Kingdom of Saudi Arabia

Ministry of education

Prince Sattam bin Abdulaziz University

College of Computer Engineering and Science

جامعة الأمير سطام بن عبدالعزيز
PRINCE SATTAM BIN ABDULAZIZ UNIVERSITY

المملكة العربية السعودية

وزارة التعليم

جامعة الأمير سطام بن عبد العزيز

كلية هندسة وعلوم الحاسب

Project

LinkedIn Application

Software Engineering Project

N	Student name	Student number
1	Alnoury Gussen Sultan Aldosari	**443850386**
2	Haifa Abdullah Faleh AlSultan	**443850278**
3	Lojain Mohammed Ali Alkabiri	**443850413**
4	Raghad Ibrahim Abdullah Al shiban	**443850415**

Supervised by: Dr.Mohammed Saad Mohammed Assiri

Year : 2023 - 1445

1. Feasibility Study &Project Proposal

Introduction

In today's interconnected professional landscape, the ability to leverage digital platforms for career advancement has become key. With an estimated 77% of recruiters using digital platforms for talent acquisition and 87% of professionals relying on digital platforms for career communication and opportunities, the importance of this type of platform in shaping successful career paths is undeniable.

Problem statement

The development of LinkedIn was prompted by a multitude of challenges prevalent in traditional networking and the job market. These included the inefficiency of conventional networking methods, the limited accessibility to diverse job opportunities, the struggle to establish a robust personal brand, the scarcity of resources for continual skill development, and the complexity of the recruitment process. Professionals faced obstacles in forming meaningful connections, accessing suitable employment, showcasing their expertise effectively, staying updated with industry trends, and efficiently identifying and hiring top talent.

Background

LinkedIn is a renowned professional networking platform that facilitates connections between professionals, job seekers, and recruiters worldwide. it has evolved as a vital tool for career growth, recruitment, and professional branding. However, as the digital landscape continues to evolve, there is a growing need to enhance the platform's functionalities and user experience to cater to the dynamic demands of the modern workforce.

Proposed solution

The proposed LinkedIn application will integrate advanced algorithms to offer personalized networking suggestions, create interactive engagement features for users, and enhance data privacy and security measures. It will also incorporate AI-driven tools to enable users to present their skills and accomplishments effectively, thereby fostering a more robust and comprehensive professional network.

Work Plan

Requirement Analysis and Design

Task 1: Conduct User Research (2 weeks)

1. **Develop User Survey:**
    - Create a comprehensive survey with a combination of multiple-choice and open-ended questions to gather quantitative and qualitative data.

- Include questions that address user experience, pain points, desired features, and overall satisfaction with the current LinkedIn application.

2. **Distribute Survey:**
   - Utilize various channels such as email, social media, and in-app notifications to reach a wide range of current LinkedIn users.
   - Encourage users to participate in the survey by highlighting the potential benefits of the proposed improvements and their impact on user experience.
3. **Conduct Interviews:**
   - Identify a diverse group of LinkedIn users, including both regular and occasional users, to participate in in-depth interviews.
   - Prepare a set of structured questions to delve deeper into specific pain points, user preferences, and suggestions for enhancing the application.
4. **Compile and Analyze Data:**
   - Gather all survey responses and interview transcripts into a centralized database for systematic analysis.
   - Employ data analysis tools to identify common themes, user preferences, and areas of improvement that emerge from the collected data.
5. **Generate User Research Report:**
   - Create a comprehensive report summarizing the key findings from the user research, including statistical data, user feedback, and notable insights.
   - Present the report to the development team and stakeholders, highlighting crucial user pain points and proposed solutions based on the research findings.
6. **Iterative Feedback Loop:**

   - Initiate a feedback loop with users to validate the findings and ensure that the proposed enhancements align with their expectations.
   - Incorporate any additional feedback or insights gained from the iterative feedback loop into the overall development process to ensure user-centric improvements.

   By thoroughly executing Task 1 and gathering comprehensive user research data, the development team can lay a solid foundation for understanding user requirements and preferences, enabling the creation of an enhanced LinkedIn application that addresses the specific needs and expectations of its user base.

Task 2: Define Feature Set and Requirements (1 week)

1. **Prioritize User Feedback:**

   - Review and analyze the findings from the user research to identify the most pressing pain points and desired features highlighted by the users.

- Prioritize features based on the frequency of user requests and the potential impact on enhancing the overall user experience.

2. **Collaborate with Stakeholders:**
    - Engage with key stakeholders, including product managers, designers, and developers, to gather insights and perspectives on the feasibility and relevance of proposed features.
    - Conduct brainstorming sessions and workshops to ensure alignment between user requirements and business objectives.
3. **Create Feature List:**
    - Develop a comprehensive list of features and functionalities based on the prioritized user feedback and stakeholder input.
    - Categorize features into essential, desirable, and potential future enhancements, considering the development timeline and resource constraints.
4. **Document Technical Requirements:**
    - Collaborate with the development team to outline the technical specifications and requirements necessary to implement each identified feature.
    - Consider factors such as data security, scalability, performance, and integration with existing systems during the documentation process.
5. **Validate Feature Set:**
    - Share the finalized feature list and technical requirements document with stakeholders and the development team for validation and feedback.
    - Ensure that the documented feature set aligns with the overall vision for the enhanced LinkedIn application and is feasible within the designated development timeline.
6. **Refine Feature Set:**
    - Incorporate feedback from stakeholders and the development team to refine and streamline the feature set and technical requirements document.
    - Prioritize features that align with the core objectives of the LinkedIn application and contribute significantly to improving user engagement and experience.

By diligently executing Task 2 and defining a well-structured feature set and clear technical requirements, the development team can ensure a focused and efficient

development process, leading to the successful implementation of key features that address user needs and align with the overall business objectives of the LinkedIn application.

Task 3: System Design and Architecture (3 weeks)

1. **System Architecture Planning:**
    - Collaborate with system architects and senior developers to outline the overall system architecture based on the defined feature set and technical requirements.
    - Determine the appropriate technology stack and infrastructure necessary to support the envisioned LinkedIn application.
2. **Database Design:**
    - Design a robust and scalable database structure that can efficiently manage user data, application logs, and other relevant information.
    - Define the data schema and relationships to ensure seamless data retrieval and storage operations.
3. **API Design and Integration Points:**
    - Identify the key functionalities that require API integration and define the API specifications accordingly.
    - Establish secure integration points for seamless communication between the front-end and back-end components of the LinkedIn application.
4. **Scalability and Performance Considerations:**
    - Conduct a thorough assessment of the projected user base and data volume to ensure that the system architecture is scalable to accommodate future growth.
    - Implement performance optimization strategies to minimize latency and enhance the overall responsiveness of the application.
5. **Security Measures Implementation:**
    - Define and implement stringent security protocols to safeguard user data and protect the application from potential security threats and vulnerabilities.
    - Incorporate encryption standards, authentication mechanisms, and access controls to ensure data confidentiality and integrity.
6. **System Blueprint Documentation:**

- Document the comprehensive system architecture blueprint, including the database design, API specifications, scalability measures, and security protocols.
- Create detailed diagrams and documentation that serve as a reference for the development team and facilitate effective communication and collaboration throughout the development process.

