**Speak Up’s Framework**

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For our project, we have decided to use the Ionic Framework for our front end, Firebase for the backend, and AngularFire as the middleware. Ionic is a mobile/web-app hybrid platform that supports languages such as CSS, Javascript and HTML5. We decided to use this platform for a number of reasons: it is free, open source, and cross-platform between web and mobile. This would make it easier for us since we do not have to split into two teams; one for developing the web app version and one for mobile devices.

Ionic works by using building blocks which are called components. These components make up the UI of an Ionic app, while the logic is built using Javascript. It works with iOS, Android and Windows mobile operating systems. We would use the mockups to place components to match the mock-up’s UI as close as possible.

One of the most appealing aspects about Ionic is that there is no need to write separate code for mobile and for web. Ionic allows us to write a single set of code and publish our application as both a web app and a mobile app. This greatly benefits us because, for the longest time, we were unsure if we wanted to develop our app on mobile or on the web. With Ionic, we don’t have to choose. We only have to write the code once and we’ll have both a web app and a mobile app. Moreover, Ionic provides an easy to use, drag and drop, web-based editor that simplifies the UI building and provides built-in version control and code sharing.

For our backend side, we plan to use Firebase, which is provided by Google. Firebase also supports multiple platforms such as iOS, Android, and Web. We’ve chosen Firebase because it provides login authentication and real-time updates. Any update to the database will immediately update any connected device. And we believe that to be perfectly suitable to our needs given that our application will feature real-time chatting. We will use Firebase for all of our database-storage needs including storing user account information, chat history, and student and classroom statistical information. Our storage needs are fairly simple so we believe that Firebase’s NoSQL structure will do fine.

To connect Ionic and Firebase together, we will use AngularFire. AngularFire is an Angular JS based binding for Firebase and it is officially supported by Firebase.

We currently have two plans to develop this system. Since we are not planning to split into two teams to develop code for different platforms, but instead split into two teams where one team would develop the logic and functions while the other team will be stylizing the UI and layouts using HTML, CSS, and etc. If the development team needs an input box or any other widget they would create a default one as a placeholder and the UI/UX team would later stylize it. We also plan on coding the initial layout and UI first before going into the logical and functional aspect of our system. Since three-fourths of our team does not have much experience with web development, it would be easier to start with the layout and code the logic and function later. We have not decided on which plan we will be doing.