Software Requirements Specification

for

The Bridge

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Table of Contents

1. Introduction

1.1 Purpose

"The Bridge: Connecting University Students with Their Seniors and Alumni" is a dynamic platform designed to bridge the gap between university students, their seniors, and esteemed alumni. This software requirements specification (SRS) document outlines the essential features and functionalities that will empower students to seek advice, guidance, and insights from their seniors and alumni. By creating a seamless digital environment, "The Bridge" aims to facilitate networking, foster mentorship, and provide a platform for students to ask questions related to courses, career paths, and experiences. This document encapsulates the core purpose of "The Bridge" in providing a robust channel for knowledge exchange and meaningful interactions among the university community.

1.2 Intended Audience and Reading Suggestions

The purpose of this document is to give a detailed description of the requirements for the “The Bridge” software. It will illustrate the purpose, scope and complete description for the development of the system. It will also explain external interface requirements and system requirements as well as non-functional requirements. This document is primarily intended to be proposed to a customer for its approval and also for further processing such as additions to be developed in later releases.

1.3 Product Scope

The product scope of "The Bridge: Connecting University Students with Their Seniors and Alumni" encompasses providing a digital platform that facilitates seamless communication and mentorship among university students, seniors, and alumni. This solution overcomes the challenge of limited avenues for students to access guidance and insights by enabling them to ask questions anonymously if desired, thereby encouraging candid conversations. By doing so, it empowers students to efficiently navigate their academic and career paths, exploring various fields with the support of experienced mentors. The benefits include fostering an environment of knowledge sharing, aiding students in making informed choices, and ultimately creating a robust community that propels personal and professional growth.

1.4 References

IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

2. Overall Description

This section will give an overview of the “The Bridge” application. The basic functionality of the system as well its context will be explored in detail. It also describes different kinds of stakeholders and user classes associated with the system and what functionality is available for each class. At last, the assumptions and dependencies for the system are presented.

2.1 Product Perspective

"The Bridge: Connecting University Students with Their Seniors and Alumni" is a revolutionary platform designed to revolutionize communication and knowledge-sharing within the university community. It introduces a novel self-contained software system that comprises two integral components: a user-friendly web and mobile application and a robust backend database. These components synergistically work to bridge the gap between university students, their seniors, and alumni.

The user interface is divided into five distinct sections, each catering to specific user roles: Students, Seniors, Alumni, Admin, and Faculty. Students can seamlessly access course-related information, pose queries to seniors and alumni, and seek career advice. Seniors and alumni have dedicated interfaces to share experiences, provide insights, and foster mentorship. The Admin interface empowers administrators to manage user profiles, maintain the platform's integrity, and ensure a smooth user experience. Faculty members can leverage their interface to provide guidance and course-specific information.

"The Bridge" transforms the way university stakeholders interact and exchange knowledge. It eradicates the limitations of traditional communication by providing a dynamic digital environment. It creates a central hub for students to access valuable insights from seniors and alumni. By presenting a user-friendly, role-based interface, "The Bridge" ensures a seamless experience for students seeking guidance, seniors/alumni offering mentorship, and administrators maintaining platform integrity. This comprehensive platform promises to reshape the educational experience, fostering a sense of community, and equipping students with a digital toolkit for academic and career success.

2.2 Product Functions

"The Bridge: Connecting University Students with Their Seniors and Alumni" offers a range of essential functions to facilitate effective communication and knowledge exchange within the university community. Key functions include:

1. User Registration and Profiles: Users can register as Students, Seniors, Alumni, or Faculty, creating profiles with relevant information, such as education, expertise, and interests.

2. Search and Connect: Students can search for Seniors and Alumni based on fields of expertise, courses, or careers, and send connection requests.

3. Mentorship: Users can engage in mentorship relationships, seeking guidance and offering insights on academic pursuits and career choices.

4. Question and Answer: Students can ask questions related to courses, career paths, and experiences, receiving valuable advice and insights from Seniors and Alumni.

5. Anonymous Queries: Optional anonymous querying enables students to seek guidance without revealing their identity, encouraging candid interactions.

6. Event Management: Admins can create and manage events such as workshops, seminars, and networking sessions to further connect users.

7. Messaging and Networking: Integrated messaging allows users to communicate, fostering networking and information sharing.

