

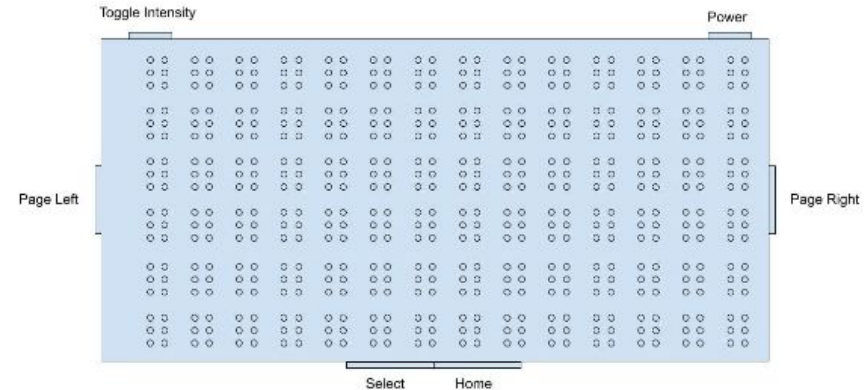
# Blindle

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**CREATING THE NEXT®**

# Introduction

- Blindle is a portable e-reader that uses electrotactile stimulation to display an array of 6x14 braille characters
  - 5 push-buttons
  - Potentiometer
  - Removable storage device
  - Web application

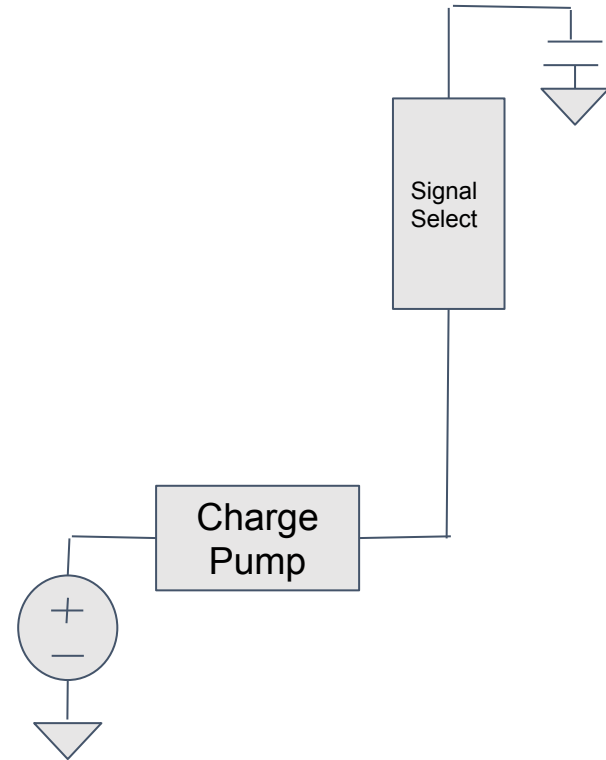


# Proposed Schedule

March 13, 2021	Finish up prototyping small scale signal select
March 13, 2021	Finish testing finger resistance
March 22, 2021	Begin user application for book download/text translation
March 22, 2021	Proof of concept for signal select
March 22, 2021	Order parts
April 1, 2021	Begin implementing electrotactile display with signal select
April 10, 2021	Assemble parts
April 27, 2021	Spring Capstone Expo

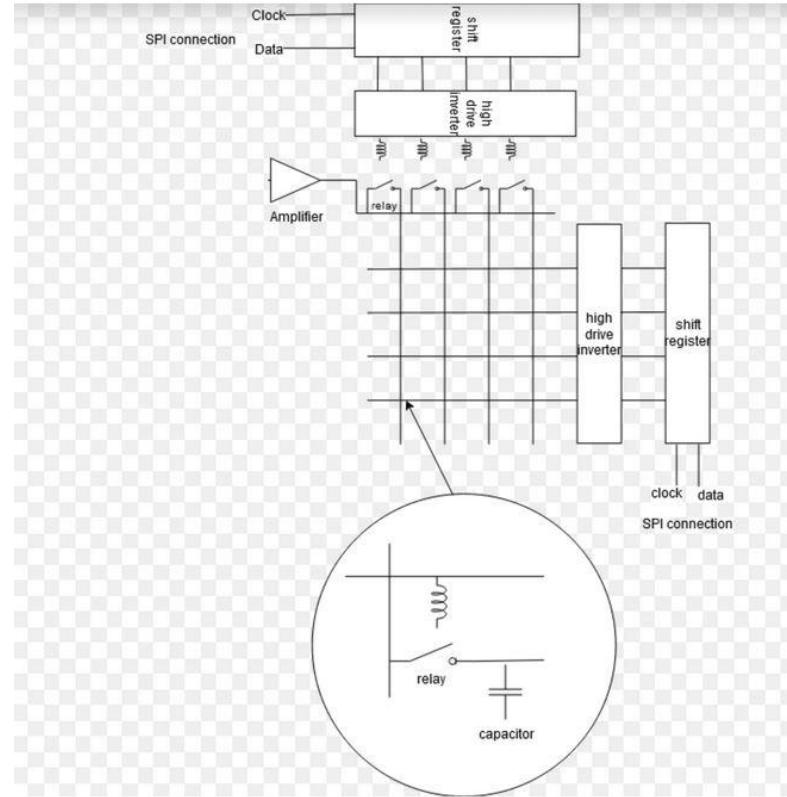
# Sensation

- Sensation achieved by using capacitor for charge storage and discharge into skin
- Charge pump steps 9V supply to high output voltage

