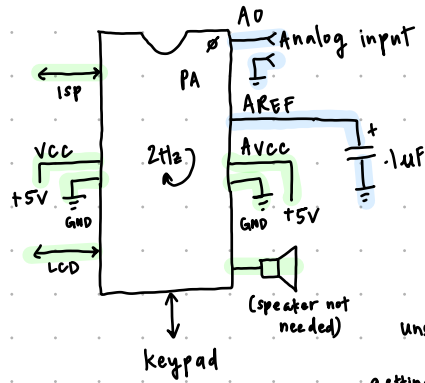


Project 4

schematic



1 AA battery
1.5
→ ~400
10 bit 0-1023
(0-5.0V)
0 → 1023

LCD	
instantaneous value	min
3.8 V	
MAX	avg.

$$V_A = \frac{\text{sample}}{2^{10}} \times 5.0$$

Unsigned short min, max, ...;

getting average

$$\frac{s_1 + s_2 + s_3 + \dots + s_i}{i}$$

$$\frac{s_1}{s_1} \quad (s_1 + s_2)$$

$$\frac{s_1 + s_2 + s_3}{3}$$

→ uses lots of memory

$$\frac{\frac{A}{s_1}}{\frac{s_1 + s_2}{2}} = \frac{A}{s_1 + s_2 + s_3}$$

make bigger than 2 bytes ← unsigned long
 sum
 cnt

functions

Registers

unsigned short get-sample(void) {
 // configure AVC analog reference
 // configure ADC mux

ADCSRA → {
 // enable it (ADCSRA ADEN: ADC Enable)
 // start conversion (ADCSRA ADSC: ADC start conversion)
 // wait for conversion to complete
 // return ADC;
 }

ADMUX - 8 bit register

1 bit 6 } Configure analog range
 0 bit 7 }

least significant 5 bits } config. mux; ADC0 (A0) → 00000

data sheet → start @ pg. 214

```
main() {
  while(1) {
    get-sample();
    // change lcd
  }
}
```