8. Course Information: Mentors (faculty, seniors and alumni) can provide course-related information and guidance, assisting students in making informed decisions.

9. Centralized Platform: "The Bridge" serves as a centralized hub for students to access valuable insights, mentorship, and course-related information.

10. Admin Management: Admins can oversee user profiles, ensuring the platform's integrity and quality of interactions.

11. User Roles: Differentiated interfaces for Students, Seniors, Alumni, Admins, and Faculty ensure tailored experiences.

12. Career Exploration: Students can explore various career paths by connecting with professionals in their fields of interest.

13. Community Building: The platform fosters a sense of community, enabling users to interact, share experiences, and grow together.

14. Privacy Controls: Users can manage their privacy settings and choose the extent of information they wish to share.

15. Real-time Notifications: Users receive notifications for connection requests, messages, events, and updates.

2.3 User Classes and Characteristics

There are four types of users that interact with our system Firstly, there is a Students, then Seniors, Alumni , Faculty (which all come under mentors) and Admin.

2.3.1 Student

Students form a primary user class. They utilize the platform to seek academic guidance, career insights, and mentorship. They can ask questions, explore career paths, connect with seniors and alumni, attend events, and engage in community discussions.

2.3.2 Seniors

Seniors, often in higher academic years, offer their experiences and expertise to guide juniors. They can answer queries, provide advice, mentor students, and share insights into courses and career choices.

2.3.3 Alumni

Alumni, having successfully transitioned into professional life, serve as mentors and role models. They contribute by providing insights into various career paths, offering advice, and sharing experiences.

2.3.4 Faculty

Faculty members play a crucial role in guiding students academically. They can offer course-related information, career guidance, and advice on academic pursuits.

2.3.5 Admin

Administrators oversee the platform's functioning, ensuring quality interactions and maintaining user profiles. They manage events, monitor discussions, and uphold the platform's integrity.

2.3.6 Guest

Though not registered users, guests may have limited access to browse content. This could include accessing public discussions, event details, and some user profiles.

2.4 Operating Environment

"The Bridge: Connecting University Students with Their Seniors and Alumni" operates in a diverse environment, catering to users on various devices, including laptops, smartphones, and tablets. It is designed to be compatible with multiple operating systems such as Windows, macOS, iOS, and Android. Additionally, the platform relies on web browsers like Chrome, Firefox, Safari, and Edge for web access. Compatibility with common web technologies and database management systems ensures peaceful coexistence with software components and applications commonly used in educational institutions, fostering seamless interactions within the university community.

2.5 User Documentation

The software is accompanied by the following materials for further help:

- User Manual Version 1.0
- Online support at www.bridge.com

2.6 Assumptions and Dependencies

Assumptions:

User Device Compatibility: We assume that users will have access to devices (e.g., smartphones, laptops, tablets) capable of running modern web browsers. Compatibility across a range of devices and browsers is crucial for an optimal user experience.

Internet Connectivity: We assume that users will have reliable internet connectivity to access and interact with the platform. The effectiveness of real-time notifications, messaging, and online interactions depends on a stable internet connection.

Database Management System: The SRS assumes the availability and compatibility of a specific database management system (e.g., MySQL, PostgreSQL) for storing user data and platform information. Any changes in the selected database system may impact data storage and retrieval processes.

Dependencies:

Third-Party Components: The project may depend on third-party components, such as authentication services, for user login and security. Compatibility and reliability of these services are essential for the platform's functionality.

Web Technologies: The project relies on web technologies like HTML, CSS, and JavaScript for the user interface. Compatibility with evolving web standards and technologies is crucial for future-proofing the platform.

Server Hosting: The availability and performance of the hosting servers where the platform is deployed are dependencies. Ensuring robust server infrastructure is essential to maintain platform stability and responsiveness.

3. External Interface Requirements

3.1 User Interfaces

- Web-based interface: This is the most common type of interface for a web application. It allows users to access the application from any device with an internet connection.
- Mobile app: A mobile app can provide a more convenient and user-friendly experience for students and alumni who are using their smartphones or tablets.
- Chatbot: A chatbot can be used to provide automated customer service for students and alumni.
- Virtual assistant: A virtual assistant can be used to provide more personalized assistance to students and alumni.

3.2 Hardware Interfaces

- Webcam: A webcam can be used for video chat and other features that require video.
- Microphone: A microphone can be used for audio chat and other features that require audio.
- Scanner: A scanner can be used to scan documents and other materials.
- Printer: A printer can be used to print documents and other materials.

