



American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

PROJECT TITLE: Life Operating System (LifeOS)

A Software Engineering Project Submitted By,

Semester: Spring_23_24		Section: C	Group Number: 08	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
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2	TAHNIA TUHIN TISHA	21-44891-2	Proposed Solution, Prototype Design, Gantt Chart	
3	NUSHRAT JAHAN	22-46149-1	Prototype Design	
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Description of Student's Contribution in the Project work

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Contribution in Percentage (%): 30%

Contribution in the Project: Project Idea, Project Description, Software Development Life Cycle, Process Model, Use case Diagram, Prototype Design, Class Diagram

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PROJECT PROPOSAL

1. Project Description: Life Operating System (LifeOS)

1. Introduction:

Life Operating System (LifeOS) is an innovative software application designed to streamline and optimize daily routines, tasks, and health management for users of all ages and genders. Incorporating features such as personalized schedules, dietary guidance, health monitoring, and sleep tracking, LifeOS aims to enhance productivity, well-being, and overall quality of life.

2. Features:

- a) **Personalized User Accounts:** Users can create personalized accounts on LifeOS, enabling them to input their demographic information such as age, gender, and health conditions. This customization ensures that the software tailors its recommendations and schedules to individual needs and preferences.
- b) **Morning Routine Management:** LifeOS includes a comprehensive morning routine feature that guides users through activities such as waking up, breakfast preparation, study/work schedules, exercise, meditation, and health checks. Timely alarms and notifications ensure users stay on track with their routines.
- c) **Food Timing Schedule:** The software provides nutritionist-recommended food charts for breakfast, lunch, and dinner, helping users make informed dietary choices. Customizable dietary preferences and restrictions can be inputted for personalized meal recommendations.
- d) **Study and Work Timetables:** Users can create customized study and work schedules within LifeOS, which are integrated into their daily routines. Notifications remind users of upcoming study/work sessions, helping them stay organized and productive.

- e) **Health Monitoring:** LifeOS features health monitoring capabilities, including pulse detection, blood pressure monitoring, diabetes tracking, and fever detection. Users can input relevant health data, and the software provides real-time feedback and alerts for any concerning metrics.
- f) **Sleep Tracking and Optimization:** The software tracks users' sleep patterns and sets fixed bedtime schedules to promote healthy sleep habits. During designated sleep hours, LifeOS deactivates non-essential applications to minimize disruptions and optimize restful sleep.
- g) **Feedback and Review Options:** LifeOS includes features for users to provide feedback and reviews, allowing for continuous improvement and refinement of the software. User suggestions and experiences are considered for future updates and enhancements.

3. User Interface:

The user interface of LifeOS is intuitive and user-friendly, featuring a visually appealing layout with easy navigation. Each feature is clearly categorized and accessible, with customizable settings to suit individual preferences.

4. Compatibility and Accessibility:

LifeOS is designed to be compatible with various devices and platforms, including desktop computers, smartphones, and tablets. The software is accessible to users of all backgrounds and technological proficiency levels, with optional accessibility features for individuals with disabilities.

5. Security and Privacy:

Security and privacy are paramount in LifeOS, with robust encryption protocols and data protection measures in place to safeguard users' personal information and health data. Users have control over their data privacy settings and can trust that their information is secure.

6. Conclusion:

Life Operating System (LifeOS) revolutionizes daily life management by integrating essential features for scheduling, health monitoring, and productivity enhancement into one comprehensive software solution. With its user-centric design and personalized functionality, LifeOS empowers users to optimize their routines, improve their health, and achieve their goals with ease and efficiency.

2. Problem Statement

In today's fast-paced world, individuals struggle to maintain a balanced lifestyle that encompasses health, productivity, and well-being. Managing daily routines, dietary choices, work commitments, health monitoring, and sleep patterns can be overwhelming and often lead to stress, inefficiency, and poor health outcomes. Existing solutions lack integration and personalization, making it challenging for users to manage their lives holistically.

1. **Inconsistent Meal Timing:** Hectic schedules lead to irregular eating patterns, impacting health. Irregular eating patterns due to hectic schedules can disrupt the body's natural hunger and satiety cues, leading to overeating, undereating, or unhealthy food choices. Inconsistent meal timing may also affect metabolism, digestion, and nutrient absorption, impacting overall health and energy levels. Over time, this can contribute to weight gain, digestive issues, and nutrient deficiencies.
2. **Inconsistent Morning Wake-Up:** Inconsistent morning wake-up routines can disrupt the body's circadian rhythm, leading to feelings of grogginess, lethargy, and difficulty starting the day. Snoozing alarms or irregular wake-up times may result in rushing through morning activities, such as breakfast preparation or personal grooming, leading to increased stress levels and a less productive start to the day. Inconsistent morning wake-up habits may also impact overall sleep quality and energy levels throughout the day, affecting productivity, mood, and overall well-being. Establishing a consistent morning routine, including waking up at the same time each day and allowing ample time for morning activities, can set a positive tone for the day and improve overall health and productivity.
3. **Inconsistent Exercise:** Conflicting schedules or lack of motivation hinder regular exercise routines. Conflicting schedules or a lack of motivation can make maintaining a regular exercise routine challenging. Physical activity is crucial for maintaining overall health, including cardiovascular health, muscle strength, and mental well-being. Inconsistent exercise may lead to reduced fitness levels, increased risk of chronic diseases, and poor mood regulation.
4. **Neglecting Health Checkups:** Busy schedules often lead to overlooking preventive health checkups. Busy schedules and competing priorities often cause individuals to neglect preventive health checkups and screenings. Regular health checkups are essential for early detection and prevention of health issues such as hypertension, diabetes, and cancer. Neglecting these checkups may result in undiagnosed health conditions, delayed treatment, and poorer health outcomes in the long run.