By meticulously executing Task 3 and establishing a well-defined system design and architecture, the development team can lay a solid foundation for building a robust and scalable LinkedIn application that ensures optimal performance, data security, and seamless integration of key features and functionalities.

Development Phase

Task 4: Front-end Development (6 weeks)

1. **Wireframe and Prototype Creation:**
    - Collaborate with UI/UX designers to create wireframes and prototypes based on the finalized design requirements and user interface guidelines.
    - Incorporate feedback from stakeholders and conduct usability testing to ensure intuitive and user-friendly design elements.
2. **User Interface Implementation:**
    - Develop the user interface components using modern front-end technologies such as HTML, CSS, and JavaScript.
    - Ensure that the interface design is responsive and optimized for a seamless user experience across various devices and screen sizes.
3. **Feature Integration:**
    - Integrate the front-end components with the back-end functionalities and APIs as per the defined integration points and specifications.
    - Test the integration to verify the proper communication and data flow between the front-end and back-end systems.
4. **Interactive Element Development:**
    - Implement interactive elements such as forms, buttons, menus, and modal windows to enhance user engagement and improve the overall interactivity of the LinkedIn application.
    - Ensure that the interactive elements align with the overall design aesthetics and user experience guidelines.

5. **Cross-platform Compatibility Testing:**
    - Conduct thorough testing across multiple platforms and web browsers to ensure that the front-end components function seamlessly and consistently.
    - Address any compatibility issues and optimize the front-end code for improved performance and compatibility.
6. **User Interface Refinement:**
    - Gather feedback from usability testing and beta users to identify areas for improvement within the user interface.
    - Iterate on the design elements and make necessary refinements to enhance the overall user experience and interface usability.

By diligently executing Task 4 and focusing on comprehensive front-end development, the development team can ensure the creation of an intuitive and visually appealing user interface for the LinkedIn application, fostering a seamless and engaging user experience across various platforms and devices.

Task 5: Back-end Development (8 weeks)

1. **API Development:**
    - Design and develop robust APIs that enable seamless communication between the front-end and back-end components of the LinkedIn application.
    - Define clear API endpoints and data structures to support the required functionalities and data processing operations.
2. **Server-side Logic Implementation:**
    - Implement the necessary server-side logic and business logic to handle user requests, data processing, and application workflows.
    - Ensure that the server-side components are optimized for performance and adhere to industry best practices.
3. **Database Integration:**
    - Integrate the back-end components with the designed database structure, establishing secure and efficient data retrieval and storage mechanisms.
    - Implement database queries and transactions to manage user data, application logs, and other relevant information.
4. **User Authentication and Authorization:**

- Develop secure authentication mechanisms, such as OAuth or token-based authentication, to verify user identities and ensure secure access to the LinkedIn application.
- Implement authorization controls to define user roles and access levels based on predefined permissions.

5. **Error Handling and Logging:**
    - Implement robust error-handling mechanisms to capture and manage application errors and exceptions effectively.
    - Set up comprehensive logging functionality to track system activities, user interactions, and potential issues for troubleshooting and analysis.
6. **Performance Optimization:**
    - Optimize back-end code and database queries to enhance application performance and reduce response times.
    - Implement caching mechanisms and performance monitoring tools to identify and address performance bottlenecks and optimize system resource utilization.

By meticulously executing Task 5 and focusing on comprehensive back-end development, the development team can ensure the creation of a secure, efficient, and scalable back-end infrastructure for the LinkedIn application, supporting seamless data processing, user authentication, and application workflows.

Task 6: AI Integration (4 weeks)

1. **AI Algorithm Selection:**
    - Evaluate and select appropriate AI algorithms, such as natural language processing (NLP) and machine learning models, based on the defined requirements for personalized recommendations and content curation.
    - Consider factors such as data complexity, model performance, and scalability during the algorithm selection process.
2. **Data Preparation and Training:**
    - Prepare the relevant data sets for AI model training, ensuring data cleanliness, accuracy, and relevance.
    - Train the selected AI models using the prepared data sets to enable accurate and personalized job and content suggestions for LinkedIn users.
3. **Integration with User Interface:**

- Integrate AI-driven features seamlessly into the user interface to provide personalized job recommendations, content suggestions, and networking opportunities based on user preferences and behavior.
- Ensure that the AI-driven elements enhance the overall user experience and add value to the LinkedIn application.

4. **Performance Monitoring and Refinement:**
    - Monitor the performance of integrated AI features to assess the accuracy of recommendations and user engagement with AI-driven content.
    - Continuously refine the AI models based on user feedback and real-time data to improve the relevance and effectiveness of personalized suggestions.
5. **Data Privacy and Security Compliance:**
    - Implement data privacy and security measures to protect user data and ensure compliance with relevant regulations and best practices.
    - Incorporate encryption and anonymization techniques to safeguard sensitive user information used in AI-driven processes.
6. **User Training and Support Integration:**
    - Integrate user training and support features that provide users with guidance on how to make the most of AI-driven recommendations and features within the LinkedIn application.
    - Offer responsive user support to address any questions or concerns related to AI-driven functionalities and ensure a seamless user experience.

By meticulously executing Task 6 and integrating AI-driven features effectively, the development team can enhance the overall user experience of the LinkedIn application, providing personalized and valuable recommendations and content for users, thereby fostering greater user engagement and satisfaction.

Testing and Quality Assurance:

Task 7: Unit Testing (2 weeks)

1. **Test Plan Development:**
    - Develop a comprehensive test plan outlining the testing approach, methodologies, and test cases for each individual component and feature of the LinkedIn application.
    - Define specific test scenarios and expected outcomes to guide the unit testing process effectively.

2. **Unit Test Implementation:**
    - Execute unit tests for each module and component of the application to verify their functionality and performance.
    - Validate the behavior of individual units and ensure that they meet the specified requirements and design specifications.
3. **Error Detection and Debugging:**
    - Identify any potential errors, bugs, or inconsistencies within the individual units through thorough testing and analysis.
    - Debug and resolve any identified issues to ensure that the units function as intended and contribute to the overall functionality of the LinkedIn application.
4. **Data Integrity and Validation Testing:**
    - Perform data integrity and validation testing to verify the accuracy and reliability of data processing and storage operations within the application.
    - Validate the integrity of user data, system logs, and other critical information to prevent data corruption or loss.
5. **Documentation of Test Results:**
    - Document the results of each unit test, including the test scenarios, executed test cases, and outcomes.
    - Record any identified issues, errors, or bugs, along with their corresponding resolutions and fixes for future reference and troubleshooting.
6. **Quality Assurance Review:**
    - Conduct a quality assurance review of the unit testing process to ensure that all components and features meet the defined quality standards and adhere to the established design guidelines.
    - Validate that the unit testing results align with the expected outcomes and contribute to the overall stability and reliability of the LinkedIn application.