3.3 Software Interfaces

- Database: A database is used to store data about students, alumni, and other users of the application.
- Web server: A web server is used to host the application and make it accessible to users.
- Application server: An application server is used to run the application and process requests from users.
- Messaging system: A messaging system is used to send and receive messages between users.

3.4 Communications Interfaces

- Email: Email is a common way for students and alumni to communicate with each other.

- · HTTP: The application will use the HTTP protocol to communicate with the web server.
- · HTTPS: The application will use the HTTPS protocol to communicate with the web server when sensitive data, such as passwords, is being transferred
- · TCP/IP: The application will use the TCP/IP protocol to communicate with the web server, database server, and email server
- Social media: Social media platforms can be used to connect students and alumni with each other and with the university.
- Phone: Phone calls can be used for urgent or time-sensitive communication.
- Video chat: Video chat can be used for more personal and interactive communication

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4. Functional Requirements

This section includes the requirements that specify all the fundamental actions of the software system

4.1 Profile Management

DESCRIPTION: Users can create, update, and manage their profiles, including personal information, profile picture, and contact details. They can also choose to make their profiles public or private.

RATIONALE: This feature empowers users to maintain accurate and relevant information on their profiles, enhancing networking and connection opportunities within the community.

4.2 Alumni Search and Connect

DESCRIPTION: Users can search for alumni based on various criteria such as graduation year, course, or profession. They can send connection requests to alumni and view their profiles.

RATIONALE: This functionality fosters alumni-student interactions, allowing students to seek guidance and career advice from alumni and build valuable connections.

4.3 Ask Questions

DESCRIPTION: Users can post questions related to courses, career paths, or general advice. Seniors, faculty, and alumni can respond to these questions.

RATIONALE: This feature promotes knowledge sharing and peer-to-peer learning, benefiting both students seeking answers and those providing insights

4.4 Announcements

DESCRIPTION: Administrators can post announcements about seminars, competitions, and course-related updates. Users receive notifications for new announcements.

RATIONALE: Announcements keep the community informed about important events and opportunities, enhancing engagement and participation.

4.5 Supplementary Course Recommendations

DESCRIPTION: Users receive recommendations for supplementary courses or workshops that can complement their education and skill development.

RATIONALE: Supplementary course recommendations offer users the chance to broaden their knowledge and skills beyond their primary courses.

4.6 Course Recommendations

DESCRIPTION: The system provides personalized major and minor course recommendations based on a user's academic history, interests, and goals.

RATIONALE: This feature helps students make informed decisions about their academic paths and supports efficient course planning.

4.7 Study Material Sharing

DESCRIPTION : Users can upload, share, and access study materials such as books, notes, and video lectures within the platform.

RATIONALE : This functionality facilitates resource sharing and collaboration among students, creating a valuable learning resource pool.

4.8 Share Experiences and Guidance

DESCRIPTION: Users can write and share their experiences, advice, and guidance through blog posts and articles.

RATIONALE: This feature promotes mentorship and knowledge dissemination within the community, benefiting both newcomers and experienced members.

4.9 Admin Profile Management

DESCRIPTION: Administrators have the capability to manage user profiles, including updating, suspending, or deleting them as necessary.

RATIONALE: Admin profile management ensures the integrity of the user database and allows for effective moderation and user support.

4.10 Differentiated User Interfaces

DESCRIPTION: The platform provides distinct interfaces for Students, Seniors, Alumni, Admins, and Faculty, each tailored to their specific needs and roles.

RATIONALE: This customization enhances user experience by presenting relevant features and information, simplifying navigation, and ensuring efficient use of the platform.

4.11 Career Exploration

DESCRIPTION: Students can connect with professionals in their fields of interest, request informational interviews, and seek career advice.

RATIONALE: This feature empowers students to explore potential career paths, gain insights, and make informed decisions about their future.

4.12 Community Building

DESCRIPTION: The platform encourages interaction, discussion, and collaboration among users. It includes forums, discussion boards, and group features.

RATIONALE: Community building fosters a sense of belonging, knowledge sharing, and mutual support, enhancing the overall user experience.

4.13 Privacy Controls

DESCRIPTION: Users have the ability to manage their privacy settings, including who can view their profiles, send them messages, and access their information.