5. **Ineffective Study Habits:** Poorly organized study schedules result in procrastination and burnout. Poorly organized study schedules can lead to procrastination, lack of focus, and burnout. Ineffective study habits may result in decreased academic performance, increased stress levels, and overwhelming feelings. Developing effective study habits, including time management techniques and active learning strategies, is essential for academic success and long-term learning.
6. **Inconsistent Work Habits:** Balancing work tasks and deadlines amidst other responsibilities can lead to inconsistent work habits. Balancing work tasks and deadlines alongside other responsibilities can lead to inconsistent work habits. Inconsistent work habits may result in missed deadlines, decreased productivity, and increased stress levels. Additionally, lack of consistency in work habits may impact job performance and career advancement opportunities. Establishing effective time management strategies and prioritizing tasks can help individuals maintain consistency in their work habits and achieve greater success in their professional endeavors.
7. **Inadequate Sleep Patterns:** Irregular sleep schedules or excessive screen time affect sleep quality and overall well-being. Irregular sleep patterns, characterized by inconsistent bedtime and wake-up times or excessive screen times before bed, can disrupt the body's natural sleep-wake cycle. Inadequate sleep may lead to fatigue, impaired cognitive function, mood disturbances, and increased risk of chronic health conditions such as obesity and heart disease. Establishing a consistent sleep schedule and practicing good sleep hygiene habits are crucial for optimal health and well-being.
8. **Inconsistent Meditation:** Time constraints or motivation issues make it difficult to integrate meditation into daily life. Meditation offers numerous health benefits, including stress reduction, improved focus, and enhanced emotional well-being. However, time constraints or motivation issues may prevent individuals from integrating meditation into their daily lives consistently. Inconsistent meditation practice may result in heightened stress levels, decreased resilience to challenges, and difficulty managing emotions.

Therefore, the problem at hand is to develop a robust and user-friendly software solution, Life Operating System (LifeOS), that seamlessly integrates essential features for time management, health monitoring, dietary guidance, and sleep optimization. This software should be highly personalized, catering to individual users' unique needs and preferences across different demographics. By addressing these challenges, LifeOS aims to empower users to lead healthier, more organized, and fulfilling lives.

3. Proposed Solution

The proposed solution is to develop the Life Operating System (LifeOS), a comprehensive software application that addresses the identified challenges through the following features:

1. **Personalized Scheduling:** LifeOS will offer users the ability to create personalized schedules tailored to their individual preferences and lifestyles. Users can input fixed mealtimes, dedicated slots for exercise, meditation, health checkups, study/work sessions, and sleep routines. The software will provide flexibility to accommodate changes in schedules and preferences over time, ensuring that users can easily adjust their routines as needed.
2. **Meal Planning and Guidance:** LifeOS will provide personalized meal plans and nutritional guidance based on user preferences, dietary requirements, and health goals. Users will have access to nutritionist-recommended food charts, ensuring consistent and healthy eating habits. Reminders for mealtimes and notifications about upcoming meals will help users stay on track with their dietary goals.
3. **Exercise and Meditation Integration:** LifeOS will seamlessly integrate exercise and meditation routines into users' schedules, promoting consistency and adherence. The software will offer guided exercise and meditation sessions tailored to users' fitness levels and preferences. Motivational prompts and progress-tracking features will encourage users to maintain regular exercise and meditation practices.
4. **Health Monitoring and Reminders:** LifeOS will include robust health monitoring features, allowing users to track vital signs such as pulse, blood pressure, and blood glucose levels. Users with chronic conditions like diabetes will be able to manage their health more effectively with features for tracking medication schedules and monitoring symptoms. The software will send reminders for health checkups and medication doses, helping users stay proactive about their health.
5. **Study Optimization:** LifeOS will assist users in optimizing their study habits by offering customizable timetables, task prioritization tools, and productivity features. Reminders for study sessions and progress-tracking tools will help users stay organized and focused on their academic goals. The software will provide insights into study habits and performance, allowing users to identify areas for improvement and make adjustments accordingly.
6. **Work Optimization:** LifeOS will help users optimize their work habits through customizable timetables, task prioritization features, and productivity tools. Reminders for deadlines and progress-tracking features will help users manage their workload more effectively and achieve their professional goals. The software will provide insights into work habits and productivity levels, allowing users to make informed decisions about time management and task allocation.

7. **Sleep Tracking and Optimization:** LifeOS will track users' sleep patterns and provide recommendations for improving sleep quality. Users can set personalized bedtime schedules, and the software will deactivate non-essential applications during sleep hours to minimize disruptions. Insights into sleep habits and trends will help users identify factors affecting their sleep quality and adjust for better restorative sleep.
8. **Feedback and Improvement Mechanism:** LifeOS will incorporate a feedback system allowing users to provide input on their experiences and suggest improvements. Regular updates and enhancements based on user feedback will ensure that the software remains effective, user-centric, and aligned with evolving user needs and preferences. Continuous improvement based on user input will ensure that LifeOS evolves to meet the changing needs and expectations of its users, providing a more valuable and impactful experience over time.