By rigorously executing Task 7 and conducting comprehensive unit testing, the development team can ensure the robustness and reliability of each individual component and feature of the LinkedIn application, laying a solid foundation for successful integration and system functionality.

Task 8: Integration Testing (3 weeks)

1. **Integration Test Plan Development:**
    - Develop a comprehensive integration test plan outlining the testing approach, methodologies, and test cases for testing the interactions between different modules and components of the LinkedIn application.
    - Define specific integration test scenarios and expected outcomes to guide the integration testing process effectively.
2. **Module Integration Testing:**
    - Conduct integration tests to verify the seamless communication and data flow between different modules and components of the LinkedIn application.
    - Validate the integration points and interaction patterns to ensure that the integrated modules function cohesively and without any conflicts.
3. **API Integration Validation:**
    - Validate the integration of APIs and external services to ensure that the LinkedIn application can effectively communicate with external systems and data sources.
    - Verify the accuracy of data exchange and synchronization between the LinkedIn application and third-party services.
4. **User Interface and Back-end Integration Testing:**
    - Test the integration between the front-end user interface and the back-end system to ensure that user interactions are accurately processed and reflected within the application.
    - Verify that user actions and inputs are appropriately captured and processed by the back-end components, providing users with a seamless and consistent experience.
5. **Performance and Load Testing:**
    - Conduct performance and load testing to assess the LinkedIn application's ability to handle concurrent user requests and data processing operations under varying workloads.
    - Identify any performance bottlenecks or scalability issues and address them to ensure optimal application performance and responsiveness.
6. **Security Integration Testing:**
    - Perform security integration testing to validate the implementation of security measures and protocols across integrated modules and components.
    - Assess the effectiveness of security controls in safeguarding user data and preventing unauthorized access or data breaches.

By meticulously executing Task 8 and conducting comprehensive integration testing, the development team can ensure the seamless integration and interoperability of different modules and components within the LinkedIn application, fostering a cohesive and reliable user experience across the entire application ecosystem.

Task 9: User Acceptance Testing (4 weeks)

1. **Test Plan Preparation:**
    - Develop a comprehensive user acceptance testing (UAT) plan outlining the testing scope, objectives, and user scenarios to be evaluated during the testing phase.
    - Define specific test cases and user workflows that encompass key user interactions and use cases within the LinkedIn application.
2. **UAT Environment Setup:**
    - Configure a dedicated UAT environment that closely mimics the production environment, allowing users to test the LinkedIn application in a realistic setting.
    - Ensure that the UAT environment accurately reflects the application's functionalities and data without affecting the live production system.
3. **User Acceptance Test Execution:**
    - Invite a diverse group of users, including representatives from different user segments and personas, to participate in the UAT process.
    - Guide users through predefined test cases and scenarios, encouraging them to provide feedback on the application's usability, functionality, and overall user experience.
4. **Issue Tracking and Reporting:**
    - Document and track user feedback, identified issues, and enhancement suggestions throughout the UAT process.
    - Categorize and prioritize user-reported issues based on their impact on user experience and application functionality.
5. **Bug Fixing and Iterative Updates:**
    - Collaborate with the development team to address and resolve any reported issues and bugs identified during the UAT process.
    - Implement iterative updates and enhancements based on user feedback and recommendations to improve the overall application performance and user satisfaction.
6. **User Acceptance Criteria Validation:**
    - Validate that the LinkedIn application meets the predefined user acceptance criteria and fulfills the desired user expectations and business objectives.

- Ensure that the application's functionality, usability, and overall user experience align with the defined standards and contribute to a seamless and engaging user journey.

By meticulously executing Task 9 and conducting comprehensive user acceptance testing, the development team can validate the LinkedIn application's usability, functionality, and overall user experience, ensuring that it meets the expectations and requirements of the end users and contributes to a positive and rewarding user engagement.

Deployment and Maintenance

Task 10: Deployment (2 weeks)

1. **Deployment Plan Formulation:**
    - Develop a comprehensive deployment plan outlining the deployment strategy, processes, and checkpoints for the LinkedIn application's release.
    - Define a clear timeline for the deployment process, considering any dependencies or pre-deployment tasks that need to be completed.
2. **Pre-Deployment Checks:**
    - Conduct thorough pre-deployment checks and tests to ensure that the LinkedIn application is ready for deployment.
    - Verify that all necessary configurations, settings, and environment variables are correctly set up for the deployment process.
3. **Deployment Execution:**
    - Deploy the LinkedIn application on the designated production servers and environments, following the established deployment plan and procedures.
    - Monitor the deployment process closely to identify and address any potential issues or errors that may arise during the deployment phase.
4. **Post-Deployment Verification:**
    - Verify the successful deployment of the LinkedIn application by conducting post-deployment checks and tests to ensure that the application is functioning as expected in the live production environment.
    - Confirm that all integrated modules and components are operational and that the application's performance meets the predefined standards and expectations.
5. **Rollback Planning:**
    - Develop a rollback plan to mitigate any potential risks or issues that may arise after the deployment.

- Define the necessary steps and procedures to revert to the previous stable version of the application in case of critical failures or performance issues.

6. **Deployment Documentation:**
    - Document the deployment process, including the deployment plan, pre-deployment checks, deployment execution details, and post-deployment verification results.
    - Create a comprehensive deployment report that outlines the key milestones, challenges, and lessons learned during the deployment process for future reference and improvement.

By meticulously executing Task 10 and following a well-defined deployment plan, the development team can ensure a seamless and successful deployment of the LinkedIn application, providing users with access to the enhanced features and functionalities while maintaining the application's stability and performance in the live production environment.

Task 11: Monitoring and Updates (Ongoing)

1. **Monitoring Implementation:**
    - Implement a robust monitoring system to track the performance, stability, and user engagement metrics of the LinkedIn application in real-time.
    - Configure monitoring tools and dashboards to provide comprehensive insights into application health, system resources, and user interactions.
2. **Performance Analysis:**
    - Continuously monitor and analyze the application's performance metrics, including response times, error rates, and server uptime, to identify any potential performance bottlenecks or issues.
    - Conduct regular performance analyses to proactively address any emerging performance concerns and optimize the application's overall responsiveness.
3. **User Feedback Collection:**
    - Establish mechanisms for collecting user feedback and suggestions, such as in-app feedback forms, surveys, and user engagement analytics.
    - Leverage user feedback to identify areas for improvement and prioritize feature enhancements and updates based on user preferences and requirements.
4. **Bug Fixes and Patch Updates:**

- Address and resolve any reported bugs, issues, or vulnerabilities through timely bug fixes and patch updates.
- Release regular updates and patches to enhance the application's stability, security, and overall user experience, ensuring that users have access to a reliable and secure platform.

5. **Feature Enhancements and Iterative Updates:**
    - Continuously iterate on existing features and functionalities based on user feedback, market trends, and industry best practices.
    - Introduce feature enhancements and updates to offer users new and improved experiences, fostering long-term user engagement and satisfaction.
6. **Security and Compliance Monitoring:**
    - Monitor the LinkedIn application's security measures and protocols to ensure compliance with industry standards and data privacy regulations.
    - Conduct regular security audits and assessments to identify and address any potential security vulnerabilities or risks, safeguarding user data and maintaining the application's integrity.

