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OSS Individual Project Proposal and Specifications

CSC415 - Software Engineering

March 4th, 2019

# Assignment 3 Proposal and Specifications

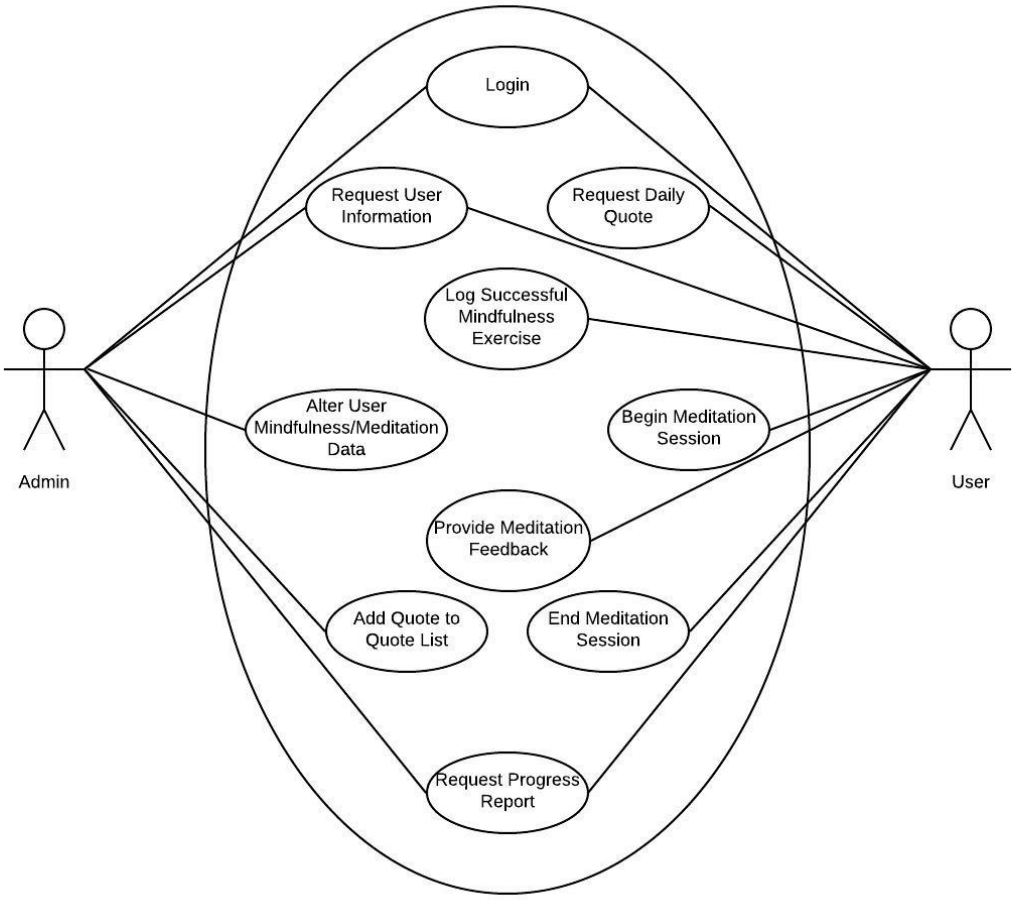
- Social Issue to be Addressed
    - Many people, especially college students, suffer from stress and anxiety. For some people, it stems from heavy pressure from school or work, but for others, anxiety attacks can occur with no trigger. Regardless of the specific circumstance, stress and anxiety can be difficult problems to face if one does not know how to handle the negative emotions that they bring.
- Project Title
    - Breath of the Bull: Zen Techniques for Stress and Anxiety
- Adding to Existing Project or Own Project?
    - This is my own project (Option 2 in the assignment 3 handout).
- Web-based or Mobile Application?
    - As I have never built a mobile app, but have always been very interested in doing so, I will be making a mobile app. I also think a mobile app is a better fit for my idea.
    - Languages: Java, JavaScript, Lua,  C++
    - Databases/Frameworks: Android Studio,  MongoDB, Corona SDK, PhoneGap
    - Platform: Android

- Project Idea
    - Breath of the Bull will be a mobile application for Android that provides Zen-based support and techniques such as mindfulness exercises, daily quotes from Zen masters, and guided meditation sessions, to help alleviate stress and anxiety.
- Project Discussion
    - Although there are many guided meditation apps available today, most of them are focused around sleep. This is not a bad thing, but relaxing to fall asleep does not help people with stress and anxiety in the middle of the day. I want my app to be a fun and easy way to train the users brain, making it capable of better handling difficult situations that cause stress and anxiety. The guided meditations will be developed so that they are appropriate for any time (not just before bed), and the mindfulness exercises will promote a practice that occurs throughout the entire course of the users day.
- Algorithms to be Implemented
    - I would like to implement a couple of algorithms that, based off of the users experiences with past guided meditations and mindfulness exercises, will generate new ones that better suite that specific user. For example, let's say that some of the parameters for guided meditations are length (in minutes), type of breathing, and frequency of positive affirmations. If a user is continuously not finishing the guided meditations, the app may decrease the length of future meditations. Also, if a user feels uncomfortable with a certain breathing technique, he/she may request that the application not use that technique in future meditation sessions.

- Data Structures to be Used
    - In order to generate meditation sessions and mindfulness exercises that best suite the user, data on their preferences will need to be stored. I believe that a hashmap of ‘user’ objects is a good way to store this data. That way, each user can have organized and easy-to-access data, such as password, preferred length for meditation, preferred time of day for meditation, preferred breathing technique, and so on. The keys for the hashmap can be the users username. With this data structure, information on each user can be accessed quickly and efficiently.
    - Daily quotes can be stored in a queue. A quote is dequeued and presented to the user, and is then put on the back of the queue. This way, it is assured that all available quotes are cycled through before the user sees a duplicate quote.
- New Software Engineering Concepts
    - As I have never worked with developing a mobile app before, I believe I will learn a lot about android development. I am unfamiliar with developing visually pleasing and user-friendly interfaces, as most of the coding I have done has been backend. Therefore, I am expecting to learn a lot about frontend development. I have some minor experience with database management, but I am definitely expecting to reinforce these management skills with this project. I am also expecting to solidify my Java development skills, as well as my algorithm design skills.
    - I am currently working on a separate independent project that involves creating a web application. I am hoping that project, as well as this project for CSC 415, will give me a strong foundation in not only the technical skills listed above, but also

the implementation of the SDLC. I believe these projects will give me great insight on how a software project is executed, from planning to deployment.

- Use Case Diagram




- Projected Timeline for Project
    - March
        - Communicate with professor to assure ideas, tools, languages, and frameworks are acceptable
        - Define work to be done, analyze risks, required resources, and tasks to be conducted
        - Learn necessary languages and frameworks

- Android Studio Documentation: https://developer.android.com/docs
- Lua Documentation: https://www.lua.org/docs.html
- Corona SDK Documentation: https://docs.coronalabs.com/
- PhoneGap Documentation: http://docs.phonegap.com/
- MongoDB Documentation: https://docs.mongodb.com/manual/

        - Given information gathered and the plan developed, generate a product design consisting of diagrams, function outlines, interface designs, and so on
        - Gain feedback as design is being written, alter design as needed
        - Test throughout entire process, assure that design is modular and well written
    - April
        - Construct project by generating code outlined in design
        - Gain feedback as project is being constructed, alter project as needed
        - Test throughout entire construction, assure code elegance, modularity, and sustainability
    - May
        - If time, final adjustments before submission