By offering a holistic approach to time management, health monitoring, and lifestyle optimization, LifeOS aims to empower users to overcome the identified challenges and lead healthier, more balanced lives.

SOFTWARE DEVELOPMENT LIFE CYCLE

4. Process Model Selection for LifeOS

Based on the analysis of LifeOS's characteristics and requirements, as well as the arguments and evidence provided, the selected Agile Software Development methodology that aligns most effectively with LifeOS is Scrum.

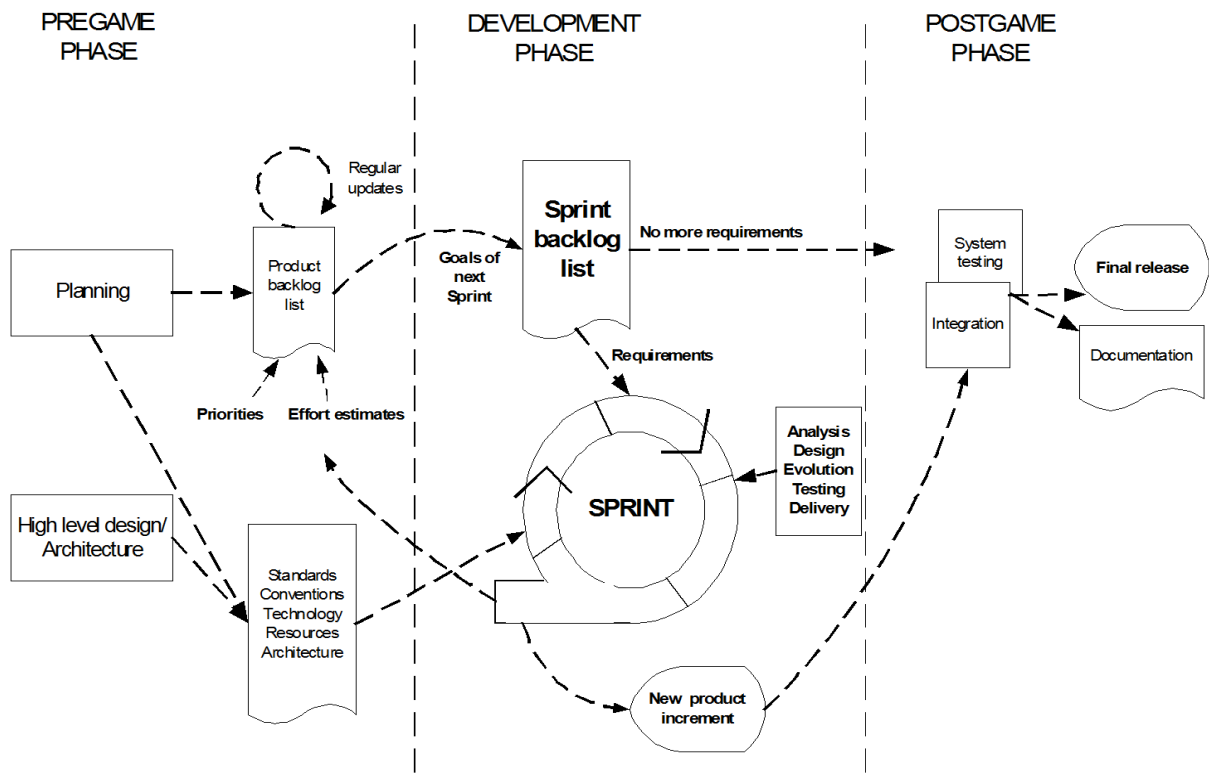
Analysis of Software Nature and Environment:

- **Complexity:** LifeOS integrates multiple features such as scheduling, health monitoring, dietary guidance, and productivity tools, requiring a robust architecture.
- **User-Centric Design:** The software needs to be highly customizable and user-friendly to accommodate various demographics and preferences.
- **Continuous Improvement:** LifeOS requires a flexible approach to incorporate regular updates and enhancements due to users' dynamic lifestyles and technological advancements.

Selected Method: Scrum:

- a) **Iterative Development:** Scrum divides the development process into short iterations called "Sprints," allowing for continuous improvement and incremental addition of features, which aligns with LifeOS's evolving nature. Scrum's iterative approach divides the development process into short time frames called "Sprints." Each Sprint typically lasts between 2 to 4 weeks and results in a potentially shippable product increment. This iterative nature aligns well with LifeOS's evolving features and functionalities. Rather than attempting to develop the entire software at once, Scrum allows the LifeOS team to focus on delivering specific, manageable chunks of functionality in each Sprint. This enables continuous improvement and the incremental addition of features over time, ensuring that LifeOS can adapt to changing user needs and market demands.
- b) **Flexibility and Adaptability:** Scrum offers flexibility to adapt to changing requirements and priorities without disrupting development. Scrum is known for its flexibility and adaptability, making it well-suited for projects like LifeOS that may experience changes in requirements or priorities. The Product Backlog, a prioritized list of features and tasks, can be adjusted throughout the project based on feedback, new insights, or shifting business goals. This flexibility allows the LifeOS team to respond quickly to changes without disrupting the development process. Whether it's incorporating new features, responding to user feedback, or addressing emerging market trends, Scrum provides the framework for the LifeOS team to adapt and deliver value effectively.
- c) **User Involvement:** Scrum emphasizes continuous collaboration with stakeholders, ensuring that LifeOS remains user-centric and driven by actual user needs. Scrum emphasizes continuous collaboration with stakeholders, including end-users, throughout the development process. The Product Owner, representing the stakeholders, works closely with the development team to prioritize features and guide the direction of the product. Regular Sprint Reviews provide opportunities for stakeholders to see the progress made during each Sprint and provide feedback on the product increment. This ensures that LifeOS remains user-centric, with features and functionalities driven by actual user needs and preferences. By involving users in the development process, LifeOS can better meet their expectations and deliver a product that truly addresses their requirements.
- d) **Rapid Delivery:** Scrum promotes rapid and frequent delivery of working software increments, enabling users to benefit from essential features sooner. Scrum promotes rapid and frequent delivery of working software increments. By breaking the development process into time-boxed Sprints, LifeOS can deliver valuable features to users on a regular cadence. This allows users to benefit from essential functionalities sooner, rather than waiting for the entire software to be completed. Rapid delivery also enables stakeholders to see tangible progress and make informed decisions throughout the development process. Additionally, the iterative nature of Scrum allows the LifeOS team to gather feedback early and incorporate it into subsequent Sprints, ensuring that the product evolves in response to user needs and market conditions.

