Team 2: Marshall Botta, Viplav Dodeja, Jerred Hermogino, Bella Recato
EGR 201: T & Th - 10:30
5 November 2019
Final Project Proposal

- Morphological Table (the table with large amt of resulting solutions of which we identify two good ones to review
  - ○

Word Input	Pronunciation	Definition	Housing	Power Source
Webcam Scanner	Speaker	Speaker	3D printed case	9-volt battery
Type-Input	Phonetic Breakdown on LCD	LCD Display	Fitted into Glasses	Li-ion rechargeable battery
Mic	-	-	Crafted wooden box	Plugged into laptop

  - ○ 108 possible solutions
  - ○ Selected solutions:
    - ■ Webcam scanner built into a 3d printed case, that uses a speaker to say the word(pronunciation) and definition of the word. Uses a 9-volt battery for power.
    - ■ Crafted wooden box with multiple buttons, which uses an LCD screen to display a phonetic breakdown and definition of the word. Plugged into laptop for power.
    - ■ Wearable glasses that scans a word and have wearable headphones to listen to definition and pronunciation. Powered by a rechargeable Li-Ion battery.
    - ■ Program on computer that receives a typed word, and uses speakers to define and pronounce the word. 3D printed case for Arduino and speaker plugged into a laptop for data transfer and power.

- Pugh Matrix

Rank 1-5	Traits	Endless Alphabet (Reading App)	Crafted wooden box	Edith glasses	Box with webcam	Computer typing program
2	Size	0	+1	+1	+1	0
4	Ease to Use	0	+1	0	-1	+1
5	Understandability	0	0	+1	+1	+1
5	Accuracy of Scan	0	0	-1	0	0
3	Safety	0	-1	0	-1	0
	Total	0	+3	+2	0	+2

- Summary of feedback by the teacher on solutions from steps 1 & 2
  - The teacher was unable to be contacted and feedback was not received.
- Identified solution and description of how it will address our issue:
  - We have decided to build a computer typing program to solve this problem. It will allow a student who is struggling on a word to type the word into the computer. Next, our program will call a live API and define the word, printing the definition on the computer. Lastly, the code will send the audio file of the word to the Arduino and use a speaker to let the student hear the pronunciation of the word. Altogether, the student will enter a word into the program, be told how to pronounce the word, and be told what the dictionary definition of the word is. Once we are able to accomplish this, our next step will be to send the audio file for the definition to the Arduino, as well, providing the student with the ability to hear the definition aloud as well.
- Argument for why this solution was chosen over the others:
  - This solution not only helps the student with gaining knowledge in words but also gives the student the freedom to identify any word they are struggling with. The learning games only have a sample set of words that they use to build the students' vocabulary. Our program will help a student who is struggling with a specific word in the text. Once the student has heard the word aloud and read or heard the definition, reading will become much easier to relate to personal context clues, as well as become familiar with the word. Ultimately, we felt this solution would best fit our problem and provide the greatest impact on our audience.
- An initial plan for prototyping:
  - Use Javascript IDLE to generate an HTML page which allows the student to type in response. Next, IDLE will receive input from the page and use data to call API and get the definition of the inputted word. Call data to receive .wav file for audio

pronunciation and definition of the word. Display the definition on the HTML web page and send the audio file to Arduino. Use Arduino IDE to send the audio file to the speaker and LCD screen attached to the Arduino UNO.

- Itemized budget estimation (BOM with links)
  - 8 ohm speaker: $7.99
    https://www.amazon.com/CQRobot-JST-PH2-0-Interface-Electronic-Projects/dp/B07YX9QLLN/ref=sr_1_3?keywords=8%2Bohm%2Bspeaker%2Bfor%2Barduino&qid=1573005693&s=electronics&sr=1-3&th=1
  - MP3 music player module: $7.99
    https://www.amazon.com/Aideepen-YX5300-Control-Serial-Arduino/dp/B01JCI23JG/ref=pd_bxgy_23_3/135-2131262-4563640?_encoding=UTF8&pd_rd_i=B01JCI23JG&pd_rd_r=83f673ef-98c2-4d73-9180-9ca2933b613c&pd_rd_w=nlh6V&pd_rd_wg=mdlgT&pf_rd_p=09627863-9889-4290-b90a-5e9f86682449&pf_rd_r=TSS9XB4YG6ZETYVAS9C9&psc=1&refRID=TSS9XB4YG6ZETYVAS9C9
  - MP3 decoder player module: $5.49
    https://www.amazon.com/HiLetgo-Lossless-Decoders-Decoding-Amplifier/dp/B01DK9SL6C/ref=ac_session_sims_23_1/135-2131262-4563640?_encoding=UTF8&pd_rd_i=B01DK9SL6C&pd_rd_r=b5f11615-98a9-4ddf-a589-e16bbf3ffeff&pd_rd_w=6mUPL&pd_rd_wg=jRJC7&pf_rd_p=48085047-4138-436e-b581-f015f2ded99a&pf_rd_r=51CGEBD9VCCD91C6ETHP&psc=1&refRID=51CGEBD9VCCD91C6ETHP
  - Proto Board $12.68
    https://www.amazon.com/Gikfun-Solder-able-Breadboard-Plated-Arduino/dp/B071R3BFNL/ref=sr_1_3?crid=22VCGVT8I9NP&keywords=protoboard&qid=1573008245&s=electronics&sprefix=proto+%2Celectronics%2C197&sr=1-3
  - Potentiometer knob $11.88
    https://www.amazon.com/RV24YN20S-Potentiometer-Inverter-Regulation-Control/dp/B074KGJ7N6/ref=sr_1_11?crid=38RSSKYRCPH8R&keywords=potentiometer&qid=1573008571&sprefix=%2Caps%2C228&sr=8-11&th=1