By diligently executing Task 11 and implementing a comprehensive monitoring and update strategy, the development team can proactively monitor the LinkedIn application's performance, user feedback, and security measures, enabling them to deliver timely updates and enhancements that enhance the application's overall stability, security, and user satisfaction.

2. Project requirements

Functional Requirements (FRs):

1. **User Authentication:**
    - The system must provide a secure login process, supporting various authentication methods such as email/password, social media integration, and two-factor authentication for enhanced security.
2. **Profile Creation and Editing:**
    - Users should be able to create comprehensive profiles that include professional summaries, work experiences, educational backgrounds, certifications, skills, and other relevant information. They should also have the ability to edit and update their profiles as needed.
3. **Job Search and Application:**

- The application must enable users to search for job postings based on keywords, location, industry, and other relevant filters. Users should be able to apply for jobs directly through the platform, attaching their resumes and cover letters.

4. **Networking and Connection Management:**
    - Users should be able to send connection requests to other professionals, manage their network connections through customizable lists, and communicate with their connections via a messaging system integrated within the application.
5. **Content Sharing and Publishing:**
    - The system should allow users to share articles, posts, and updates related to their professional interests and experiences. Users should have the ability to publish long-form articles and multimedia content to enhance their professional branding and visibility.
6. **Learning and Development Resources:**
    - The application should offer users access to a diverse range of learning resources, including industry-specific courses, tutorials, webinars, and educational content provided by industry experts and institutions.
7. **Recruitment and Talent Acquisition Tools:**
    - Recruiters and hiring managers should be able to post job openings with detailed descriptions, manage candidate applications, and communicate with potential candidates efficiently through the platform's integrated recruitment tools and messaging system.
8. **Data Analytics and Insights:**
    - The system should provide users with comprehensive analytics and insights into their profile activities, including the number of profile views, application engagement metrics, and networking performance, to help users understand their professional reach and impact.

Non-Functional Requirements (NFRs):

1. **Performance:**
    - The application should maintain fast response times, with page loading times not exceeding three seconds, and ensure smooth navigation and interaction even under high user traffic and data processing loads.
2. **Security:**
    - The system should adhere to industry-standard security protocols, including data encryption during transmission and storage, regular security updates, and compliance with data protection regulations to ensure the confidentiality and integrity of user data.
3. **Scalability:**
    - The application must be designed to handle a significant increase in user base and data volume without compromising performance or user

experience. It should be scalable both vertically and horizontally to accommodate future growth and user demands.

4. **Usability:**
    - The user interface should be intuitive and easy to navigate, providing clear guidance for users at various skill levels. The application should offer responsive design across different devices and screen sizes, ensuring a consistent and user-friendly experience for all users.

3. Activity diagram

Job Search Process Activity Diagram

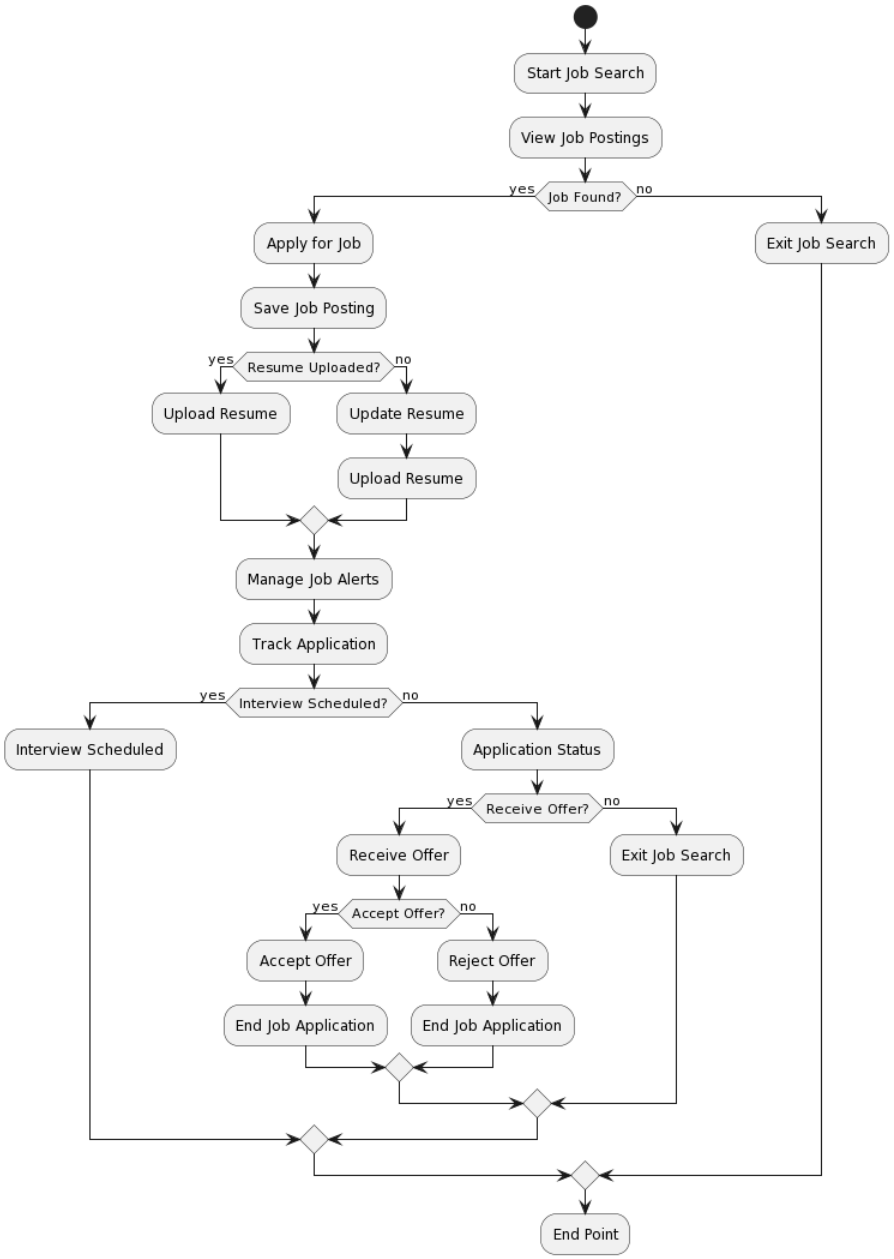

Figure 1: This activity diagram illustrates the sequence of actions involved in a job search process.

The (figure 1) represents an activity diagram depicting the flow of sequence of actions in a job search process. The diagram starts at the start point and proceeds to view job postings. If a job is found, the user can apply for the job and save the job posting. If a resume has already been uploaded, the flow continues to manage job alerts. If a resume hasn't been uploaded, the user is prompted to update their resume and then upload it. The flow then progresses to track the application.

