Pathway app API & Data Modelling Brief

Updated version, 7th July 2017

Pathway is an iOS chatbot app to support people taking antidepressants by tracking their medication, mood & wellbeing, and the side effects they're experiencing. Because the app is being used as part of a clinical study (lasting 16 weeks), users are also prompted to fill in standardised questionnaires every now and then.

While we had every freedom to build a bespoke iOS app for this project, the back-end was already in place. This gave us the benefit of a system tried & tested in production, but one which was never intended for use with clients that send data intermittently over long periods of time, and may or may not be offline when used. Furthermore, the server stores entities in highly generic form, so a lot of the client-side API interaction code deals with shoehorning local data into an acceptable format.

If you had a chance to design and build a back-end for Pathway from scratch, what approach would you take? Here are the basic constraints & requirements:

- These data **must** be stored about each user (see `demo_onboarding.mov`):
  - their name;
  - their current medication and when they began taking it;
  - information about changes to their medication: the date of any change, the name of the new drug, and whether the number of doses changed;
  - the date they began using the app.
- These data **can** be stored about the user on a daily basis (see `demo_evening_checkin.mov`):
  - their wellbeing rating for that day (a number from 1-100);
  - whether or not they took their medication that day;
  - what symptoms they experienced that day;
  - their responses to a three-question mood survey (each response is a number from 0-3).
- These data **can** be stored about the user once every two weeks:
  - their responses to a 9-question health survey (each response is a number from 0-3);
  - their responses to a 5-question memory survey (each response is a number from 0-4) (see `demo_memory_survey.mov`).
- Given that the app is being used for a clinical study, data retention and validity on the server is critical.
- The client is a mobile app that should have reasonable functionality even when the device is offline.

In whatever technologies you feel comfortable in, please develop a barebones implementation of the above, working from a GitHub repo. There is no need to spend more than 8 hours working on this – feel free to use pseudocode, diagrams or free-text descriptions of your approach to illustrate your thought process. You could choose to provide an outline of your overall solution (data model layer, database implementation, API interface design, controllers etc), or focus on just part of the problem in greater detail.

Please send us a link to your GitHub repo by the evening of Wednesday, 12th of July. Any questions – email jk@ctrl-group.com or eh@ctrl-group.com.