert citation]. This causes a safety issue, as the phone is often carried in a person's hand or pocket.
- If you need to make a guess because you couldn't really talk to stakeholders, you can say "We imagined stakeholders would want...because..."
- Each requirement should have a unique label/number for it.
- In the list below, if a particular section doesn't apply, just write N/A so we know you considered it.

5.1 Look and Feel Requirements

5.1.1 Appearance Requirements

LF-A1. The system colors shall adhere to the organization's branding.
Rationale: Utilization of company colors is crucial for maintaining a unified professional image, allowing the application to be recognizable to its users.

LF-A2. The system shall use clear and recognizable icons and images.
Rationale: A clear and recognizable icons and images will improve application usability, helping users recognize the meaning behind the icons and images. A standard icon should be high quality and have excellent pixel resolution (24x24 pixels to 48x48 pixels).

LF-A3. The application shall support responsive design to adapt to various screen sizes and orientations.
Rationale: There are numerous screen sizes and thus, supporting responsive design would ensure that the application maintains a consistent and visually appealing layout across various device sizes, contributing to a seamless user experience.

LF-A4. The system shall integrate the company seal or emblem discreetly within the application design to emphasize professional identity.
Rationale: The inclusion of the company seal reinforces brand authenticity and professionalism.

LF-A5. The system shall have an intuitive navigation structure and layout to enable users to find desired information and functionalities easily.
Rationale: An intuitive layout allows users to navigate through the application effortlessly, reducing the learning curve and improving usability of the application. An intuitive layout follows the traditional organization of existing chat applications.

5.1.2 Style Requirements

LF-S1. The application shall adhere to a consistent color scheme throughout the user interface.
Rationale: A consistent color scheme provides a cohesive and unified design.

LF-S2. The system shall use a font that is legible and readable across different devices, screen resolutions, and lighting conditions.
Rationale: A readable and professional font would allow users to read legible messages, promoting effective communication among users.

LF-S3. The system shall display messages in the chat application with clear formatting which includes distinguishable sender information, timestamp, and message content.
Rationale: A clear message format makes it easier for the users to follow discussions and contributes to an organized and user-friendly interface.

5.2 Usability and Humanity Requirements

5.2.1 Ease of Use Requirements

UH-EOU1. The system shall have a clear and intuitive navigation layout, ensuring that users can effortlessly locate the information that they seek.
Rationale: An intuitive design ensures that users can seamlessly engage with the application features with minimal learning curve. This would enhance overall usability and contributes to increased user satisfaction. An intuitive layout follows the traditional organization of existing chat applications.

UH-EOU2. The system shall allow users to quickly access recent chats, allowing users to efficiently engage with recent conversations without unnecessary navigation.
Rationale: Minimizing user effort to access recent chats ensures seamless user experience and promotes swift interaction with relevant contacts. Recent chat conversations should be located at the top of the users list of conversations.

UH-EOU3. The system shall use icons that clearly indicate the associated action or feature, giving users a visual cue of what each icon represents.
Rationale: Recognizable icons with clear action indicator are contextually relevant and avoids metamorphic imagery. This enhances the usability of the application, allowing users to navigate seamlessly through the application.

5.2.2 Personalization and Internationalization Requirements

UH-PI1. The system shall allow users to customize their profiles through addition of personal information (i.e., name, age, gender, date of birth, hometown), profile pictures, and adjustment of chat availability status.
Rationale: Allowing the users to personalize their profiles would foster a sense of identity and self-expression within the application.

5.2.3 Learning Requirements

UH-L1. The system shall include an interactive onboarding tutorial which guides the users through functionalities specific to the chat application, allowing the users to learn the application key features within a time frame of 15 minutes.
Rationale: An interactive onboarding tutorial would ensure that users are aware of chat application features, aiding in a smooth and efficient adaptation to the use of the application.