RATIONALE: Privacy controls empower users to maintain their desired level of privacy and security within the platform, building trust and user satisfaction.

4.14 Real-time Notifications

DESCRIPTION: Users receive real-time notifications for connection requests, messages, upcoming events, and platform updates.

RATIONALE: Real-time notifications keep users engaged and informed about important interactions and events, ensuring they don't miss out on opportunities or important updates.

4.15 Anonymous Queries

DESCRIPTION: Users have the option to submit queries or questions anonymously, allowing students to seek guidance without revealing their identity to respondents.

RATIONALE: This feature promotes candid interactions and encourages students to ask sensitive or personal questions without fear, fostering a supportive and open community.

5. Nonfunctional Requirements

5.1 Requirement Gathering and Analysis:

·Understand the specific needs and preferences of the college community, including students, faculty, and staff.
· Identify and document the key features and functionalities required for the connection website based on the gathered requirements.

5.2 Performance Planning:

· Define clear performance goals, including target response times and scalability requirements.
·Decide on the technology stack and infrastructure that can meet these performance goals and can handle future growth.

5.3 Security Planning:

· Identify potential security risks and threats that the connection website may face.
·Develop a comprehensive security strategy that encompasses measures such as data encryption, robust user authentication, and protection against common cyber threats.

5.4 User Interface and Design:

·Create wireframes and mock ups for the website's user interface (UI) to visualize its layout and design.
·Ensure the design is responsive, user-friendly, and compliant with accessibility standards to accommodate a diverse user base.

5.5 Development:

·Begin the development of the connection website, following secure coding practices and industry standards.
·Implement core features such as user registration, profile management, and interactive connection forums based on the defined requirements.

5.6 Database Development:

·Set up a robust and scalable database system to store user data and website content.
·Optimize database queries for efficient data retrieval.

5.7 Compliance with Regulations:

· Ensure the website complies with relevant data protection regulations, privacy laws, and educational standards.
· Implement necessary privacy controls and consent mechanisms to safeguard user data

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5.8 Performance Optimization:

· Continuously monitor and optimize the website's performance to identify areas of improvement.
· Use performance monitoring tools to pinpoint and address any bottlenecks or issues affecting speed and responsiveness.

5.9 Testing:

· Conduct thorough testing of the website, including functional testing to verify feature functionality, security testing to identify vulnerabilities, and usability testing to ensure user-friendliness.
· Ensure cross-browser and cross-device compatibility through testing on various configurations.

5.10 Documentation and User Training:

· Create comprehensive user documentation and training materials that explain how to use the connection website's features and functionalities.
· Train administrators and support staff on the website's functionalities and procedures to effectively assist users.

5.11 Deployment:

· Deploy the connection website to a production server, making it accessible to users.
· Set up load balancing and redundancy mechanisms to ensure high availability and minimize downtime.

5.12 Monitoring and Alerts:

· Configure performance monitoring tools to continuously track the website's health, including server load, response times, and database performance.
· Establish alerts and notifications to promptly inform system administrators of performance issues or potential problems.

5.13 Support and Helpdesk:

· Launch a user support system that includes channels like email and chat support, enabling users to seek assistance with any issues or inquiries.
·Ensure that helpdesk support staff are trained and equipped to provide prompt and effective assistance to users.

5.14 Continuous Improvement:

· Continuously gather user feedback through surveys, feedback forms, and user interviews to understand their needs and pain points.
· Monitor website analytics, including user behavior, traffic patterns, and conversion rates, to identify areas for improvement.
·Use the data collected to make iterative improvements to the website, addressing user concerns and adding new features as necessary for a better user experience.

5.15 User Acceptance Testing (UAT):

·Involve key stakeholders, including college administrators, faculty, and students, in User Acceptance Testing (UAT) to ensure the website meets their expectations.
·Gather feedback from users during UAT to identify any issues, bugs, or areas for improvement.

5.16 Performance Load Testing:

·Conduct load testing to simulate heavy user traffic and assess the website's ability to handle peak loads without performance degradation.
·Adjust server configurations as necessary to optimize performance under high traffic conditions.

5.17 Security Testing:

·Perform penetration testing and vulnerability assessments to proactively identify and address potential security weaknesses in the website's infrastructure and code.
·Continuously monitor for emerging security threats and promptly apply security patches and updates to maintain a secure environment.

