

App Project Experience

Tutorials and Sources

The following is a short list of tutorials and websites used for the Rad Tech Observations app:

- All basic MIT App Inventor 2 tutorials that were assigned in class, plus the following additional MIT App Inventor 2 tutorials:
 - Presidents - for using text
 - Mole Masher - for uploading Images
 - YouTube videos (which ones and for what reason?)
 - Colored Dots - for layering
 - Paintpot - for working with colors
 - No Texting While Driving - for getting input from phone
 - Initialize global:
<http://appinventor.mit.edu/explore/ai2/support/concepts/variables.html>
- Hide keyboard:
<https://groups.google.com/forum/#!topic/mitappinventortest/i-Ynvk-qL4k>
- Make components visible or invisible:
<https://www.youtube.com/watch?v=tcHoHhOldZg>
- Add sound to images: <https://www.youtube.com/watch?v=uycmwTAFgNQ>
- Duplicate screens/rename:
<https://www.youtube.com/watch?v=hhdvRp1UfmM&t=516s>
- TinyDB:
 - <https://www.youtube.com/watch?v=-PpH-kC1p-4&t=24s>
 - <https://www.youtube.com/watch?v=mKe5a8F6uvY&t=22s>
- Procedures and Variables: <https://www.youtube.com/watch?v=zIAGWK5nldg>
- IF statements: https://www.youtube.com/watch?v=7eb6xy_nUBk
- Superimpose buttons over images:
 - <https://groups.google.com/forum/#!msg/ai4a/G9CH7aqVTuc/Rzr9zl6jqsQJ>
 - https://groups.google.com/forum/#!topic/mitappinventortest/wumhhIO_I3g
- How to make transparent buttons (to be used against “pictures” of the human body): <https://puravidaaps.com/snippets1.php/#transparent>

Image and Sound Sources

- Human body: clipart-library.com/clipart/LTdJRnojc.htm
- Hello kitty:
<http://www.supercoloring.com/coloring-pages/hello-kitty-halloween-skeleton>
- Meow MP3: <http://www.orange-freesounds.com/cat-meows-purring-sound/>

App Development Approach

The app was developed in stages:

Stage One: Brainstorming. As a group, the app development team thought of several ideas for their app, all but one of which were rejected for being impractical or better on a computer than on a phone, or a bit “forced” in nature (i.e., not of real interest to people who have smartphones).

Stage Two: Confirmation. As we started taking our MIT App Inventor 2 tutorials, it became more and more clear as to whether our chosen app would be viable or not. We “tested” our concepts against our learnings from the tutorials to refine what we believed the app would/could/should do. This served to confirm our choice of application to develop.

Stage Three: High-Level Design. In our team, we walked through what we believed the basic workflow that someone might take to use the app would be and we decided on the steps (or “screens” and “activities”) that the app would have in it, at a high level.

Stage Four: Refinement of Design. Given our later tutorials, it became clear that some of the ideas we had proposed for the high-level design were going to be either impossible or too difficult (e.g., storing information in and retrieving information from a relational database), so we refined the design and slightly reduced the scope of the product.

Stage Five: Coding the Prototype. The prototype stage was split into early- and late-stage prototyping. Early prototypes were developed and walked through carefully so that each team member felt comfortable with both the approach of the actual (rather than the designed) app and its content. Scope was further reduced, but the end quality was maintained through to the late-stage programming of the app. The team met again for final approval of content and approach of the app.

Purpose of the App

The Rad Tech Observations app is used by Radiology Technologists who are taking x-rays of patients.

Not only do Radiology Techs run the x-ray machinery, they are also expected to record information that they find when taking x-rays, such as scars, rashes or wounds. This forms part of the patient's record for the x-ray scan that was performed.

This app allows the Rad Tech to draw those observations on the outline of a human form using their smartphone and to record these drawings as well as a typed description to go along with the x-rays taken.

What Is the App?

The Rad Tech Observations app is an aid for Radiology Technologists who are busy with x-ray machines and may be at a distance from their chunky desktop computers when they are recording observations about a patient in the area of a scan. These observations might include scars, moles, amputations, scratches, tattoos and/or wounds.

