* Original project proposal would have a device built but due to COVID, given the choice to construct the device or entirely software
  + Should fine IDE that everyone can run and work on to have the same capabilities
  + Could have separate components focus on a particular function ; for example, one part would conduct the fft of a recording and another would compare these components to a user’s profile
* Password length does not matter
* for voice recognition, should attempt multiple samples ; should also use phrases/sentences as it gives a better overall picture of the spectrum given compared to a single word which may also carry great variability
* could possibly try different languages to “bolster” security as people who don’t speak the language would typically have a much harder time attempting to imitate the person
* should allow variations in how a user may enter their voice (don’t force them to speak in a specific tone etc.) , should also include the name as part of the spoken phrase
* make registration a separate interface and focus on the “log in” interface
  + the registration interface would create user profiles whereas the login interface takes the profiles to authenticate a given user
* KEEP SIGNUP SEPARATE FROM AUTHENTICATION (if it can be done, then it can be an additional feature but shouldn’t be part of the requirements)
* order of authentication doesn’t particularly matter EXCEPT GPS location output should be final
* High Level Design
  + for new user ; don’t save the recordings of the phrase given but rather analyze the voice and store the voice’s frequency components
  + when taking in multiple phrases, should compare the components of all of them to match similarly to identify a given user
* What should be stored together is the user’s name, their PIN, and the frequency components of their voice
* try out how many components should match for a given voice in order to authenticate a login. hypothesis testing for true positive/negative and false positive/negative in order to find out how good the system is. should not be too many such that no one can login or too little such that everyone can
* continue researching about frequency components and FFT ; look a bit into hypothesis testing