If an interview is scheduled, the flow follows the path to the interview scheduled activity. If no interview is scheduled, the user can check the application status. If a job offer is received, the flow proceeds to the receive offer activity. Depending on whether the offer is accepted or rejected, the job application is ended accordingly. Finally, the flow ends at the end point. If no job is found during the job search process, the flow directly proceeds to the exit job search activity.

LinkedIn Registration Process Activity Diagram

Figure 2: This activity diagram represents the flow of sequence showcasing the registration process for new users on the LinkedIn application.

The activity diagram in (Figure 2) showcases the flow of sequence for the registration process of new users on the LinkedIn application. The diagram starts at the start point and proceeds with the user entering their personal information and creating a username and password. Decision paths are included to handle different scenarios, such as checking if the username is available and if the password meets the required criteria.

If the username is available and the password is valid, the flow continues with verifying the email address. If the email is verified, the user is prompted to set a profile picture and complete their profile information. If the profile is complete, the user can set their job preferences. If the job preferences are saved, the flow proceeds to connect with contacts. Depending on whether the contacts are connected or not, the user is given the option to join groups.

If the email is not verified, the user can choose to resend the verification email. If the password is not valid, the user is asked to enter a valid password. If the username is not available, the user is prompted to enter a different username. The diagram concludes with the end point, indicating the completion of the registration process.

4. Creating Sequence Diagrams

Sending Connection Request Sequence Diagram

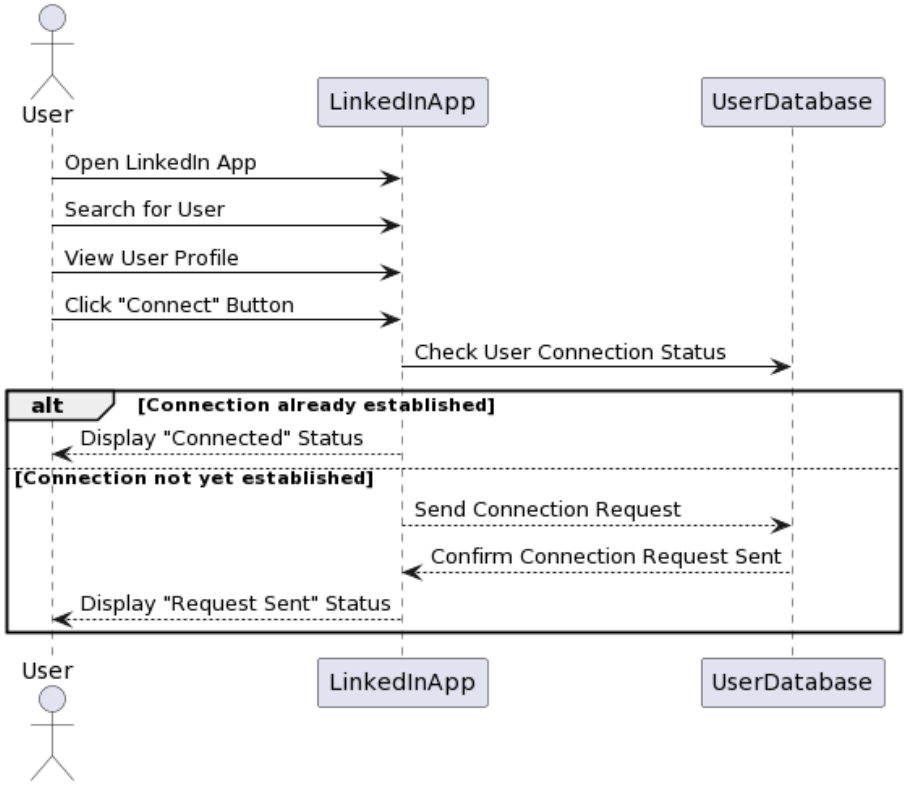

Figure 3: This sequence diagram provides a visual representation of the steps involved in the process of sending a connection request on the LinkedIn application.

This sequence diagram illustrates the process of sending a connection request on the LinkedIn application. The diagram involves three main objects: the User, the LinkedIn App, and the user database.

The User starts by opening the LinkedIn app and searching for a specific user. They then view the user's profile and click the "Connect" button.

At this point, the LinkedIn App checks the connection status with the User Database. If a connection is already established, the LinkedIn App displays a "Connected" status to the User.

If a connection is not yet established, the LinkedIn App sends a connection request to the User Database. The User Database confirms the connection request sent, and the LinkedIn App displays a "Request Sent" status to the User.

Creating and Publishing a Post Sequence Diagram

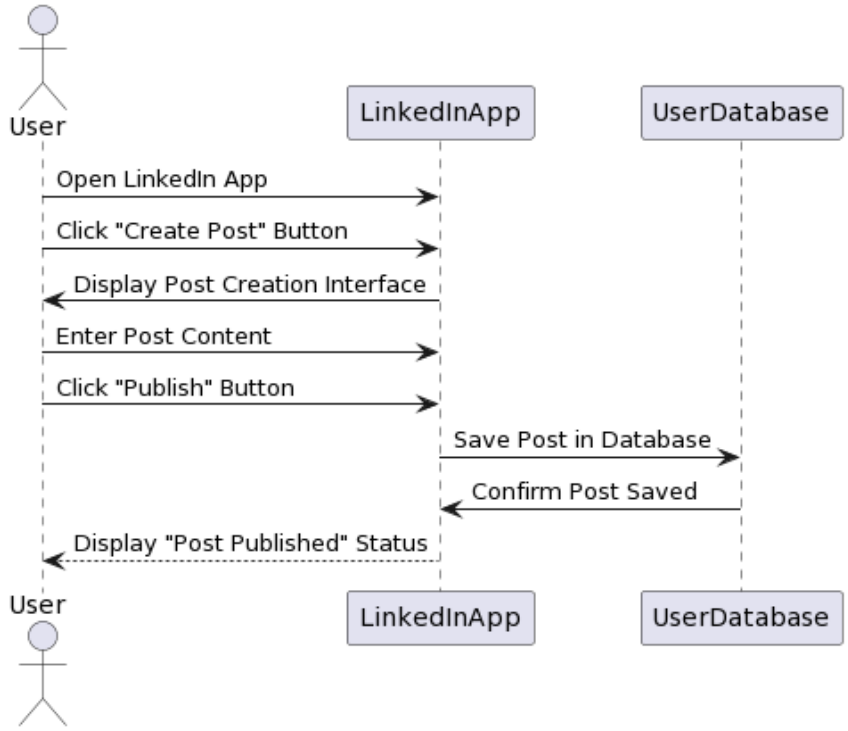

Figure 4: This sequence diagram provides a visual representation of the steps involved in the process of creating and publishing a post on the LinkedIn application.

This sequence diagram showcases the process of creating and publishing a post on the LinkedIn application. The diagram involves three main objects: the User, the LinkedIn app, and the user database.

The User starts by opening the LinkedIn app and clicking the "Create Post" button. This action prompts the LinkedIn app to display the post creation interface to the User.

