

Project Proposal on Healthcare Behavioral Group Therapy Application by Team Code-Blooded

This proposal outlines the development of a web-based Behavioral Group Therapy Application designed for healthcare providers, therapists, and patients. The application will leverage Node.js for the UI, F# for the business logic (therapist workflows, patient assessments, and real-time interactions), and MongoDB for data storage. The primary objective of this project is to develop a comprehensive web application to support **group therapy** sessions in a secure, compliant, and effective manner.

The core of the project design is aimed at using **F#, that will be responsible for taking care of the important aspect of business logic for the platform with respect to group therapy**. Schedule management, progress of the patient and workflow sessions will be handled by F# with the help of its functional programming techniques so as to lessen the mistakes and to enhance reliability. Its capability to take care of several procedures at one go will enable the system to execute the associations smoothly, like when patients attend respective sessions or when notes are updated by the therapists. For designing the engaging interface that the therapists and the patients could access, [Node.js](#) will be used, while the usage of MongoDB is basically for the storage of patients' and sessions' data. No doubt, that the usage of MongoDB and [Node.js](#) are essential, however **F# will be used significantly that is responsible for joining everything and making sure that the processes are protected and efficient**. Adding to it, the **component based structure of F#** will make the addition of new characteristics more simpler, in the coming future. After completing our project, may be the next scope of improvement would be the integration of video conferencing platforms or designing some insightful analytics dashboards.

The **language's robust type system** will be useful in avoiding early mistakes during the development phase, resulting in a more secure environment considering both the therapists and the patients. By enhancing **more important logic in F#, the system will be considered more balanced in between reliability and productivity**, keeping in mind the scalability factor as we welcome more users to use the tool. A link would be established between user interface and the database with the **help of F#, the regulations that actually states the interaction of patients and therapists with the system will be coded in F#**, like from session joining to maintaining updates and progress overview. [Node.js](#) will be dependent on **F# APIs to transmit and obtain data**. The focus also points to safety, **with F# handling the important confidential data, also trying to maintain all the compliance procedures with respect to the healthcare protocols. F#'s constancy property will lessen the danger of corrupted data**, when more than 1 user is using or revising data simultaneously. Ultimately, the tool will serve as an example for mixing a bit of **functional programming** aspect with **present day web frameworks** in the healthcare domain.

The programming language that will contain all **our business logic as mentioned above, will be F#**

Team mates' details: Sudeeptha Bal(801455628, sbal1@charlotte.edu), Chetan Kapadia(801438508, ckapadi1@charlotte.edu), Rucha Tatwar(801420899, rtatawar@charlotte.edu), Sanjyot Sathe(801426514, ssathe1@charlotte.edu) and Nidhi Shah(801420572, nshah77@charlottee.edu).

Research article: Types from data: making structured data first-class citizens in F# (<https://dl.acm.org/doi/10.1145/2908080.2908115>) - Type-safety (**Robust Type System**) and inferencing are some of its features that enable the developer to work with the data more easily without having to design it, which not only makes the data manipulation and analysis easier, but also decreases the chance of the type being interpreted wrong at compilation time so that the development process is made smoother.
