nh-mobile-code-challenge-v1-Joshua-Lam

Questions/Assumptions

1. Are clinicians from one state allowed to visit a patient from another state?
   - For MVP. I am limiting finding a clinician who reside in the same state as a patient
   - For instance, Dr Shelly in WI lives very close to the MN border and potentially a patient at the MN border could be closer to her than other MN clinicians. Not familiar with any Nice Healthcare business decisions nor insurance restrictions, I am limiting my searches within the state

2. The files given for clinicians and labs are not in proper JSON format, I fixed them so that they are in proper JSON format for parsing purposes

3. The assignment states that "a clinician typically drives from the clinician's home and back after every home visit". Based on this, in the event if lab work is needed, I am making the decision that the clinician would always drive home after every patient visit then drop of the lab samples at his/her closet lab.

4. A designed decision I made was to compute and associate the clinicians' nearest labs at when the app loads and store the result in memory. There could be a slight performance hit at the beginning but better than computing that logic each time a user looks for optimal clinician. While I could have stored the results eg using CoreData on the device, I am concerned about the limitation and security of this approach. I have proposed a more optimal solution using a 'cloud' based approach. (Please see **Feature/Enhancement Proposal** below)

Limiting Factors of MVP

1. Lack of usability review/feedback
   - The UI rendering, app experience, verbiages are based on my best guess as a developer, however, it would be good if the MVP can be subjected to usability tests
2. Lack of QA/Beta testing
   - Users could run into bugs which the developer did not anticipate
3. Clinicians and Labs information are file based
   - These files are baked into the app for MVP
   - These files can be outdated once new clinicians and labs are onboarded to Nice Healthcare or if currently clinicians and labs leave the program. Ie there is no real time knowledge.
   - Only way for app to find new clinicians is to build a new app and submit to AppStore and users have to download the new app
   - Every time the app is loaded, the app will attempt to associate the closest lab to a clinician. This can be relatively time consuming and not friendly on device resources
     - Multiple remote calls will be made to the Location Service to get distance

        - Potential for more errors with dependency on SLA of Location Service, device/WIFI signal strength etc
        - Potentially drain battery
        - Potentially drain data plan (for those with no WIFI or no unlimited data plan)
    - These files are not encrypted for MVP and they can potentially expose clinician personal information
    - (Please see **Feature/Enhancement Proposal** below)
4. Only users in MN, CO and WI can use the app
    - Please see **Feature/Enhancement Proposal** below that can potentially resolve this
5. No voice over for the visually impaired
6. Error messaging could be better based on usability review.
7. Lack of metrics gathering for marketing
8. Lack of network 'reachability'
9. No way for users to ask questions or communicate with Nice Healthcare Customer support if they have issues.
10. The app is not obfuscated or 'hardened' with runtime application self protection (RASP) mechanisms – this means that a competitor can reverse engineer it and especially so with a jail broken iPhone, and if the optimal distance calculation logic is a propriety logic, it can fall into wrong hands.

Optimization

1. Nature of patient's issue
    - Could match up clinicians with more qualified specialty
2. Severity of patient's issue
    - The severity of the case may need patient to call 911
3. Find other clinicians instead of a single more in case the clinician is held up or unavailable
4. Clinician availability
    - If a clinician is unavailable do not pick that clinician

Feature/Enhancement Proposal

- I am recommending a new feature to have the logic of association of clinicians to the nearest lab done in the 'cloud' for the app which will retrieve the results through 'cloud' endpoints which could potentially solve the problems mentioned above. The results from the endpoint will consist of all clinicians, their addresses, and their nearest labs and distances from the lab computed. I would be happy to discuss my idea, collaborate and brain storm with team members.

Thank you Nice Healthcare for this wonderful opportunity.