The User then enters the content of the post and clicks the "Publish" button. The LinkedIn app, upon receiving the publish request, saves the post in the user database.

The user database confirms the successful saving of the post, and the LinkedIn app displays a "Post Published" status to the User.

Sending a Message Sequence Diagram

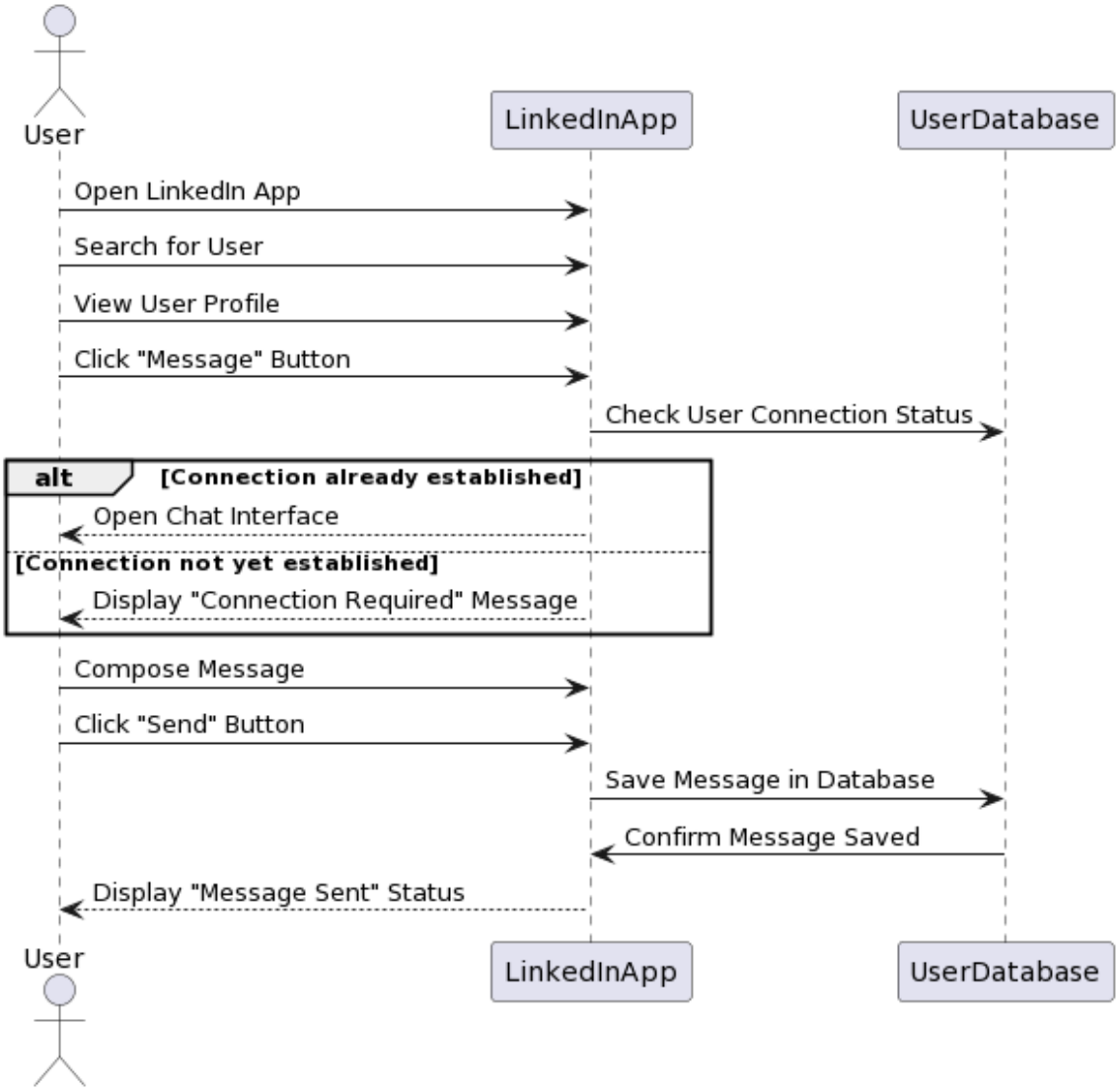

Figure 5: This sequence diagram provides a visual representation of the steps involved in the process of sending a message to another user on the LinkedIn application.

This sequence diagram depicts the process of sending a message to another user on the LinkedIn application. The diagram involves three main objects: the User, the LinkedIn app, and the user database. The User starts by opening the LinkedIn app and searching for a specific user. They then view the user's profile and click the "Message" button.

At this point, the LinkedIn app checks the connection status with the user database. If a connection is already established, the LinkedIn app opens the chat interface for the User to compose the message.

If a connection is not yet established, the LinkedIn app displays a "Connection Required" message to the User, indicating that a connection is necessary before sending a message.

Once the User composes the message and clicks the "Send" button, the LinkedIn app saves the message in the user database. The user database confirms the successful saving of the message, and the LinkedIn app displays a "Message Sent" status to the User.