Objectives of the Rad Tech Observations App

The Rad Tech Observations app is designed to save time for Radiology Techs who are busy running x-ray machinery by the patient's side. It is while they are preparing for an x-ray that they may notice Observations on the patient that may be pertinent to their x-ray scans.

It is important that the Tech is able to record these observations quickly, at the point they are observed, so having a smartphone right next to the patient is useful and quick.

This app also gives the Tech the ability to draw the observation onto a generic patient picture on their smartphone. As a result, this app increases the clinical completeness and accuracy of the scans and therefore the clinical quality of the readings by the Radiologists. This leads to an increase in the quality of patient care and a potential reduction in mis-diagnoses and lawsuits.

Audience

Radiology Technologists who perform X-rays. It can also be used for other radiologic modalities: CTs, MRIs, Ultrasounds, and Nuclear Med scans.

How We Developed the App

As stated previously in the App Development Approach, we approached each step of development in stages. We would meet once or twice a week and brainstorm what we wanted to develop, how it would be developed, and what would and wouldn't work. We worked well together as a group and were very courteous to each other. Janet had previous experience in coding which was a big plus for our project. Janet also had some of the initial plans for the app workflow, and we worked as a group to refine the process. With our backgrounds in the medical field and one having a background in library science, we all brought something to the table. Kimberly introduced us to Padlet (See figure: 1) where she created a Wiki so we could keep up with ideas for our app project. Carrie and Kimberly obtained and edited the graphics to use in the app. We floated several prototype graphics before finally deciding on a final set of graphics. It was challenging to figure out what would make a good smartphone app and learning the MIT App Inventor but a lot of fun. We were a team from beginning to end, sweating over each decision which almost made it feel like we were working in a real business. It was also frustrating, because it was very slow learning the app inventor tool. Overall, it was a rewarding experience.