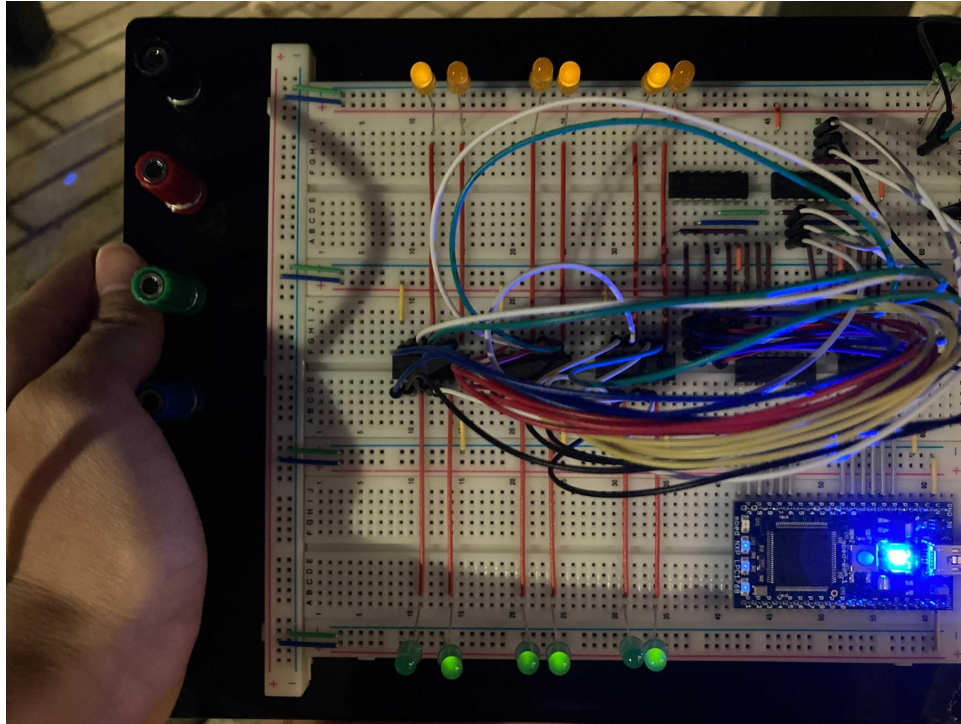


# Signal Select

- Rapid refresh using an Mbed with 12 GPIO pins
- Using rtos system for multithreading
- Shift registers control row and column select:
  - 'Clock' signal sent out to cycle through cell rows / columns
  - Each point represents a single pin in the array
  - Every 3 rows / 2 columns represents a separate braille cell
  - Traverse across the array left to right



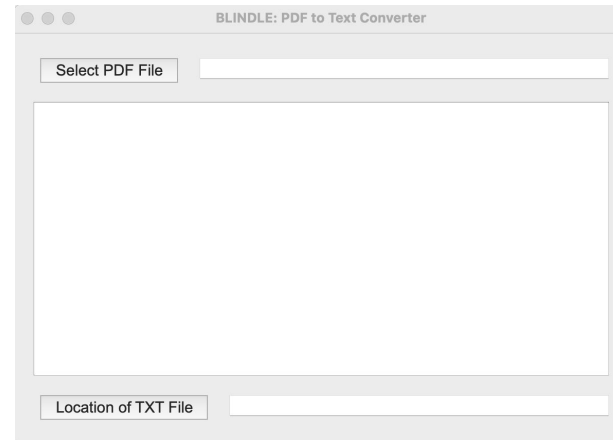
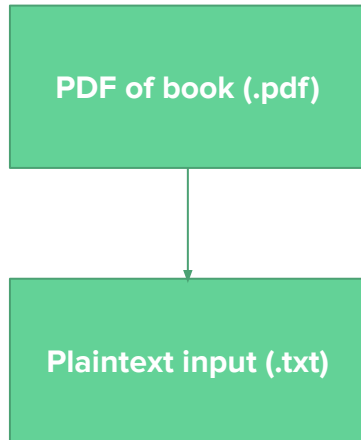
# Small Scale Signal Select



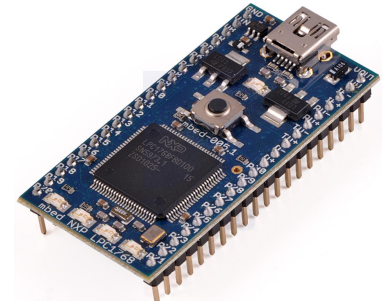
- Uses demuxes
- 12 GPIO ports
- 2 demux, 2 inverters, 3 and gates
- 2 braille cells

# Web Application (GUI)

- Lookup table for Braille translation in MCU uses plaintext format, so .txt conversion is required.



# Microcontroller



- Text → braille → signal translation
  - Use lookup table to translate text character into its braille counterpart as a c++ boolean array.
- Storage and loading of relevant memory components
  - Includes cursor position, book text, braille LUT
- Manages braille array position via demux design



# Parts Needed

- Microcontroller : Mbed
- Pushbuttons
- Potentiometer
- Solid State Relay
- Charge Pump: [MP6002](#)
- IC chips
- Capacitors: [EDK106M100A9HAA](#)

# Questions?