Tasker Master

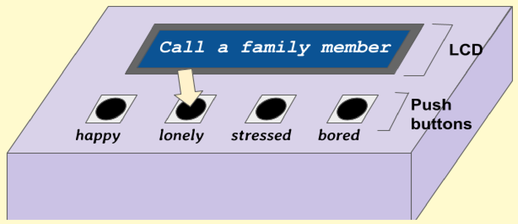
By: Henry Humphrey (Civil), Kaylin Lee (Materials), Joel Miranda (Computer), Diana Pantoja (Aerospace)
hjhumphrey@ucdavis.edu, kaglee@ucdavis.edu, joemiranda@ucdavis.edu, diapantoja@ucdavis.edu

Introduction

- COVID-19 pandemic causing elders increased levels of anxiety and depression due to the lack of human interaction.
  - According to USC, "**Older adults living alone are more likely to feel anxious (38%) or depressed (27%).**" [2]
- The majority of caregivers and elders don't use current technology due to usability issues, availability, and affordability.
  - AARP states that **only 28% of elders are comfortable with their current devices.** [3]
- Complicated for caregivers and the elderly to use.
  - The Social Connectedness Fellowship Program**, states 50% of problems in the usage of technology tools are related to usability.** [4]
- The design solution:
  - Operable and user friendly to ensure that the elderly won't get confused by the device
  - Promotes safe and healthy practices
  - Keeps interest and assigns tasks.

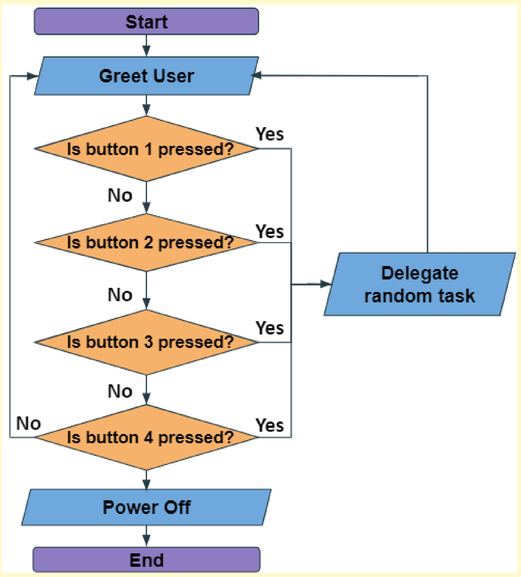
Methods

- Elders **do not like feeling useless**[1] so our main focus was giving them the power and that feeling of need from others.
  - According to greatergood.Berkeley.edu, elders want to feel useful, they don't want to be seen as needing service.
- Trying to **incorporate family/friends** to be involved with their elders by using the device.
- Components used: LCD, Push Buttons, Arduino, breadboard, and resistors.
- **Requirements:** operable, low cost, promotes safe and healthy practices, enthusiasm from elders towards product.



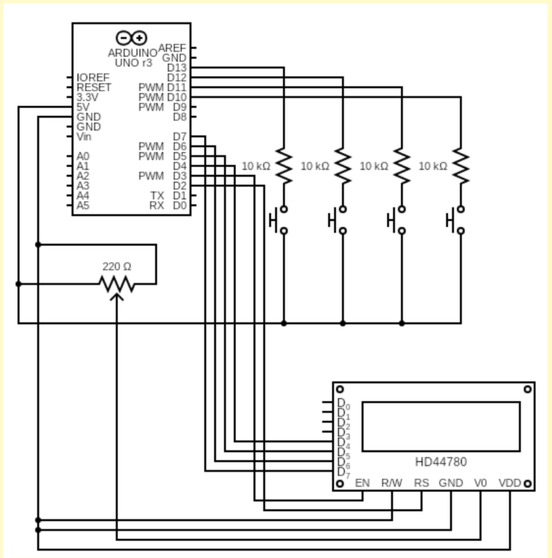
Model

- Simple design = easily operable
- Buttons corresponding to emotions - coded task are randomized and displayed.
- Tasks are created to aid specific emotions, ie: "call a family member" for lonliness.



Code Flowchart

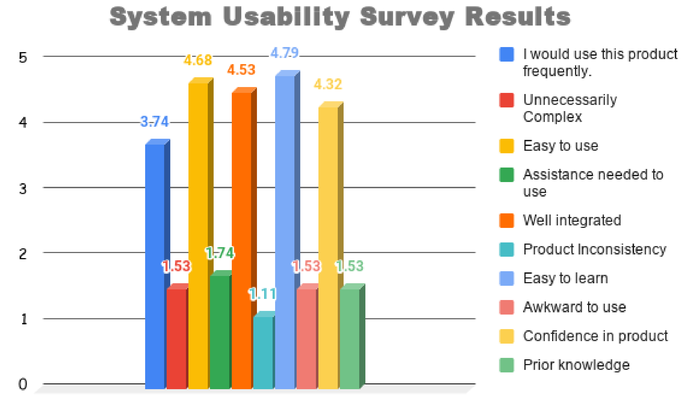
- Program starts by greeting the user.
- There is 1 condition for each button.
- If none of the buttons are pressed then the program continues to greet the user.
- When one button is pressed then the program displays a task.
- When the devices finishes displaying a task then the program greets the user again.



Circuit Diagram

- This diagram includes 1 Arduino Uno, 4 push buttons, 1 LCD screen, and 5 resistors.
- 6 digital pins are used for the LCD screen.
- 4 digital pins are used for each button.
- The device is supplied by a 5V voltage source.

Results



The above graph is a survey collected from 20 participants who answered questions based on the usability of our device. The results show that we scored an **87%** for the overall usability of our product.

Future Work

- Follow through with tasks, such as displaying a recipe for cookies, showing a phone number from a relative, or playing music when given a task to dance.
- Add more tasks, and interview elders to understand what makes them happy.
- Integrate a personalization system where the user can add their own tasks based on their interests.
- Use a bigger LCD screen to display more words.

Acknowledgements

UC Davis School of Nursing
Our professor, Dr. Jennifer Mullin
Our TA's, Achala Rao and Clay Swackhamer
And Dr. Terri Harvath

References

[1] S. Jill Suttie, "How Social Connections Keep Seniors Healthy" Greater Good Magazine [online] [accessed February, 2021]

[2] J. Zissimopoulos and J. Thunell, "Older Adults Living Alone Report Higher Rates of Anxiety and Depression," USC Schaeffer, 21-Oct-2020. [Online].[Accessed: 02-Mar-2021].

[3] AARP Research Project Catalyst, " Caregivers and Technology: What They Want and Need" [published] [accessed February, 2021]

[4] A. Karina Alibhai, "Social Isolation and Technology: How Technology Can Be Used To Reduce Social Isolation Among Older Adults In British Columbia" Social Connectedness Fellowship Program [published] [accessed February, 2021]