

Motion

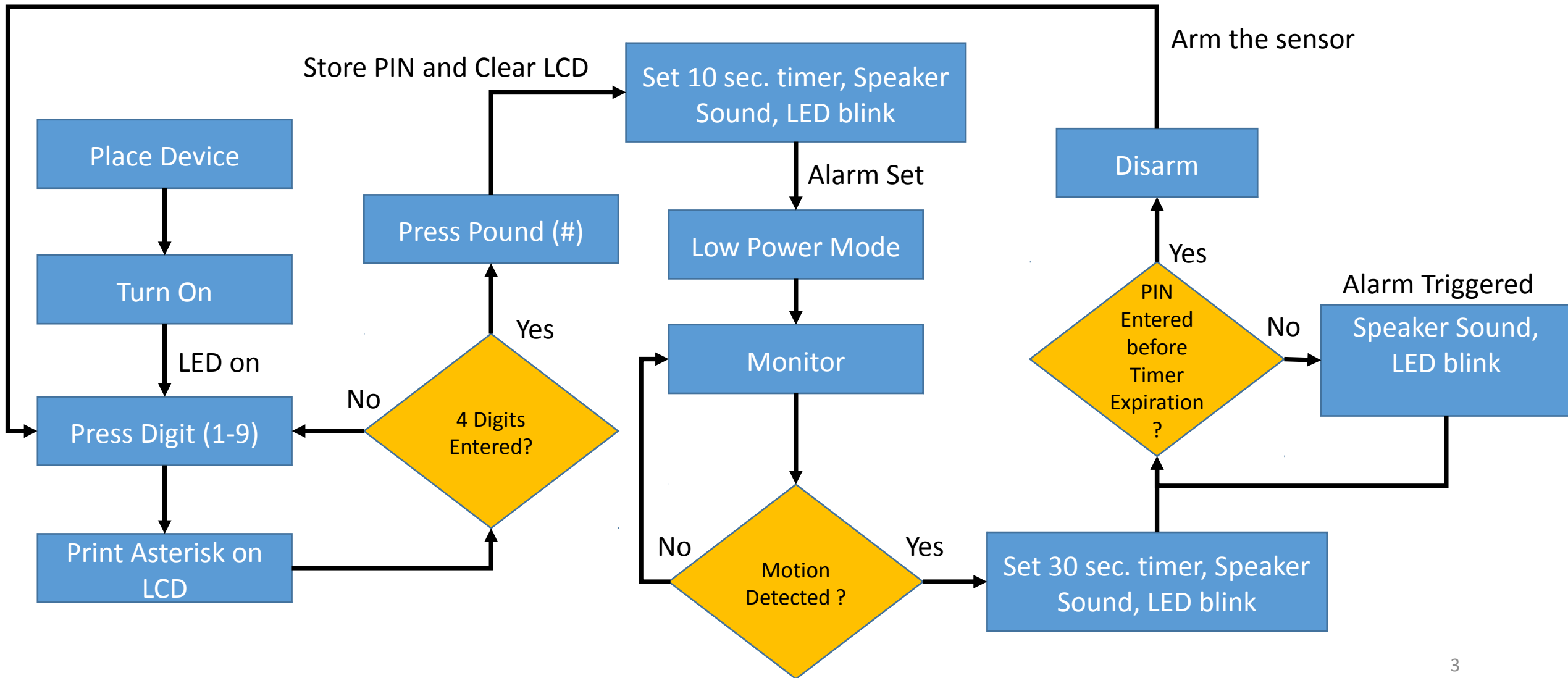
Detector Sensor Alarm (M.D.S.A.)