- e) **Quality Assurance:** Scrum incorporates testing and quality assurance throughout the development lifecycle, enhancing reliability and user satisfaction. Scrum incorporates testing and quality assurance practices throughout the development lifecycle. The development team collaborates to define "Definition of Done" criteria for each user story, ensuring that features meet the necessary quality standards before being considered complete. Continuous integration and automated testing help identify and address issues early, reducing the risk of defects and ensuring a high level of reliability. Regular Sprint Reviews also provide opportunities for stakeholders to evaluate the quality of the product increment and provide feedback for improvement. LifeOS can deliver a robust and reliable software solution that meets user expectations by prioritizing quality throughout the development process.
- f) **Risk Mitigation:** Scrum helps identify and mitigate risks early in the process by breaking down development into manageable iterations. Scrum helps identify and mitigate risks early in the development process. By breaking down the project into manageable iterations, the LifeOS team can identify potential risks and issues sooner rather than later. Regular Sprint Reviews and Retrospectives provide opportunities to reflect on progress, identify areas for improvement, and address any emerging risks or challenges. Additionally, the iterative nature of Scrum allows the team to adapt and adjust their approach as needed to mitigate risks and ensure project success. By actively managing risks throughout the development process, LifeOS can minimize the likelihood of project failure or significant setbacks and deliver a successful product to users.



Evidence to Support Model Selection:

Case Studies: Numerous successful projects with similar complexities and user-centric requirements have adopted Scrum.

Industry Trends: Scrum has become the preferred development approach for many software companies, particularly for projects requiring flexibility and rapid delivery.

User Feedback: Scrum's iterative development approach allows for early user feedback and validation, ensuring that LifeOS meets users' evolving needs.

In conclusion, Scrum provides a structured yet flexible framework that aligns well with the iterative, user-centric, and adaptable nature of LifeOS. By embracing Scrum principles and practices, LifeOS can leverage iterative development, collaboration, rapid delivery, and continuous improvement to create a robust and continuously evolving software solution that meets the dynamic lifestyle needs of its users.

Project Role Identification and Responsibilities:

1. Project Manager:

Responsibilities:

- Planned, executed, and monitored the development of LifeOS, ensuring that project objectives were achieved within scope, budget, and schedule constraints.
- Define project goals, deliverables, and success criteria in collaboration with stakeholders and the project team.
- Develop and maintain project plans, schedules, and resource allocations, identifying dependencies and critical paths to ensure timely delivery.
- Coordinate the efforts of cross-functional teams, including developers, designers, testers, and other stakeholders, to execute project tasks and deliverables.
- Monitor project progress, track key performance indicators (KPIs), and identify and mitigate risks and issues that may impact project outcomes.
- Communicate regularly with stakeholders, providing updates on project status, progress, and risks, and soliciting feedback to ensure alignment with expectations.
- Manage changes to project scope, requirements, and priorities, assessing their impact and adjusting as needed to maintain project success.
- Facilitate collaboration and foster a positive team culture, resolving conflicts, and promoting accountability, transparency, and continuous improvement throughout the project lifecycle.

2. Product Owner:

Responsibilities:

- Define the vision and goals for LifeOS, prioritizing features and functionalities based on user needs and market trends.
- Develop and maintain the Product Backlog, ensuring it accurately reflects user requirements and stakeholder priorities.
- Collaborate closely with stakeholders, including end-users, to gather feedback and validate product decisions.
- Make decisions on behalf of the stakeholders regarding feature implementation, release planning, and product direction.
- Ensure that the development team understands the vision and goals of LifeOS and provides guidance and support as needed.

3. Scrum Master:

Responsibilities:

- Facilitate Scrum ceremonies, including Sprint Planning, Daily Standups, Sprint Reviews, and Sprint Retrospectives.
- Remove impediments and barriers that hinder the progress of the development team, ensuring a smooth and efficient development process.
- Coach and mentor the development team on Agile principles and practices, fostering a culture of collaboration, transparency, and continuous improvement.
- Help the team identify and address issues, risks, and dependencies, promoting self-organization and accountability.
- Act as a servant-leader, supporting the team in achieving their goals and delivering value to stakeholders.

4. Development Team:

Responsibilities:

- Design, develop, test, and deploy features and functionalities for LifeOS, adhering to quality standards and best practices.
- Collaborate with the Product Owner to understand user requirements, clarify acceptance criteria, and ensure alignment with the product vision.
- Participate actively in Scrum ceremonies, including Sprint Planning, Daily Standups, and Sprint Reviews, providing updates on progress and identifying any impediments.
- Take ownership of tasks and deliverables, working collaboratively with other team members to achieve Sprint goals and meet deadlines.

