Team Name: BlindKey

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Team Number: 52

Proposal Description:

The objective of this project is to create a braille input device allowing those with visual impairments to type on to a screen. The braille language itself is a set of six raised dots in two parallel rows each having three dots. **[1]** Possible combinations of these dots correspond to different letters/symbols. To emulate this system, we will solder 6 buttons on to the pins of our Onion Omega 2, where each key corresponds to one dot of the Braille script. 2 additional buttons will represent the space and back space button on a typical key board.

Each time a user presses a button(s) and then presses the enter button, the Omega board will return a binary code. For example, if button 1 on the first row is pressed, then the onion board will return 100000. Our code will then decrypt the input value by calling a function that will pass the input value through a 2-d array which will already contain all the possible input combinations and their respective values. If the users input does correspond to a value, then a letter/number will appear on the Onion LCD screen, else there will be no output.
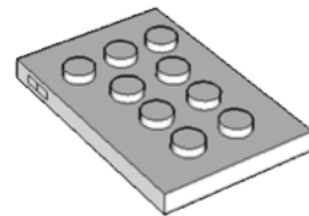

Figure 1: Sketch of proposed design

This device could be used as a keyboard by individuals with

visual impairments and would assist them in typing without having to learn anything else. It also

provides a cheaper alternative to the typical braille keyboard cost thousands of dollars. **[2]**

Equipment Requested:

Item	Justification	Where to purchase	Cost (CAD$)
Onion Omega	Main component of desgin, tacks button input and sends information to code to be processed	**N/A**	0
LCD screen (OLED expansion)	Displays the letter/number that the user inputs into the braille buttons	Onion Online store	**15.44**

10 Buttons	Emulated the braille dots; allows user to input letters/numbers	Creaton Inc , Toronto	$0.30 * 10 = $3.00
40 Jump wire (100 mm , male-to-male)	Create circuit that will allow button input to be detected	RigidWare @uWaterloo	$0.15* 40= $6.00
Breadboard	To create circuit connecting push buttons to onion omega	RigidWare @uWaterloo	$8.00
10 200 ohms resistor	to control the amount of current flowing into the circuit	RigidWare @uWaterloo	$0.15*10 = $1.50

Total cost: $23.94

Necessary Delivery Time: For the equipment that can be bought at waterloo, we are hoping to get those by the end of this week (10/11/17). As for the buttons we will need them sometime between 13/11/17 to 17/11/17. Since the LCD screen will be ordered off the Onion Online store, we are expecting a two week delay and hoping to get them 20/11/17 to 24/11/17.

Links to equipment and prices:

LCD screen: http://www.robotshop.com/ca/en/oled-expansion-onion-omega.html?gclid=Cj0KCQjw4eXPBRCtARIsADvOjY2-5GoAwXifZMOJURDOr-jiRuQwZgW6NVHIA41H-dSfEW5oqFIjLhQaAvuHEALw_wcB

Buttons: https://www.creatroninc.com/product/2-pin-small-breadboard-tactile-push-button/?search_query=push+button&results=38

Resistor,Breadboard,Jump Wire: https://docs.google.com/spreadsheets/d/1P_fm9qgF440YoQRU3L4bQ1NW_VdtHXyzSlPmIePHtRs/edit#gid=0

References:
[1] http://www.afb.org/info/living-with-vision-loss/braille/what-is-braille/123
[2] http://store.humanware.com/hca/brailliant-bi-32-new-generation.html?CAGPSPN=pla&gclid=Cj0KCQjw4eXPBRCtARIsADvOjY3PMwqnWwzogIDGjdbxbA7NfRi1iy94C-wAodOCjrCH4zJKL0UqkDcaAsivEALw_wcB