Abubakr, Cody, Farnoud

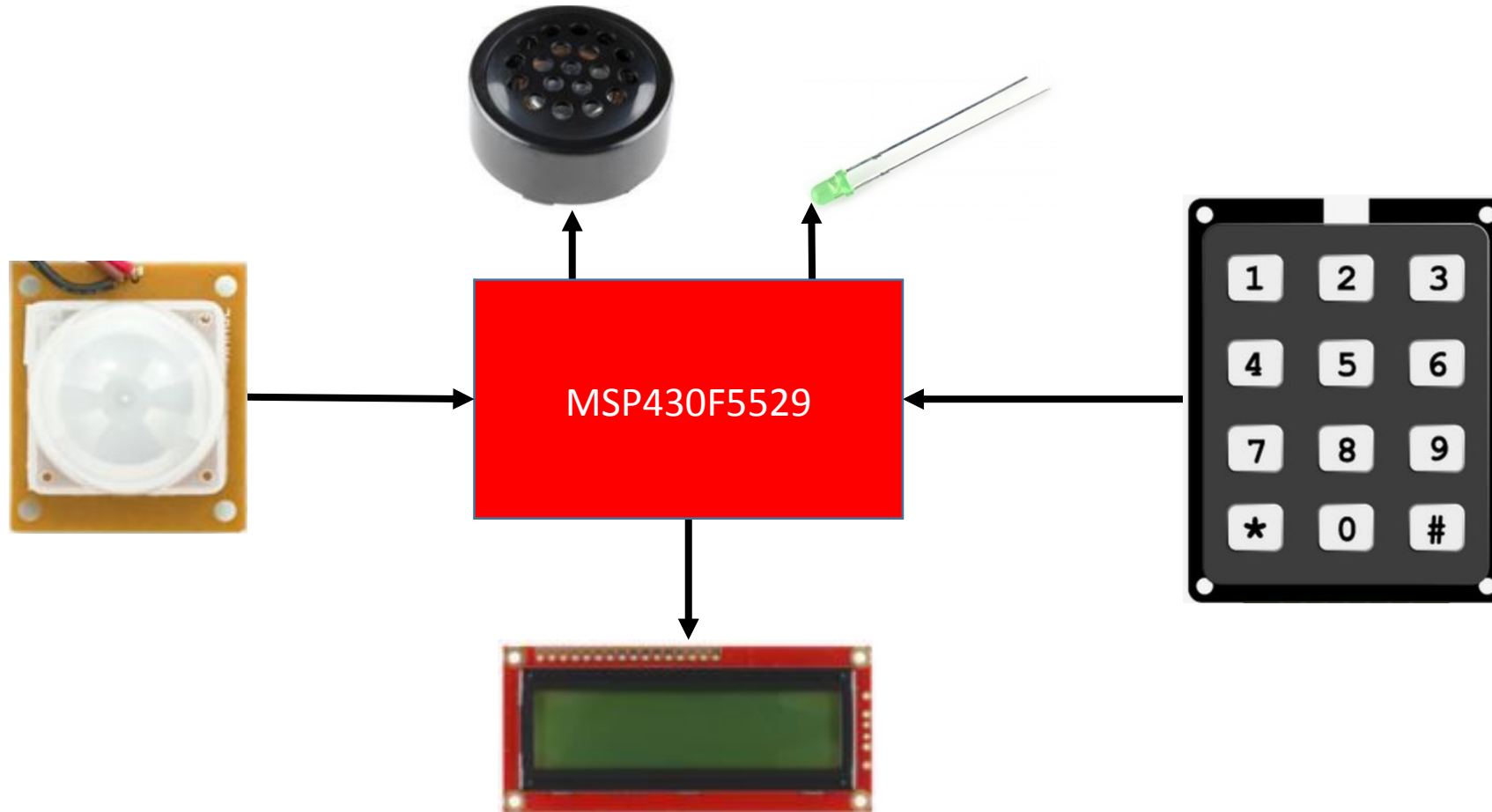
# Outline

- System Overview
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- Hardware Components
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  - Motion Sensor
  - Speaker
- Project Status