- Continuously improve skills, share knowledge, and contribute to the overall success of the project.

5. UX/UI Designer:

Responsibilities:

- Create intuitive and user-friendly interfaces for LifeOS, focusing on usability, accessibility, and visual appeal.
- Conduct user research, including surveys, interviews, and usability testing, to gather insights and validate design decisions.
- Collaborate with the Product Owner and development team to define user personas, user stories, and design requirements.
- Produce wireframes, prototypes, and mockups to communicate design concepts and solicit feedback from stakeholders.
- Iterate designs based on user feedback and usability testing results, ensuring that LifeOS meets the needs and expectations of its users.

6. Quality Assurance (QA) Engineer:

Responsibilities:

- Develop and execute test plans, test cases, and test scripts to validate the functionality, performance, and security of LifeOS.
- Collaborate with the development team to identify and prioritize areas for testing, ensuring comprehensive test coverage across all features and platforms.
- Conduct regression testing, smoke testing, and exploratory testing to uncover defects and ensure that fixes are properly implemented.
- Document and report defects, track their resolution, and verify fixes in collaboration with the development team.
- Participate in Sprint Reviews and Sprint Retrospectives to provide feedback on product quality and identify opportunities for improvement.

7. DevOps Engineer:

Responsibilities:

- Configure, deploy, and maintain the infrastructure and environments for LifeOS, including development, testing, and production environments.
- Automate build, deployment, and release processes using continuous integration/continuous deployment (CI/CD) pipelines and tools.

- Monitor system performance, availability, and security, implementing proactive measures to detect and mitigate issues.
- Collaborate with the development team to optimize application performance, scalability, and reliability.
- Ensure compliance with security and compliance standards, implementing best practices for data protection, access control, and encryption.

8. Technical Lead/Architect:

Responsibilities:

- Create and maintain documentation for LifeOS, including user manuals, installation guides, release notes, and API documentation.
- Collaborate with the development team to understand product features and functionalities, ensuring accurate and comprehensive documentation.
- Write clear, concise, and user-friendly documentation that addresses the needs of different audiences, from end-users to developers.
- Keep documentation up to date with the latest product releases, features, and enhancements, ensuring that users have access to accurate and relevant information.
- Provide support and assistance to users, developers, and other stakeholders regarding documentation-related inquiries or issues.

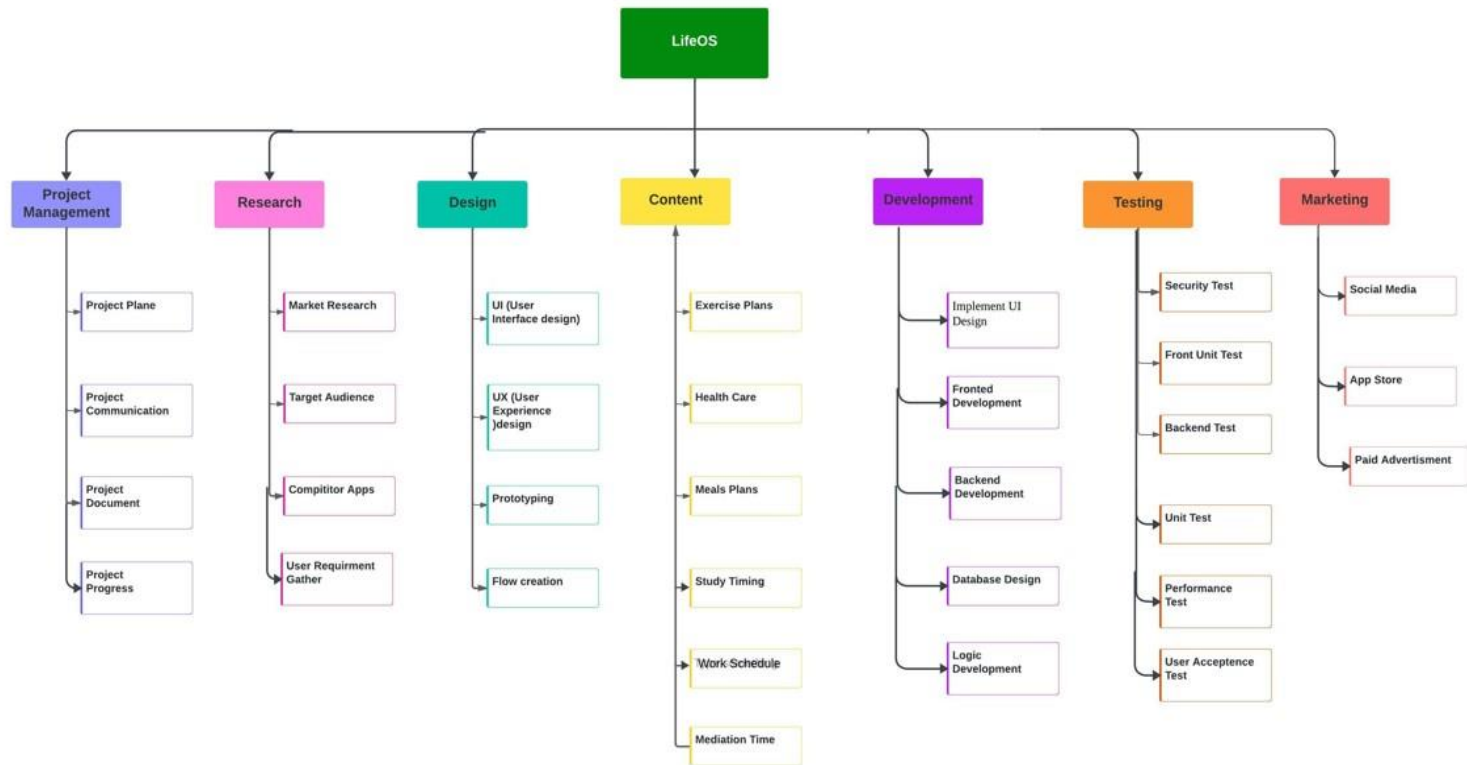
9. Stakeholders:

