What is [Block]?

A simple, unobtrusive at home notification hub
Motivation

- At home
- Hands occupied
  - Kneading dough
  - Babysitting
  - Quality time with family
- Limit personal phone use
- Important notifications
- Improves quality of your home experience
Features

- Smartphone notification passing
- Bluetooth communications
- Gesture control scrolling
- At a glance display
- Light show
How does it all work?

Android Phone

Arduino Mega

RGB Panel

NeoPixel LEDs

Bluetooth Dongle

Ultrasonic Sensors
State Machines

Detecting right swipes

- left ^ !right /
- !left ^ right / 1
- other /

Notification update logic

- post?
- app in curr?
- index = app
- curr.append(app)
- index = app
- total++
- total--
- index = (index - 1) % total
- curr.delete(app)
Look & Feel
Software Details

● **Android**
  ○ JodaTime
  ○ NotificationListenerService & Bluetooth LE, targets android API 18 +

● **Arduino Libraries**
  ○ Adafruit_NeoPixel.h
  ○ Adafruit_GFX.h
  ○ RGBmatrixPanel.h
  ○ Adafruit_BLE_UART.h

```cpp
#include <Adafruit_NeoPixel.h>
#include <SPI.h>
#include <Adafruit_GFX.h>  // Core graphics library
#include <RGBmatrixPanel.h>  // Hardware-specific library
#include "Adafruit_BLE_UART.h"
```
# Performance Analysis

<table>
<thead>
<tr>
<th></th>
<th>Performance</th>
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<tbody>
<tr>
<td>Notification receive time</td>
<td>~1000ms</td>
</tr>
<tr>
<td>Bluetooth connection speed</td>
<td>~200ms</td>
</tr>
<tr>
<td>Ultrasonic sensor response time per reading</td>
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Challenges

- Gesture Control
  - LeapMotion → Ultrasonic
- Not Enough DIO/PWM Pins
  - Uno x3 → BT, LEDs, Ultrasonic
  - Arduino Uno → Arduino Mega
- Insufficient Power Supply
  - USB → Regulated 5V/10A
  - Impacted sensor readings
Improvements

Usability
- PCB for cleaner housing
- Interactive sensors
  - clear notifications
- Informative actuators
  - display notification details
  - audio feedback (read messages)

Extensions
- Phone calls & Voice commands
- User modes

Aesthetics
- Color customization
- Improved UI e.g. sliding animations
[Block]

Any Questions?
OTHER DRAFTED MATERIALS
post?

app in curr?

index = app

curr.append(app)
index = app
total++

total--
index = (index - 1) % total
curr.delete(app)