Team JSEN - Julia, Szymon, Eddy, & Ny

Prototype Documentation

Due 12/15/19

**Statement of Client’s Wants:**

Our client told us of her love of mystery novels and how she spends most of her free time listening to mystery audio books. With this, we decided to base our project on her love for mystery by creating an audio based role-playing mystery game: instead of purely listening to a novel, she would be able to immerse herself into one by becoming the detective herself. Since our client is blind, she requested buttons with braille on them to progress throughout the story.

**Statement of the Design Problem:**

Our client needs a more interactive version of a mystery novel that would provide her additional entertainment in her spare time and be more immersive than audiobook mystery novels currently are.

**Final Burn-down chart and Project Backlog:** Link [here](https://docs.google.com/spreadsheets/d/1QYjZCuhPEuXl0IL50I7jT-t23u-OGXi4ChVD6iybX0s/edit?usp=sharing).

**Video Demonstration:** (enter video below)

**Aspects Relative to Existing Products:**

* “Choose Your Own Adventure” novels are similar to our idea. Both grant the user the ability to change how they experience the story at certain points throughout the course of the story.
* Android App - Audio Game: Wizard’s Choice - [https://play.google.com/store/apps/details?id=com.sdkbridge.walkerschoice](https://play.google.com/store/apps/details?id=com.sdkbridge.walkerschoice&hl=en_US) This app relates to the sort of interaction our project would have with our client. Our prototype is using buttons with braille on them, which are more tactile than on-screen buttons on a touchscreen. Given that our client is legally blind, a touch screen app would likely be more difficult for her to use.

**Personalization of Prototype:**

* Client likes mystery books (audiobooks) and mystery games.
* Braille on the top of the buttons so that our client can distinguish between them.
* Audio signals/output.
* Additional “replay” button added so the client can easily replay any statement/description.
* Adjustable volume slider connected to the speaker to allow our client to adjust the audio to her preferred volume.
* Detail of our client’s life embedded into the story (e.g. IBM employment).
* Shorter box - the height of our initial prototype was too tall for our client to use comfortably, so we have made the box shorter.

**New Skills Learned:**

* Programming in C
* Working with Arduino hardware
* Using CATme
* Using Fusion 360
* Using Make a Box (additional laser cutter skills)
* Mystery story writing
* Debugging with processing and arduino
* Working with a client

**Final User Test, Results & Conclusions:**

Test **-**

* Motive: Client wants to be able to play a mystery game for entertainment.
* End Result: Client successfully reaches the conclusion of the plot of the story.
* State of project at the beginning of scenario: Client hears introduction sequence and then the script prompt.
* Display status during the task performance: Client is able to move on to the next phase of the story successfully.
* The google form we created will be used to check for additional criteria : <https://docs.google.com/forms/d/1rVk7UfTRfc314S7I1TIa6HQ9Bm1ICF1tJgx3cui7j2I/prefill>

Results can be found in this [sheet](https://docs.google.com/spreadsheets/d/11M6-7wbvfePx3qiGJjFxWMa9pzMKCGD17zglFVCyEDM/edit?usp=sharing).

Overall, she enjoyed the braille on the buttons and enjoyed the story.

Conclusions **-**

Although we were not able to see our project to its fullest potential, we got our software running in Processing, and we are happy with the final script. Our biggest issues were running out of time and having issues with playing the audio files. We were able to wire up the buttons and the speaker; however, we were having issues with accessing the files from the SD card, disabling us from playing the story from the arduino. The code on Processing, however, works smoothly with a few small kinks either within Processing itself or slight logic errors in our script which would need more time to be fixed. The buttons were never finalized, but we were able to 3D print braille caps to be glued to the buttons on the breadboard. The final box for the prototype was never finished, for we only had a cardboard laser-cut prototype, but the dimensions were good along with the holes for the speaker, buttons, and volume slider. If we had more time, we could clean up the code, possibly get the speaker to play our audio files, and create a finalized box (made of birch plywood) to put the arduino inside.

In The Event of A Continuation **-**

In the event of a continuation of this project beyond our functional prototype, we would clean our current story, create more endings for this particular story and create additional mystery stories for our client to discover and interact with. This would allow our client to have more utility from our product and be able to interact with our product for a longer amount of time. If we did this, we could also write code that would automate the building of story nodes (such as based on the names or locations of folders and file names), which would greatly simplify the amount of work that has to be done when loading an additional story onto our device. If we added additional stories, we would also have to program some sort of menu, a save/load feature and add buttons (e.g. play/pause/home/speed audio) to our box to navigate and choose the story.

During our second to last visit, our client wanted to interact with the story through voice, therefore one of our next steps would be to add a voice controlled aspect to our story, which would make it more interactive for our client. This would likely require adding and integrating a library (like Python’s SpeechRecognition library) into our code and possibly porting our prototype to a board computer with more processing power.