Responsibilities:

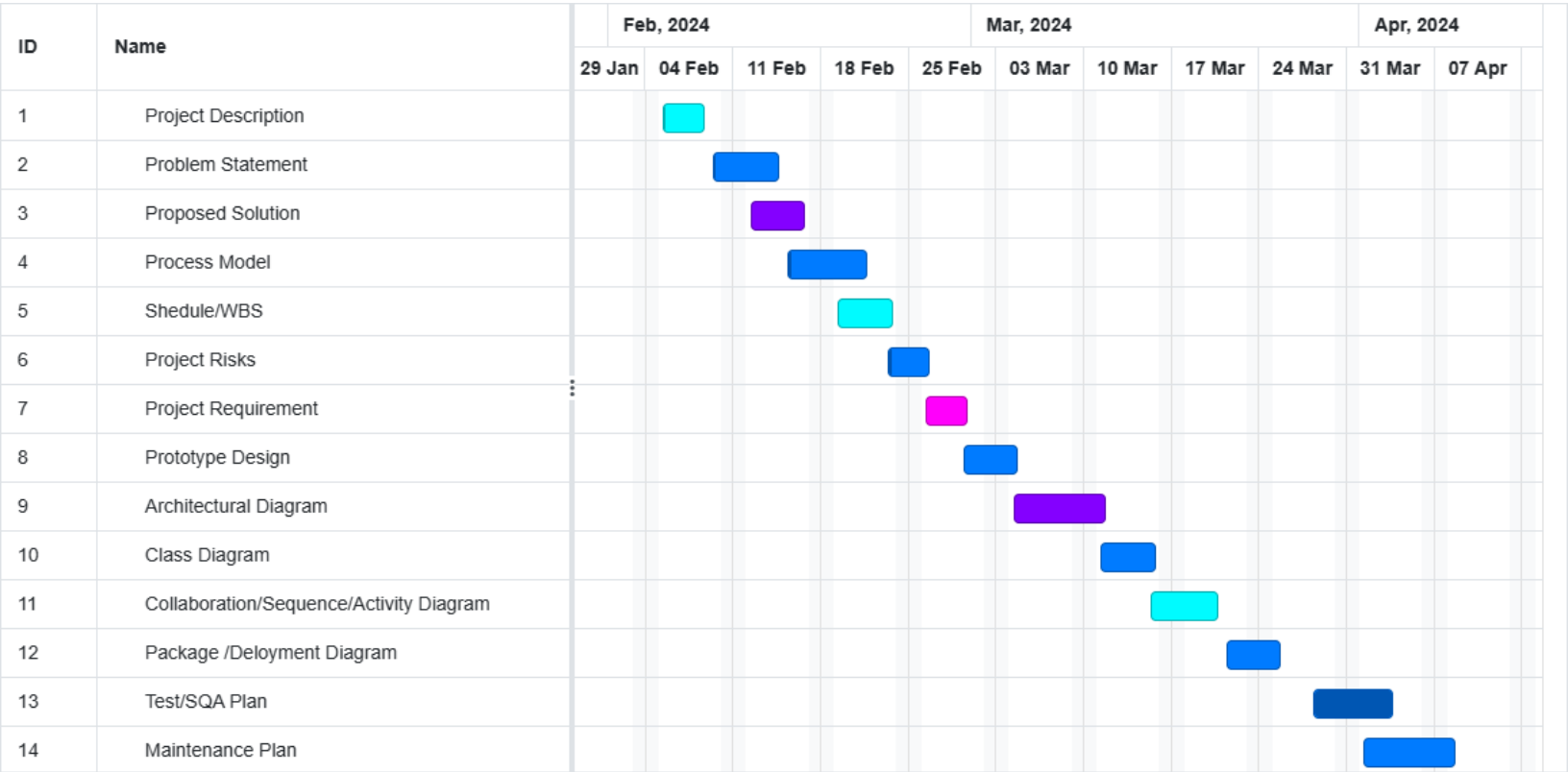
- Provide input, feedback, and requirements for the development of LifeOS.
- Represent the interests of various groups, including end-users, investors, regulatory bodies, and other stakeholders.
- Participate in regular meetings, reviews, and demonstrations to stay informed about project progress and provide feedback.
- Collaborate with the project team to prioritize features and make decisions regarding project scope, budget, and timeline.
- Advocate for the needs and priorities of their respective groups, ensuring that LifeOS meets their expectations and delivers value.

Each role/stakeholder plays a critical part in the software development process, contributing their expertise and efforts to ensure the successful delivery of the project within scope, schedule, and budget while meeting user needs and expectations.