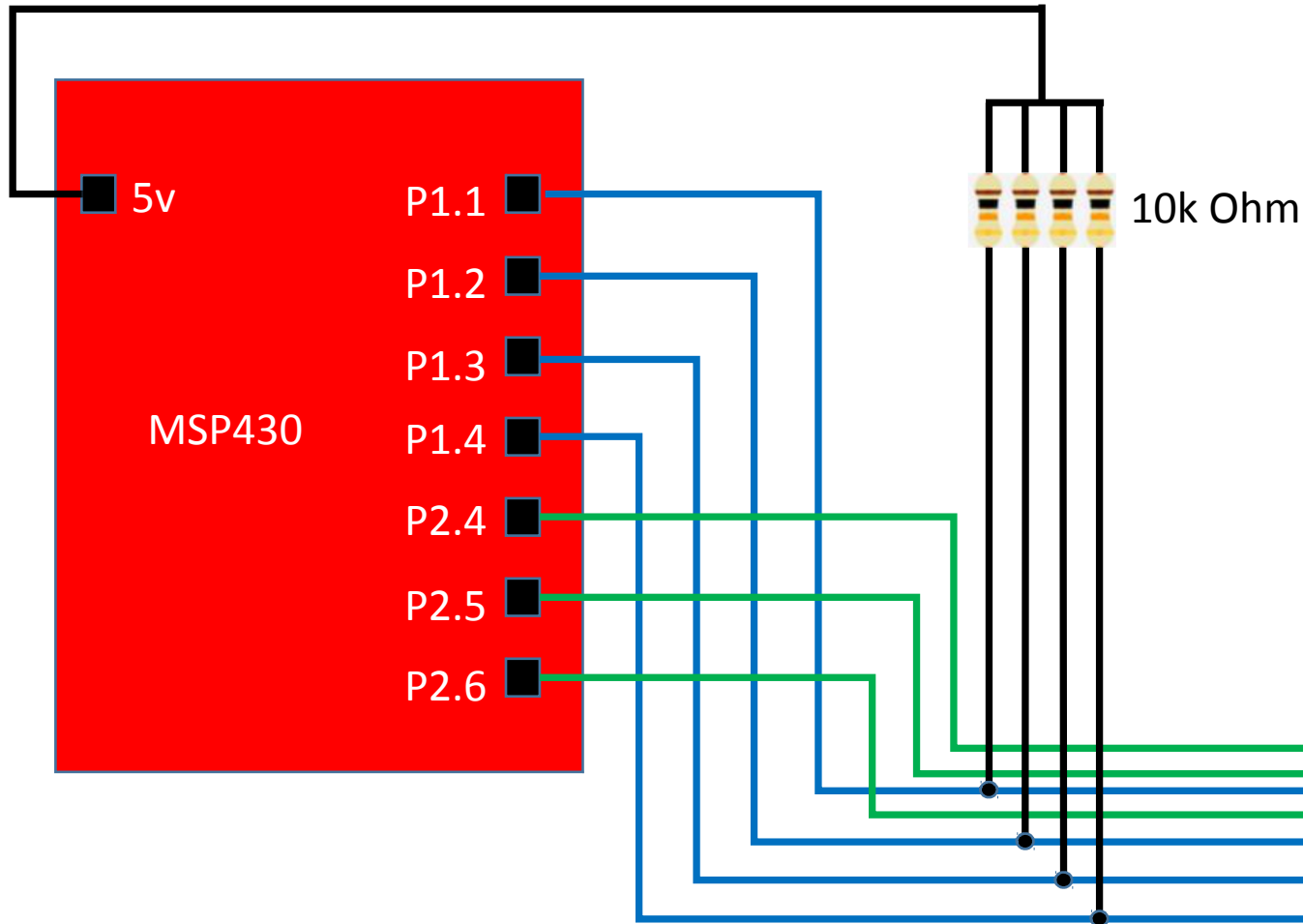
# System Overview



# High Level Architecture



# Component – Keypad



Sparkfun 12 button keypad



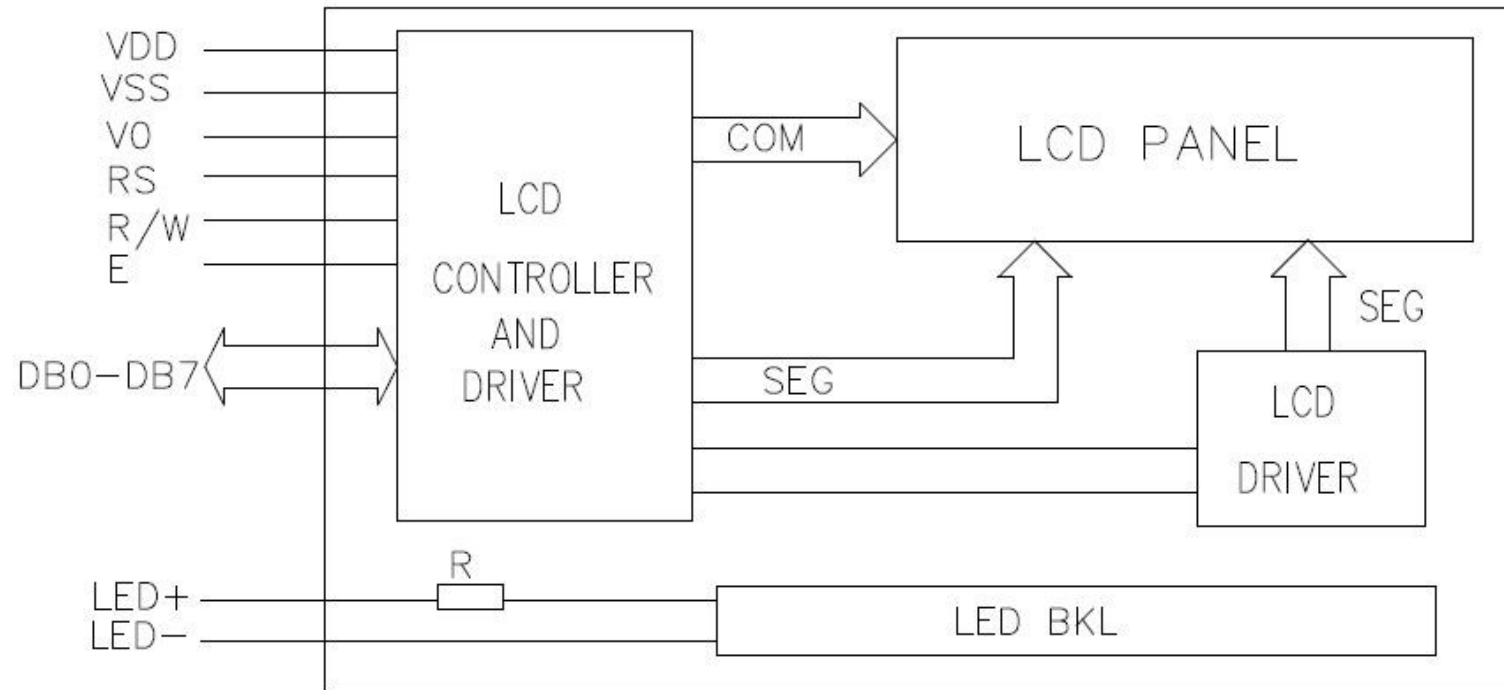