Job Application Submission Sequence Diagram

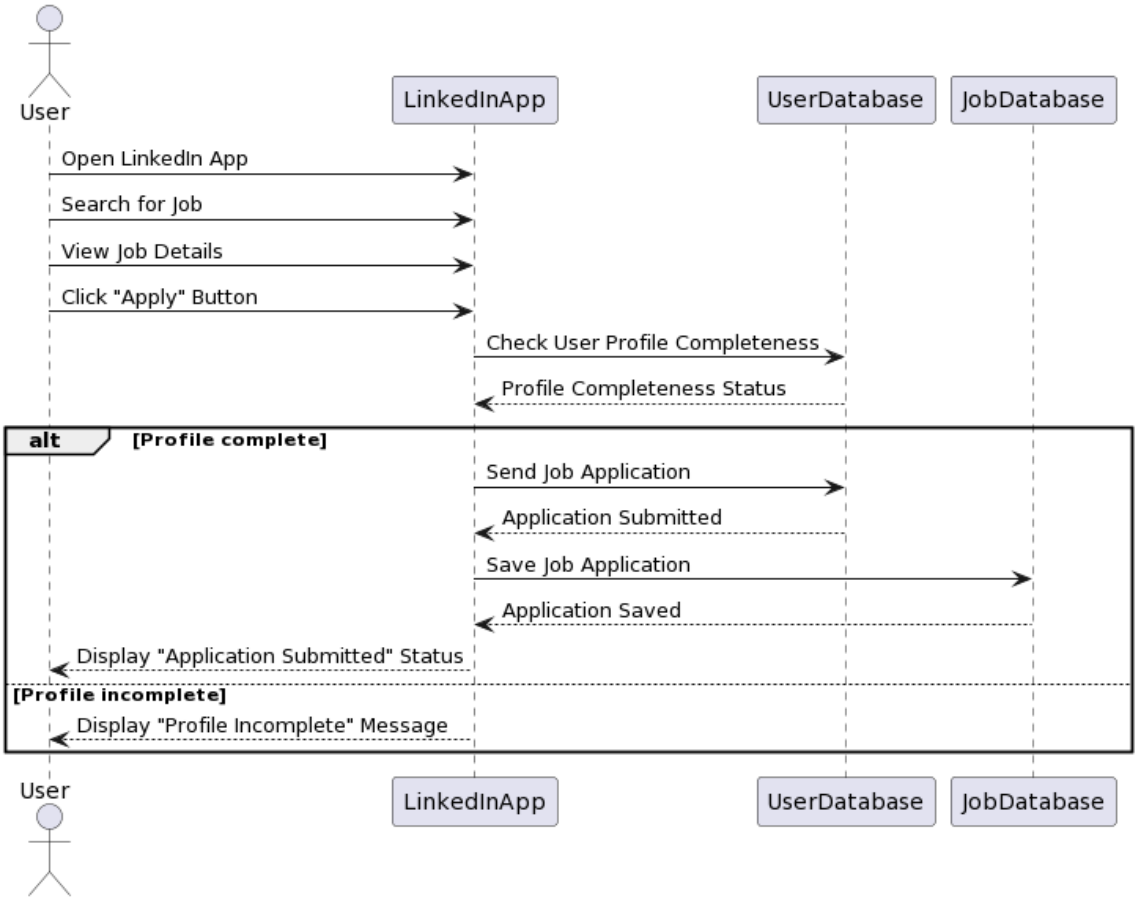

Figure 6: This sequence diagram provides a visual representation of the steps involved in the process of job application submission on the LinkedIn application.

This sequence diagram illustrates the process of submitting a job application on the LinkedIn application. The diagram involves four main objects: the User, the LinkedIn app, the user database, and the job database.

The User starts by opening the LinkedIn app and searching for a specific job. They then view the job details and click the "Apply" button.

At this point, the LinkedIn app checks the completeness of the User's profile by communicating with the user database. If the profile is complete, the flow continues with the LinkedIn app sending the job application to the user database. The user database confirms the successful submission of the application, and the LinkedIn app proceeds to save the job application in the job database.

If the User's profile is incomplete, the LinkedIn app displays a "Profile Incomplete" message to the User, indicating that the profile needs to be completed before applying for the job. Finally, the LinkedIn app displays an "Application Submitted" status to the User, indicating the successful submission of the job application.

5. Project Use Case Modelling

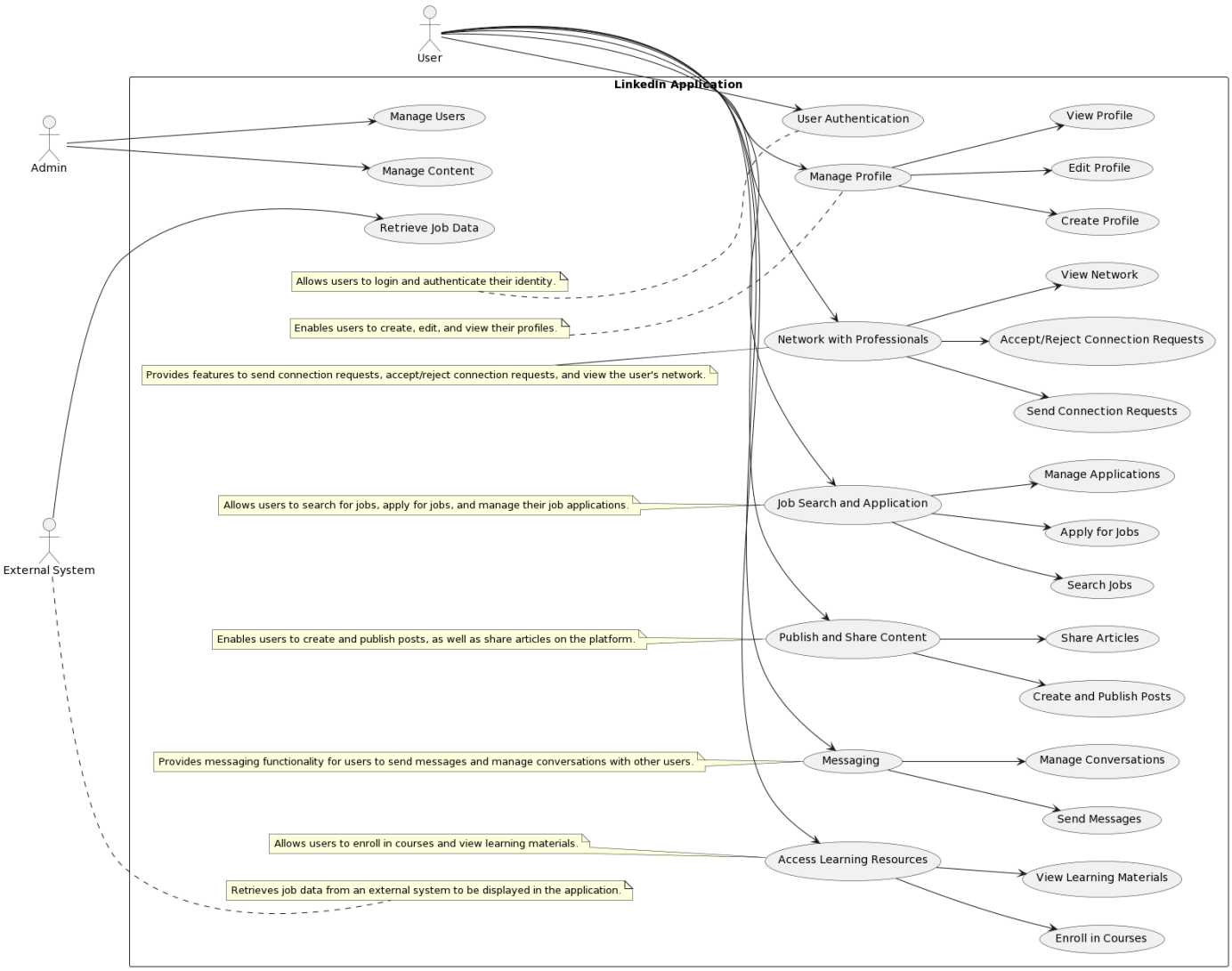

Figure 7: The Use Case diagram provides an overview of the functionalities offered by the LinkedIn Application and the interactions between the actors and the system.

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The diagram represents the Use Case diagram for the LinkedIn Application. The Use Case diagram is used to visualize the functionalities and interactions of a system. In this case, the diagram illustrates the various use cases and actors involved in the LinkedIn Application.

The diagram showcases two main actors: the User and the Admin. The User represents the regular users of the LinkedIn Application, while the admin represents the administrators who have additional privileges to manage users and content within the application. Additionally, there is an External System actor, which represents an external source from which the application retrieves job data.

The diagram highlights several important use cases that the User can perform within the application. These include User Authentication, Manage Profile, Network with Professionals, Job Search and Application, Publish and Share Content, Messaging, and Access Learning Resources. Each of these use cases has specific functionalities associated with it, such as creating and editing profiles, sending connection requests, searching and applying for jobs, publishing posts, messaging other users, and accessing learning materials.