5. Schedule/WBS

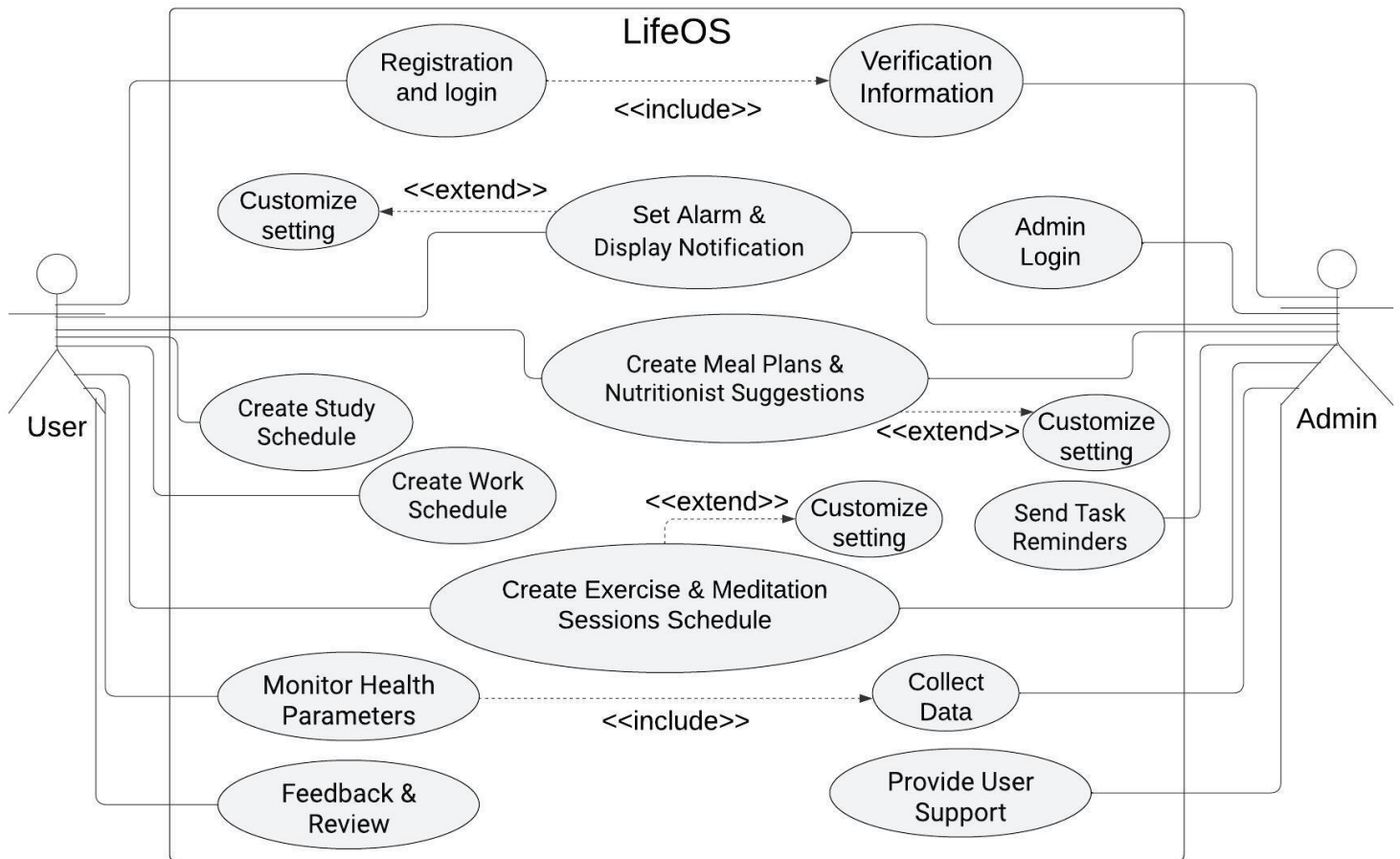


Gantt Chart



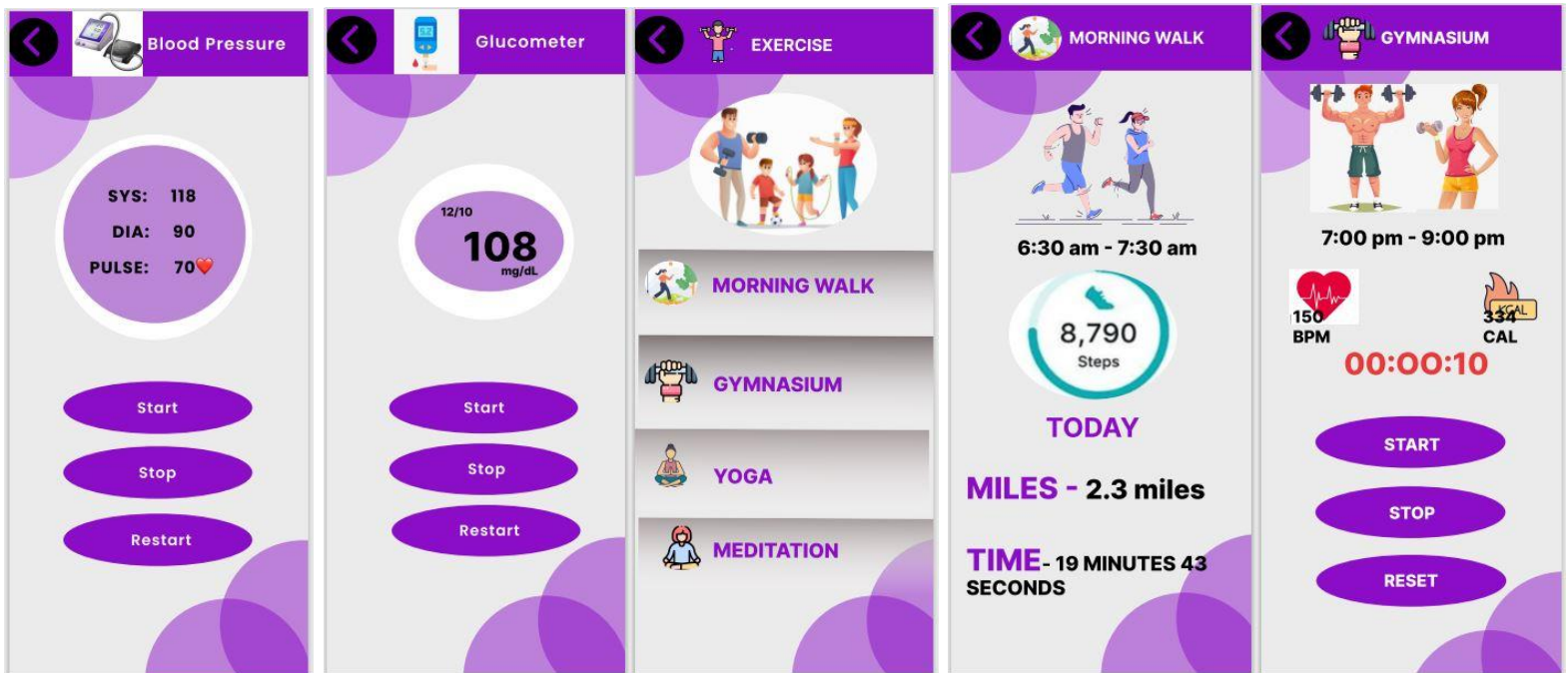
7. Project Requirements