5.18 Backup and Disaster Recovery Testing:

·Test data backup and disaster recovery procedures to ensure that data can be safely and efficiently recovered in the event of unexpected incidents, such as data loss or system failures.
· Regularly update and test disaster recovery plans to adapt to changing circumstances.

5.19 User Training and Onboarding:

· Offer training sessions or tutorials to educate users on how to effectively use the connection website's features and functionalities.
· Create onboarding materials for new users to facilitate a smooth and welcoming introduction to the platform.

5.20 Launch and Marketing:

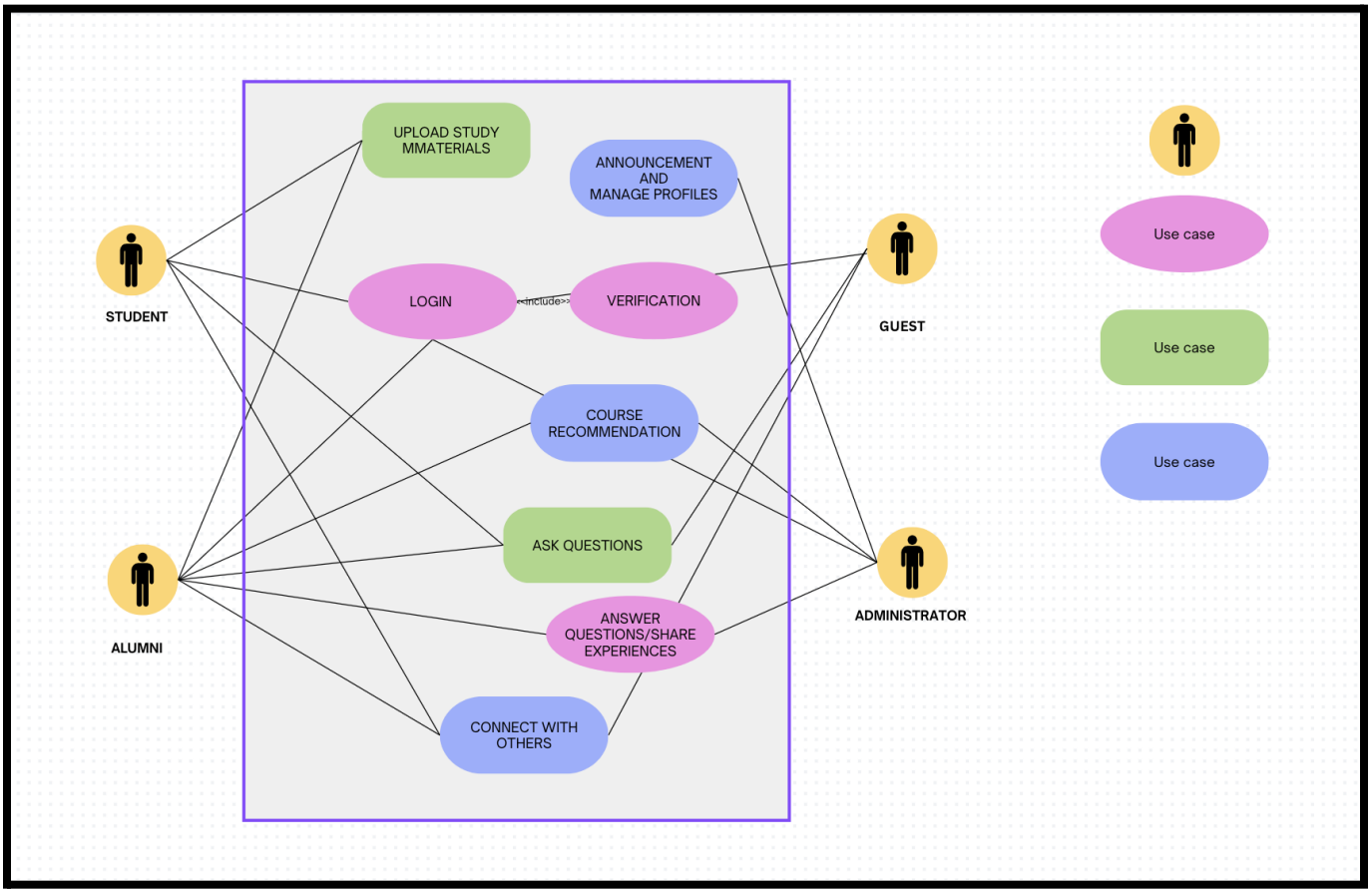
· Plan a formal launch of the connection website, complete with announcements and promotional materials to create awareness among the college community.
·Execute marketing strategies to actively promote the website within the college community, encouraging adoption and usage.