5.2.4 Understandability and Politeness Requirements

UH-UP1. The system shall display informative and user-friendly error messages when an error is encountered or input is invalid. An informative error message should consist of clear instructions on how to rectify the error written in natural language.
Rationale: A clear error message can help users to understand the nature of the problem. This allows the users to take appropriate action to resolve the issue, reducing user frustration when an error is encountered.

5.2.5 Accessibility Requirements

UH-A1. The system shall adhere to WCAG accessibility standards to ensure usability among those with disabilities. This includes providing alternative text for images and using sufficient color contrast between text and background elements. Text should have a color contrast ratio of at least 4.5:1 and larger text should have at least 3:1 contrast ratio.
Rationale: Adhering to WCAG standards would ensure that the application is inclusive and accessible to a wider audience.

5.3 Performance Requirements

5.3.1 Speed and Latency Requirements

PR-SL1. The system shall deliver messages sent within the chat application to recipients in real-time, with a latency of no more than 1 second.
Rationale: A minimal latency will ensure that users experience near-instantaneous communication.

PR-SL2. The system shall respond to user inputs within 300 milliseconds.
Rationale: A fast response time would enhance user experience making interactions within the application seem immediate and responsive.

PR-SL3. The system shall allow users to query chat history with a response time of no more than 500 milliseconds.
Rationale: A swift search query response time enable users to efficiently locate messages in chat history, improving usability of the application.

5.3.2 Safety-Critical Requirements

PR-SC1. The system shall implement a robust user authentication and authorization mechanism, ensuring only authorized personnel can access and participate in sensitive chat application communications.
Rationale: A robust user authentication reduces the risk of unauthorized access and protects sensitive information from being compromised.

PR-SC2. The system shall securely store a chat history log containing identifiers, date and time of communication, and an accurate chat log. **Rationale:** Storing chat log is essential for auditing, accountability, and traceability.

5.3.3 Precision or Accuracy Requirements

PR-PA1. The system shall maintain a timestamp accuracy of ± 2 seconds, ensuring that the displayed time of sent and received messages accurately reflect the time they were processed.
Rationale: Ensuring high precision in the timestamp of message delivery contributes to the reliability and real-time nature of the chat application, providing a responsive and communication experience to users.

PR-PA2. can add more!!!
Rationale:

5.3.4 Reliability and Availability Requirements

PR-RA1. The system shall have an availability of 99.9% ensuring that users can access the chat application without significant downtime.
Rationale: A system that is continuously available is crucial to ensure real-time communication and that the service is accessible whenever the user needs it.

PR-RA2. The system shall have a reliability rate of 99.9% in successful message delivery. This ensures that messages sent by the users are received by the intended users with a success rate of 99.9%.
Rationale: A highly reliable system is crucial in preventing data loss, providing a sense of confidence and satisfaction in the application.

5.3.5 Robustness or Fault-Tolerance Requirements

PR-RFT1. The system shall remain functional when handling messages containing special characters, emojis, and multimedia content. The system will not crash when a diverse message format is encountered.
Rationale: Having a robust message handling prevents the application from becoming unresponsive and crashing when faced with an unexpected message content.

PR-RFT2. In the event of temporary network disconnection, the system shall have a fault-tolerant mechanism to store unsent messages locally and will automatically attempt to resend the message once connection is reestablished.
Rationale: This ensures that no message is loss when the chat application is disconnected from the network, maintaining a seamless user communication experience.

5.3.6 Capacity Requirements

PR-C1. The system shall be able to support a minimum of 50 simultaneous users without degradation in performance and response time.
Rationale: Considering the scope of this project, the chat application should be able to accommodate a medium-size user base without compromising the user experience.

PR-C2. The chat server shall provide a minimum of 1 terabyte storage capacity to securely store chat logs, media files, and other data.
Rationale: This requirement ensures that the application is capable of storing a significant amount of data without running out of storage space.

5.3.7 Scalability or Extensibility Requirements

PR-SE1. The system must employ a modular architecture to enable seamless integration and extension of new features without necessitating any major changes to the existing system.
Rationale: This requirement enables continuous development of the application while facilitating easy integration of new features. This ensures that the application is capable of evolving with changing requirements.

