AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH

SOFTWARE ENGINEERING (SPRING 2023-2024)

Group 2: Section: B

Project Proposal Title:

Tracking Mental Health Through Web and Mobile Check-Ins

Report No.: 2

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SOFTWARE DEVELOPMENT LIFE CYCLE

Introduction:

This report will firstly discuss about the selection of software engineering model and present sufficient evidence to support argument for the chosen model. Next will be discussed about the role and responsibilities that are allocated in the project management activities. Lastly, an analysis will be provided to the impact of society and the environment.

SELECTION OF SOFTWARE ENGINEERING MODEL

Selected Methodology: Extreme Programming (XP)

Arguments for XP:

- **Effective Communication:** The client and developers maintain constant communication throughout the development process, reducing the risk of product failure.

- **Cost Efficiency:** XP promotes cost efficiency through its focus on delivering value incrementally and avoiding unnecessary features or complexity.

- **Simple Design and Clean Code:** XP encourages teams to implement exactly what is asked for, leading to a simple design and clean codebase, which enhances maintainability and reduces technical debt.

- **Early and Frequent Feedback:** XP facilitates early and frequent feedback through automated unit tests, feedback from team members, and direct input from the client, ensuring that the software meets requirements and expectations.

- **Pair Programming:** XP encourages pair programming, where two developers work together on the same task, leading to improved code quality, knowledge sharing, and reduced errors.

- **Emphasis on Teamwork:** XP places a strong emphasis on teamwork, fostering collaboration, communication, and collective ownership of the project.

- **Idea Sharing:** The collaborative nature of XP allows team members to share ideas, perspectives, and solutions, leading to better outcomes and continuous improvement.

- **Programmer-Friendly Approach:** XP respects developers' work-life balance and aims to create a supportive and empowering work environment, leading to higher job satisfaction and productivity.

- **Reasonable Timeframes:** XP typically operates on short development cycles (1 to 6 weeks), providing programmers with sufficient time to develop the software in parallel with their teammates, promoting efficiency and focus.

Evidence Supporting XP:

- According to a study by Succi and Marchesi (2002), Extreme Programming (XP) has been found effective in improving software quality and customer satisfaction through its emphasis on close collaboration, collective ownership, and iterative development [1].

- Research by Wells and Williams (2001) underscores the benefits of XP practices such as pair programming, test-driven development, and continuous integration in enhancing code quality, reducing defects, and improving overall project success rates [2].

- Cockburn and Highsmith (2001) highlight XP's suitability for projects with changing requirements and tight deadlines, citing its ability to deliver working software quickly and adapt to evolving user needs and environmental changes [3].

Roles and responsibilities in the software management activities

User Role:

The program allows users to track and record information about their mental health. They can get personalized guidance and insights depending on the data they have recorded.

- This position mostly communicates with the application interface to enter data and obtain insights or feedback produced by the system using the data they have provided.

Administrator (Adnan):

The system's upkeep and functioning are supervised by the administrator. The administrator can perform the following functions:

- Control permissions and manage user accounts. They also keep an eye on the overall condition and utilization of the system, track general health and utilization of the system including performance metrics, user activity, and usage trends.

Therapist (Jinia):

Within the software platform, this position entails safely evaluating and analyzing customer data. Counselors and therapists use user-provided data to learn about the state and development of their clients' mental health. This role should be able to perform the following functions:

- Review, analyze client data securely, and provide remote support and guidance to users.

Data Analyst (Lamyea):

The data gathered from users' mental health records must be analyzed by the data analyst. This role should be able to perform the following functions:

- Find patterns and trends in the aggregated data to understand mental health patterns and behaviors and prepare reports for investigation and system enhancement.

Notification Manager (Toma):

The tracking mental health software's notification settings are configured and overseen by the Notification Manager. This role can perform functions like:

- Oversee and configure notification settings and ensure timely reminders and alerts for users.

Community Moderator (Shafkat):

The community features in the mental health tracking program, like discussion boards and forums, are managed by the Community Moderator. This role should be able to perform the following functions:

- Manage community features, such as forums and foster a positive and encouraging atmosphere in the community.

Security Officer (Shafkat):

The tracking software for mental health is subject to privacy and data security, which is the responsibility of the Security Officer. The main functions include:

- Oversee data security and privacy measures and respond to potential security incidents.

Customer Support (Lamyea):

The Customer Support position is in charge of helping users of the program for tracking mental health. The main functions that will be performed by Customer Support are:

- Respond to user inquiries about the software and provide advice and address technological problems.

Integration Specialist (Adnan):

The tracking mental health software's third-party integrations are managed by the integration specialist. The functions performed by this role are:

- Manage third-party integrations for a seamless user experience and ensure compatibility with other health apps and platforms.

Content Curator (Jinia):

The tracking mental health software's content curator is in charge of creating and selecting instructional materials. This role should be able to perform the following functions:

- Develop and curate educational content within the software, and keep information relevant and up-to-date.

Impact on society and environment

Societal impact:

The **positive and negative** societal impacts include:

- Health: The software helps people deal with mental health issues early, making them feel better overall. However, the negative impact is that overreliance on the software for mental health management may deter users from seeking professional help when needed, potentially delaying, or neglecting essential treatment.

- Safety: One advantage of using the app is that it gives people quick access to help during tough times, making them feel safer. On the other hand, users may also experience disappointment if the software's recommendations do not align with their expectations or if they do not perceive significant improvements in their mental health.

- Legal: By implementing data protection measures and ensuring compliance with privacy laws, the software safeguards users' confidentiality and protects their sensitive health information. On the contrary, non-compliance with data protection regulations may result in legal consequences, such as fines, lawsuits, and cause damage to the platform's reputation.

- Cultural: Transparent privacy policies and user control over data settings respect diverse cultural expectations and preferences, enhancing user trust and engagement. On the other hand, in some situations it is possible that if the software does not fit well with different cultures, some people might not feel comfortable using it.

Environmental impact:

- Remote access: The positive impact is that the mental health support is provided online by the app which reduces the need for physical travel to therapy sessions or support groups. However, the negative impact is that this shift to online support may not only lead to decreased demand for transportation services but could also result in reduced human interaction and social isolation for some individuals.

- <u>Energy efficiency:</u> Less energy is consumed by the app compared to traditional mental health services, as it primarily operates in the digital realm which potentially results in reduced energy usage and greenhouse gas emissions. However, it is important to note that the app is also contributing to the carbon footprint associated with data centers and electronic devices, which may offset some of the environmental benefits.

In conclusion, the mental health app offers solutions for societal and environmental challenges. But we must consider risks and use strategies to reduce them. By protecting user privacy, designing sustainably, and promoting digital literacy, the app can help mental health while reducing harm to society and the environment. Collaboration among developers, mental health experts, and policymakers is key for its long-term success.

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References:

[1] Succi, G., & Marchesi, M. (2002). Extreme Programming Examined: An Empirical Study of a Radical Software Development Method. Addison-Wesley.

[2] Wells, D., & Williams, L. (2001). Extreme Programming: A Gentle Introduction. Addison-Wesley.

[3] Cockburn, A., & Highsmith, J. (2001). Agile Software Development: The People Factor. Computer, 34(11), 131-133.