The admin actor has two specific use cases: Manage Users and Manage Content. These use cases allow the admin to perform tasks such as managing user accounts, creating new accounts, and managing user privileges. The admin also has the ability to manage the content within the application, including reviewing and moderating user-generated content.

Lastly, the diagram shows the interaction between the LinkedIn Application and an External System. This External System is responsible for retrieving job data that is displayed within the application, enhancing the job search functionality for the users.

Actor	Description
User	Represents the regular users of the LinkedIn Application. They interact with various features and functionalities.
Admin	Represents the administrators who have additional privileges to manage users and content within the application.
External System	Represents an external source from which the application retrieves job data.

table 1: represents the different actors involved in the LinkedIn application.

Use Case Name	Description
User Authentication	Allows users to log in and authenticate their identity.
Manage Profile	Enables users to create, edit, and view their profiles.
Create Profile	Allows users to create their profile by providing necessary information.
Edit Profile	Allows users to update and modify their profile information.
View Profile	Allows users to view their own profile.
Network with Professionals	Provides features for users to connect and interact with other professionals.
Send Connection Requests	Allows users to send connection requests to other professionals.
Accept/Reject Connection Requests	Enables users to accept or reject incoming connection requests.
View Network	Allows users to view their network of connections.
Job Search and Application	Enables users to search for jobs, apply for jobs, and manage their job applications.
Search Jobs	Allows users to search for available job opportunities.
Apply for Jobs	Enables users to submit job applications for the desired positions.
Manage Applications	Allows users to manage and track their job applications.
Publish and Share Content	Enables users to create and publish posts, as well as share articles on the platform.
Create and Publish Posts	Allows users to create and publish their own posts.
Share Articles	Enables users to share articles with other users.
Messaging	Provides messaging functionality for users to send messages and manage conversations with other users.
Send Messages	Allows users to send messages to other users.
Manage Conversations	Enables users to manage and organize their conversations.
Access Learning Resources	Allows users to enroll in courses and view learning materials.
Enroll in Courses	Enables users to enroll and participate in online courses.

View Learning Materials	Allows users to access and view learning materials related to courses.
Manage Users (Admin)	Allows the admin to manage users, such as creating new accounts or managing user privileges.
Manage Content (Admin)	Enables the admin to manage content within the application, such as reviewing and moderating user-generated content.
Retrieve Job Data (External System)	Represents the external system from which the LinkedIn Application retrieves job data to display in the application.

table 2: represents the various use cases within the LinkedIn application. These use cases describe the different functionalities and interactions that users can perform within the system. Each use case serves as a specific action or task that users can undertake when using the LinkedIn application.

7. Creating a Class Diagram

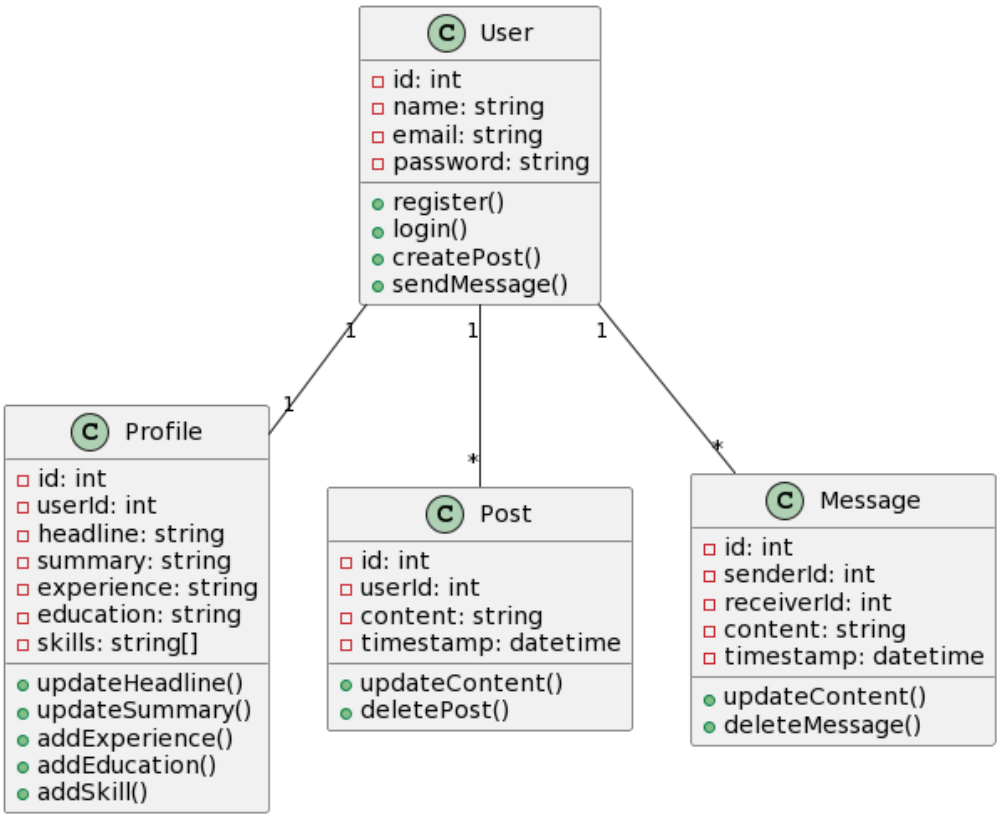

Figure 8: This class diagram provides a simplified representation of the key classes, their attributes, operations, and associations within the LinkedIn application.

The User class represents a user of the application and has attributes such as id, name, email, and password. It also has operations like register(), login(), createPost(), and sendMessage().

The Profile class represents the user's profile and contains attributes such as id, userId, headline, summary, experience, education, and skills. It has operations like updateHeadline(), updateSummary(), addExperience(), addEducation(), and addSkill().

The Post class represents a post made by a user and contains attributes like id, userId, content, and timestamp. It has operations like updateContent() and deletePost().

The Message class represents a message sent between users and contains attributes like id, senderId, receiverId, content, and timestamp. It has operations like updateContent() and deleteMessage().

The associations between the classes are represented by the lines connecting them. The User class has a one-to-one association with the Profile class and a one-to-many association with the Post and Message classes.

Conclusion

In conclusion, the development of the LinkedIn application represents a critical milestone in addressing contemporary challenges faced by professionals in the competitive global job market. By providing a comprehensive, easy-to-use platform for communication, job search, and professional development, professional digital platforms have brought about a major transformation in the way individuals and companies communicate and collaborate across various industries.

Because of the features that will be in this application - creating profiles, searching for jobs, sharing content and messaging - LinkedIn will become an indispensable tool for professionals seeking to expand their networks, showcase their expertise and explore new career opportunities. The platform's focus on fostering meaningful connections, promoting lifelong learning, and facilitating effective hiring processes will make it a leading force in professional networking and career advancement.

Resources

1- With helping from our family members
2- https://youtu.be/pCK6prSq8aw?si=h09Yrxn-eJeduyiv
3- https://youtu.be/pCK6prSq8aw?si=h09Yrxn-eJeduyiv