5.3.8 Longevity Requirements

PR-L1. The system shall remain compatible with major operating systems for a minimum of five years, ensuring continued accessibility across evolving technology.
Rationale: This requirement ensures that the application can adapt to changes in technology and can maintain accessibility over an extended period of time.

PR-L2. The system shall undergo regular software maintenance activities for a minimum of five years from initial release.
Rationale: Regular maintenance of the chat application ensures that the system remains secure and performs efficiently, and that new bugs and issues can be addressed, contributing to continued usefulness.

5.4 Operational and Environmental Requirements

5.4.1 Expected Physical Environment

OE-EPE1. N/A

5.4.2 Requirements for Interfacing with Adjacent Systems

OE-IA1. The system shall encrypt data exchanged between systems during transit using industry standard protocols.
Rationale: Sensitive chat communications and files will be safeguarded and data tampering will be prevented.

5.4.3 Productization Requirements

OE-P1. N/A

5.4.4 Release Requirements

OE-R1. The application must be compatible with Android 5.0 or above.
Rationale: This ensures that the application can function on a wide variety of Android devices.

5.5 Maintainability and Support Requirements

5.5.1 Maintenance Requirements

MS-M1. The development team shall address and fix any reported bugs or issues within the chat application. Any critical issues must be resolved within one week of report, while non-critical issues should be addressed within one month.
Rationale: Continuous resolution of issues is crucial in maintaining a stable and secure application, ensuring user satisfaction and confidence.

5.5.2 Supportability Requirements

MS-S1. The system shall maintain a comprehensive frequently asked questions (FAQ) section to provide users with self-service resource for issue resolution.
Rationale: An FAQ would allow users to independently address common queries, reducing the dependency for direct support.

5.5.3 Adaptability Requirements

MS-A1. The system shall be able to run on the most recent version of Android released on Android devices.
Rationale: The system should be able to run on Android devices as this is the platform that it is being designed for.

5.6 Security Requirements

5.6.1 Access Requirements

SR-AC1.

5.6.2 Integrity Requirements

SR-INT1. The application shall authenticate user to verify the identity of the user accessing the system.
Rationale: Authentication ensures that only authorized users can log in and use the application.

5.6.3 Privacy Requirements

SR-P1.

5.6.4 Audit Requirements

SR-AU1. The application shall store chat history log for each agent securely on the server. The log shall contain identifiers of the communication agents, the date and time of the communication, and an accurate chat log.
Rationale: Storing chat history log allows for trail auditing for reviewing past conversations, tracking changes, and investigating incidents.

5.6.5 Immunity Requirements

SR-IM1.

5.7 Cultural and Political Requirements

5.7.1 Cultural Requirements

CP-C1. The system shall integrate a calendar that highlights important holidays and events from different cultures.
Rationale: Storing calendar events from different cultures recognizes cultural diversity, helping users stay informed of significant occasions.

CP-C2. The system prevent users from creating accounts with discriminatory names, based on unacceptable words.
Rationale: Preventing creating of discriminatory accounts will foster a professional environment within the workplace and promotes responsible use.

5.7.2 Political Requirements

CP-P1. N/A

5.8 Legal Requirements

5.8.1 Compliance Requirements

LR-COMP1. The system shall comply with data protection laws through user consent for data processing, providing privacy notices, and implementing measures to secure user data.
Rationale: User privacy is protected and ensures compliance to regulations governing the collection and processing of personal information.

LR-COMP2. The system shall collect only the minimum amount of personal information necessary for stated purpose.
Rationale: This supports PIPEDA's principle of limiting the collection of personal information to what is reasonable necessary [CITE].

5.8.2 Standards Requirements

LR-STD1.

A Division of Labour

Include a Division of Labour sheet which indicates the contributions of each team member. This sheet must be signed by all team members.