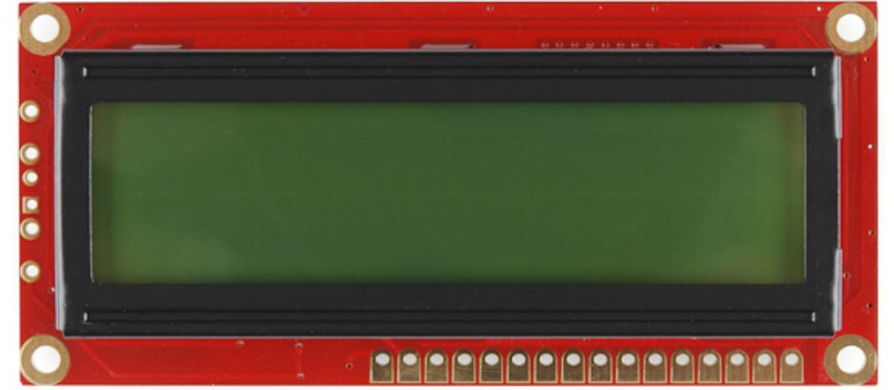
- 1: 2+3
- 2: 1+2
- 3: 2+5
- 4: 3+7
- 5: 1+7
- 6: 5+7
- 7: 3+6
- 8: 1+6
- 9: 5+6
- \*: 3+4
- 0: 1+4
- #: 4+5