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Appendix

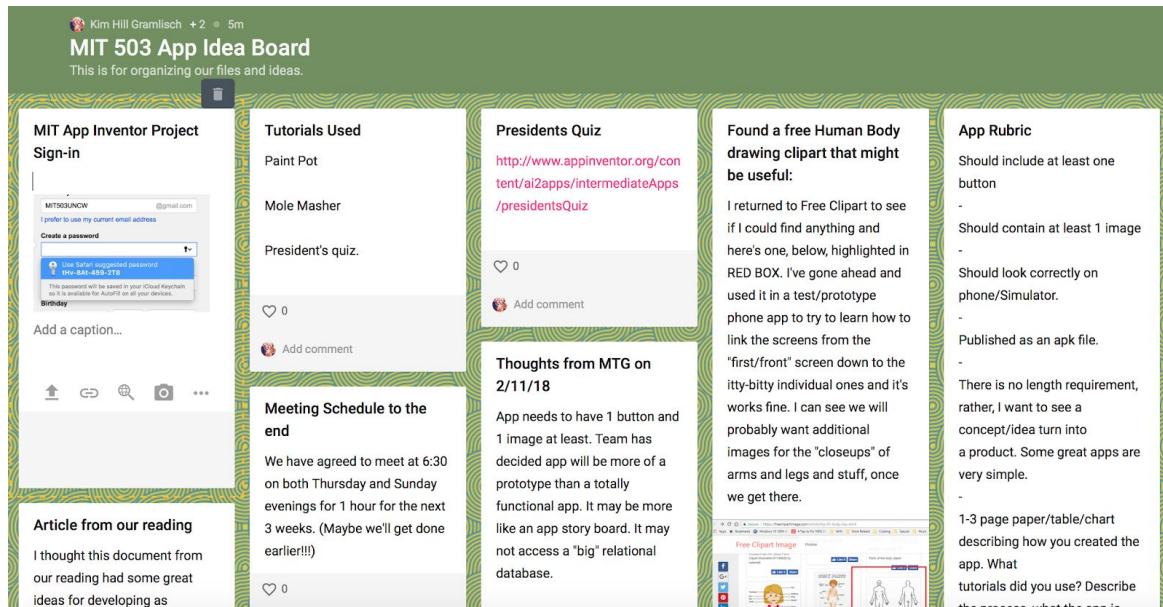


Figure 1: Padlet used to organize our ideas and files

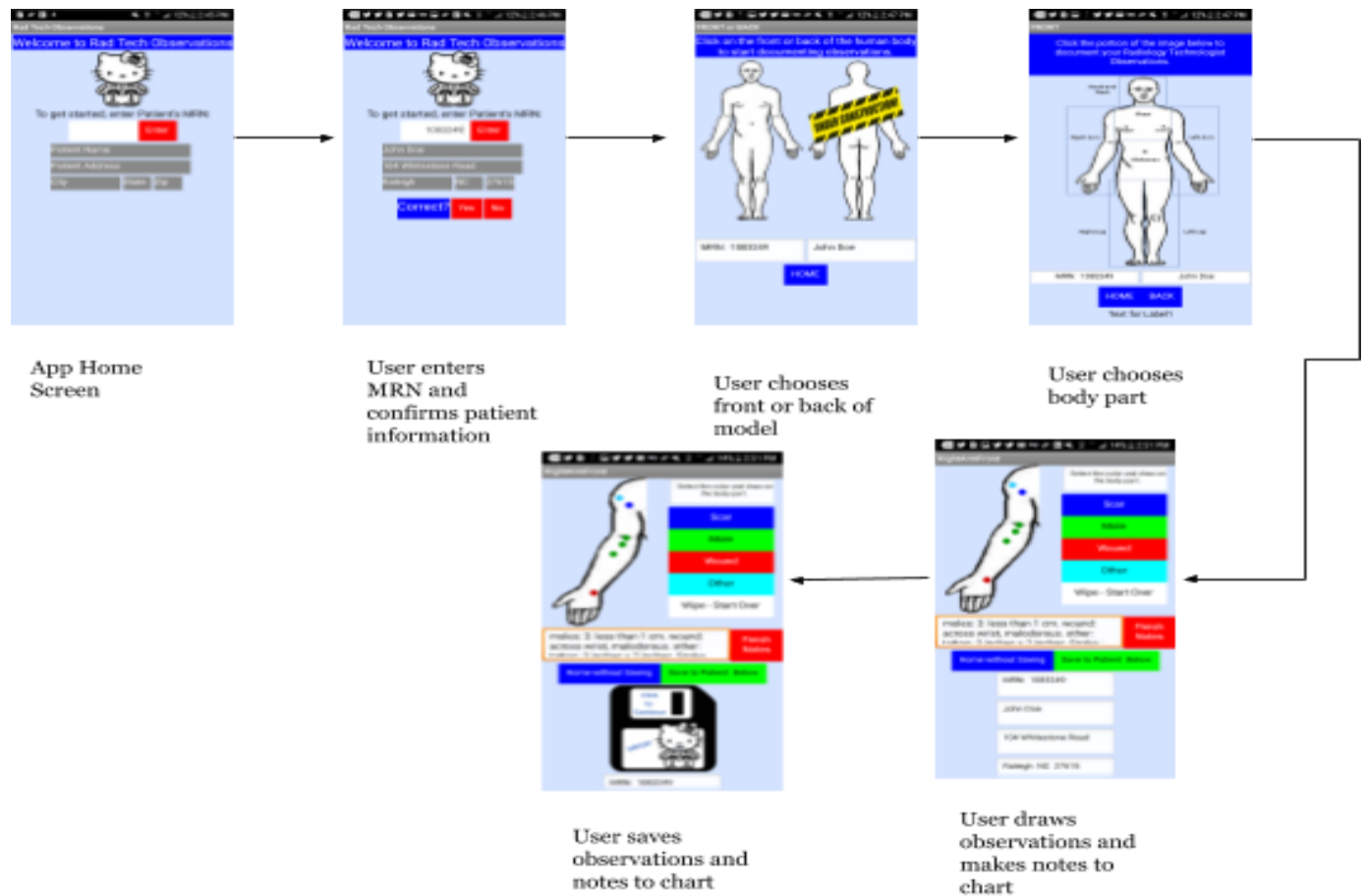


Figure 2: Sample app workflow