5.21 Ongoing Maintenance and Updates:

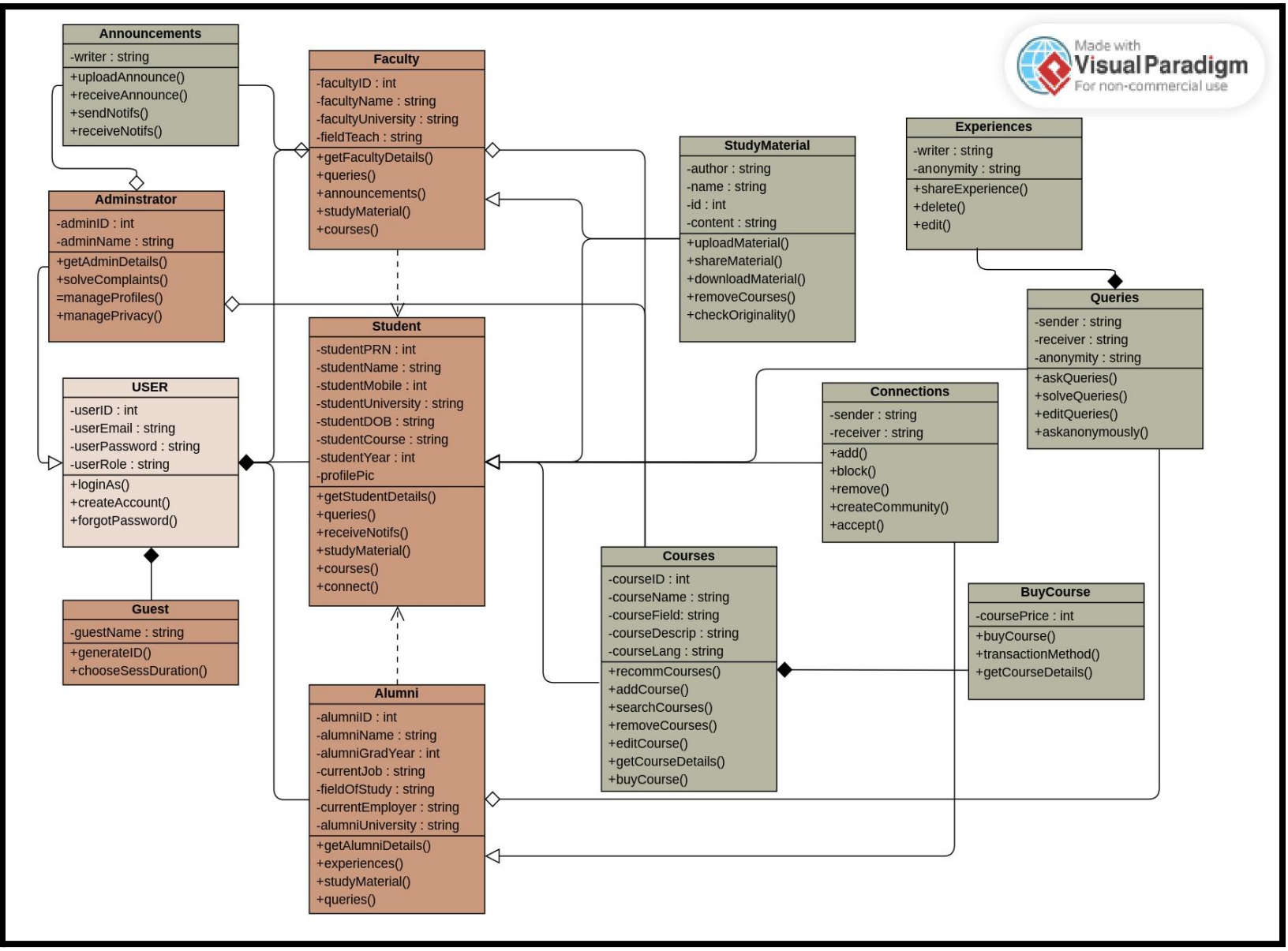
·Establish a regular maintenance schedule to apply updates, security patches, and bug fixes to keep the website up to date and secure.
·Continuously monitor website performance, security, and user feedback to identify areas for improvement and implement iterative enhancements.