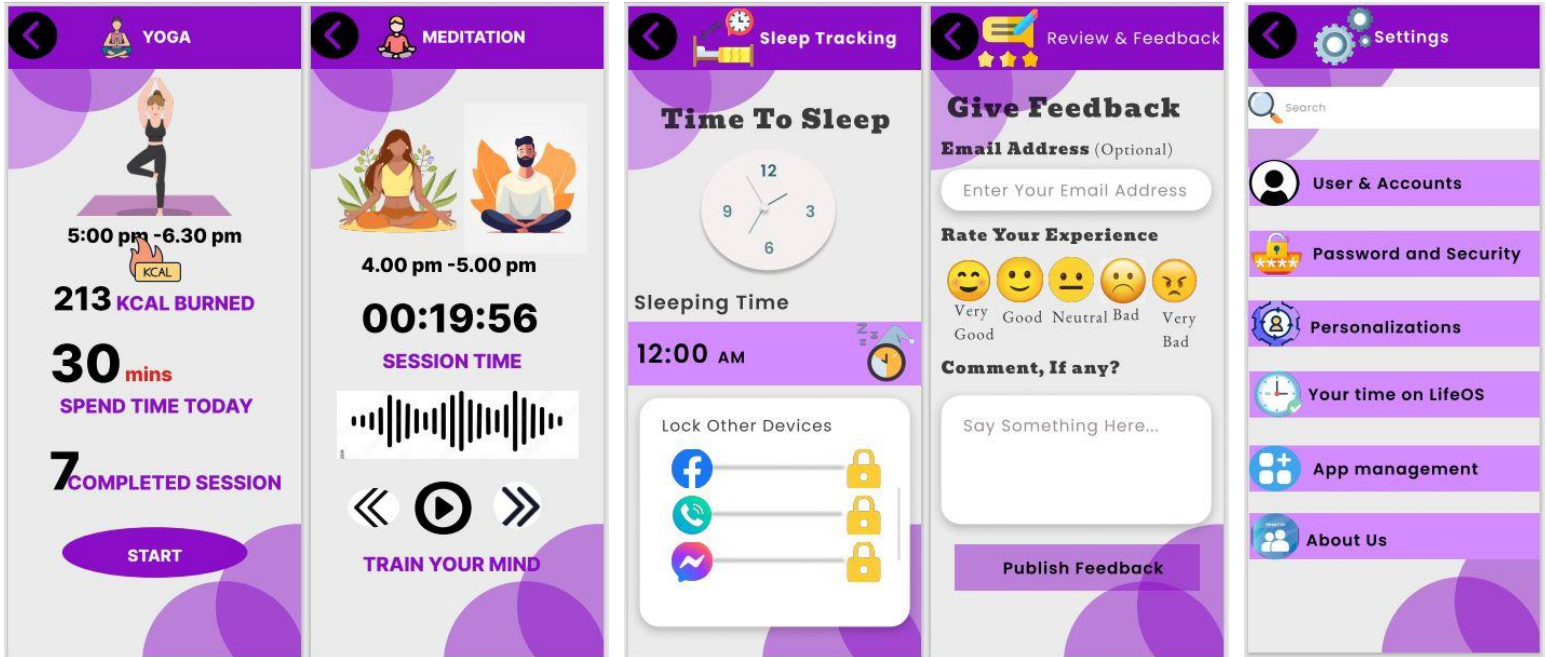
Usecase Diagram



8. Prototype Design







10. Class Diagram

Life Operating System (LifeOS)