- 7 pins for 12 keys
- 4 pins for rows
- 3 pins for columns

# Component – LCD

Features:

1. 3.3V power supply
2. 5x8 dot characters
3. 4-bit or 8-bit MPU interfaces
4. Built in ST7066 controller
5. We need 11 I/O pins to interface to this LCD



# Component – LCD cont'd

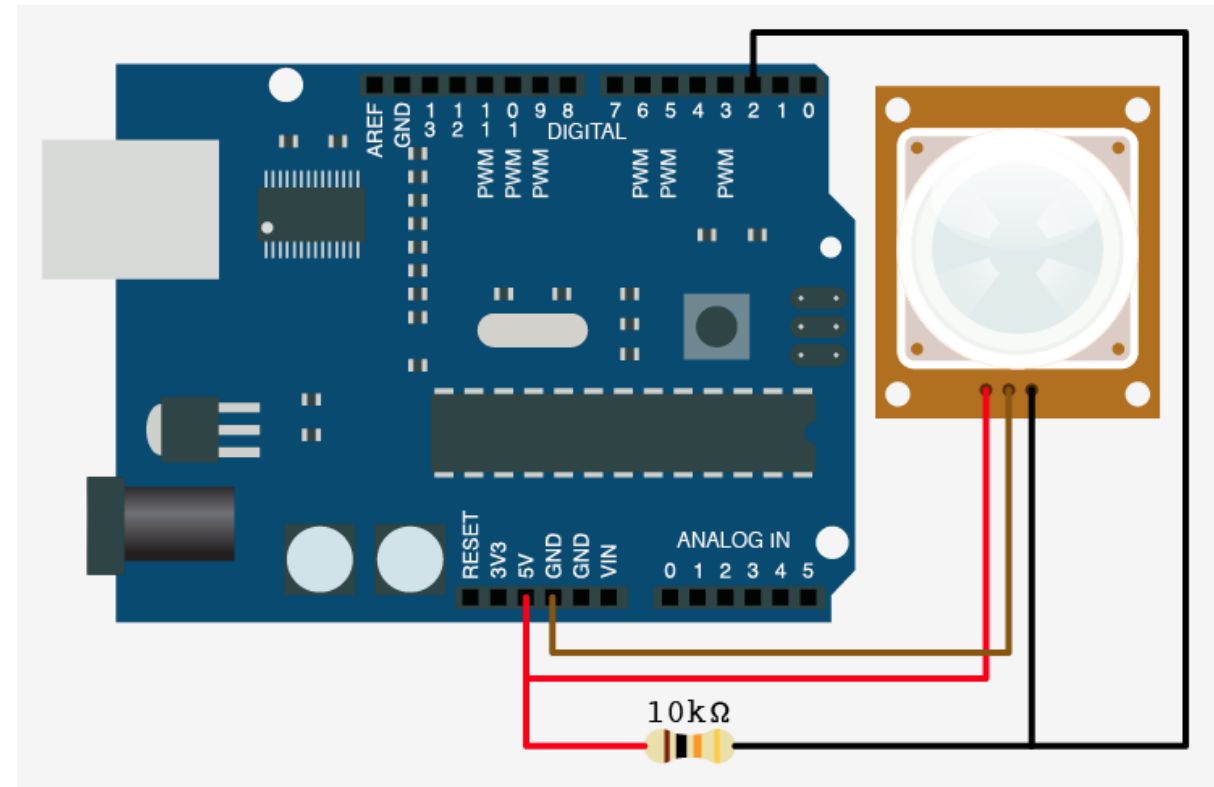
## 6. Interface pin description

Pin no.	Symbol	External connection	Function
1	V <sub>SS</sub>	Power supply	Signal ground for LCM
2	V <sub>DD</sub>		Power supply for logic for LCM
3	V <sub>0</sub>		Contrast adjust
4	RS	MPU	Register select signal
5	R/W	MPU	Read/write select signal
6	E	MPU	Operation (data read/write) enable signal
7~10	DB0~DB3	MPU	Four low order bi-directional three-state data bus lines. Used for data transfer between the MPU and the LCM. These four are not used during 4-bit operation.
11~14	DB4~DB7	MPU	Four high order bi-directional three-state data bus lines. Used for data transfer between the MPU
15	LED+	LED BKL power supply	Power supply for BKL
16	LED-		Power supply for BKL