6. Analysis Model

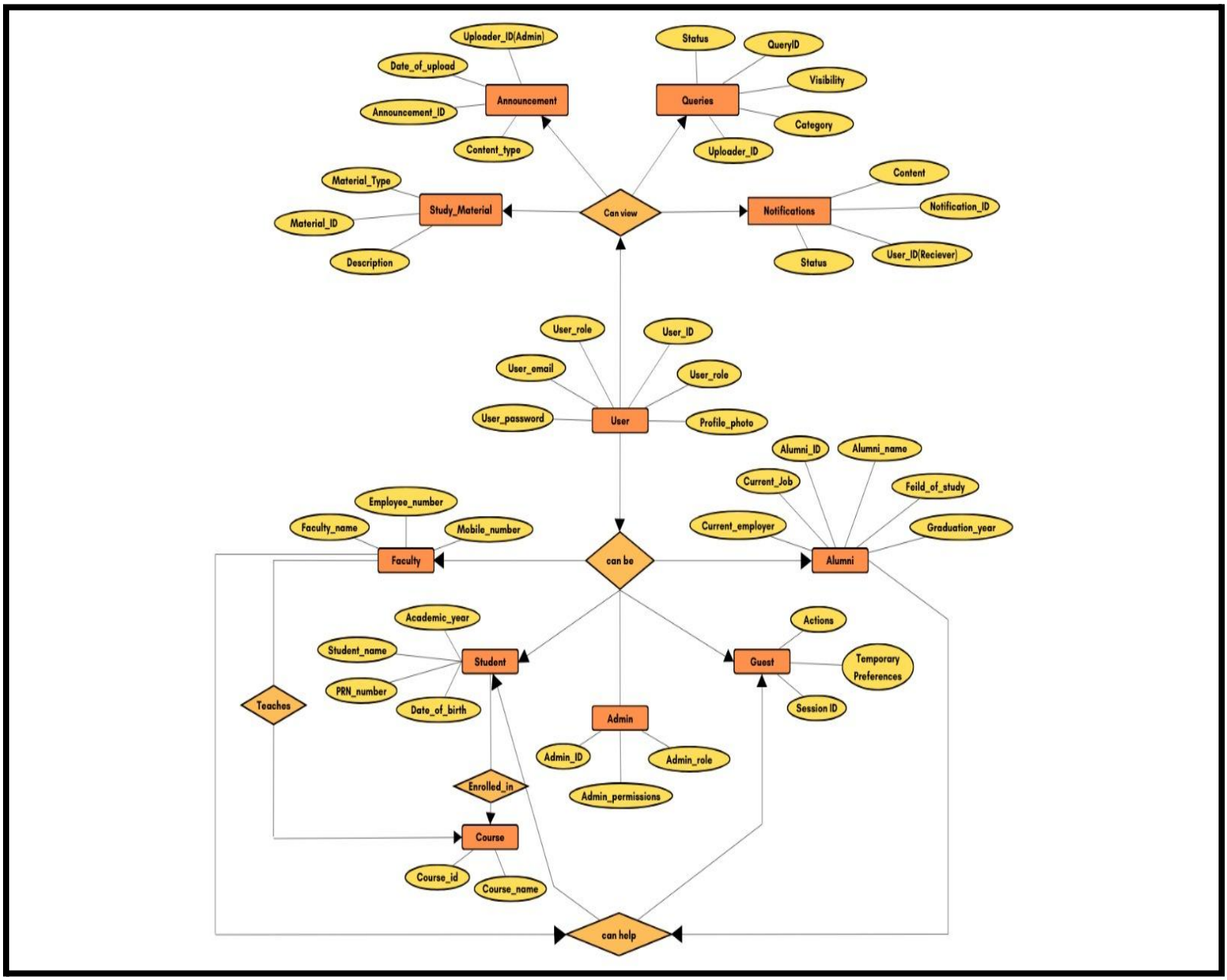
6.1 Use Case Diagram



6.2 CLASS DIAGRAM



6.3 ER Diagram



6.4 DEPLOYMENT DIAGRAM