# Component – Motion Sensor

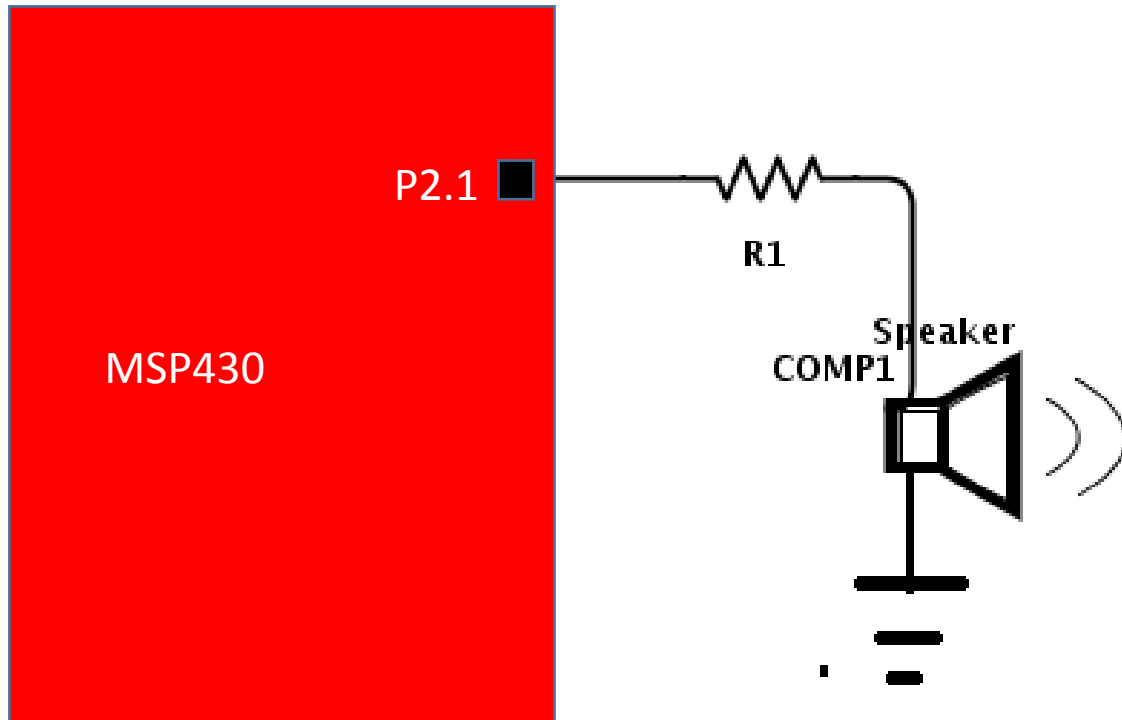
## Features:

1. Work from 5 to 12V but we can install a jumper wire past the 5V regulator on board to make it work at 3.3V.
2. The alarm pin is open collector so, we need a pull up resistor on alarm pin
3. It takes 1-2 seconds for the sensor to get a snapshot of the still room.
4. If any thing moves after snapshot period the alarm pin will go low.





# Component – Speaker



- Alarm sound can be generated using Pulse Width Modulation (PWM)
- R1 = 1k ohms

# Project Status

Component	Status	Assignee
Keypad -12 button	Acquired	Cody
16x2 Character LCD	Acquired	Team
PIR Motion Sensor	Acquired	Farnoud
Speaker	Acquired	Abubakr
LED	Acquired	Team

## Status

- All component have been ordered and acquired
- HW wiring beginning this week

## Alternatives

- Reduce HW components used

BACKUP