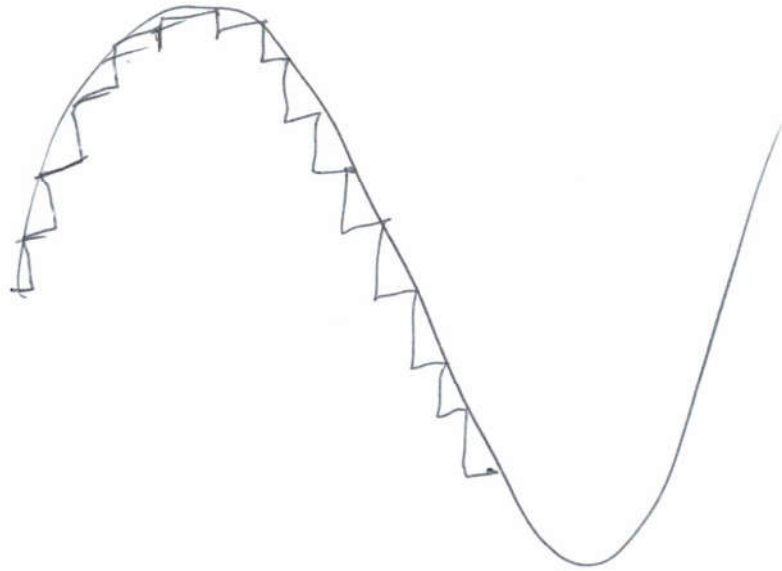


Serial Communication II.

① ADC: Analog-to-Digital Converter

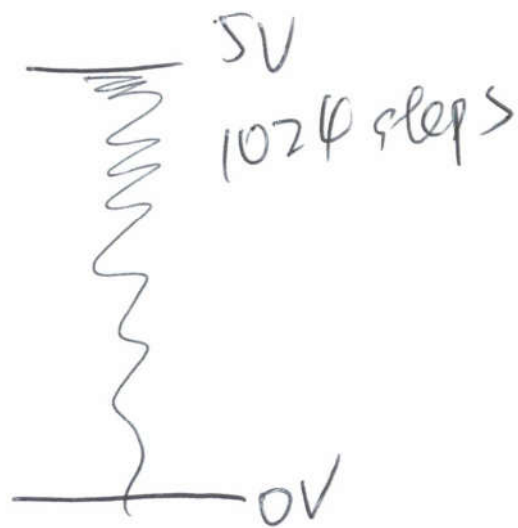


1000 8
10000 16
2¹⁰ 1024
Hex: F 15
A 10

② Arduino has an internal 10-bit ADC

$$\frac{2^{10} = 1024}{0 \sim 1023}$$

□□□□ IR 4-bit 15
*



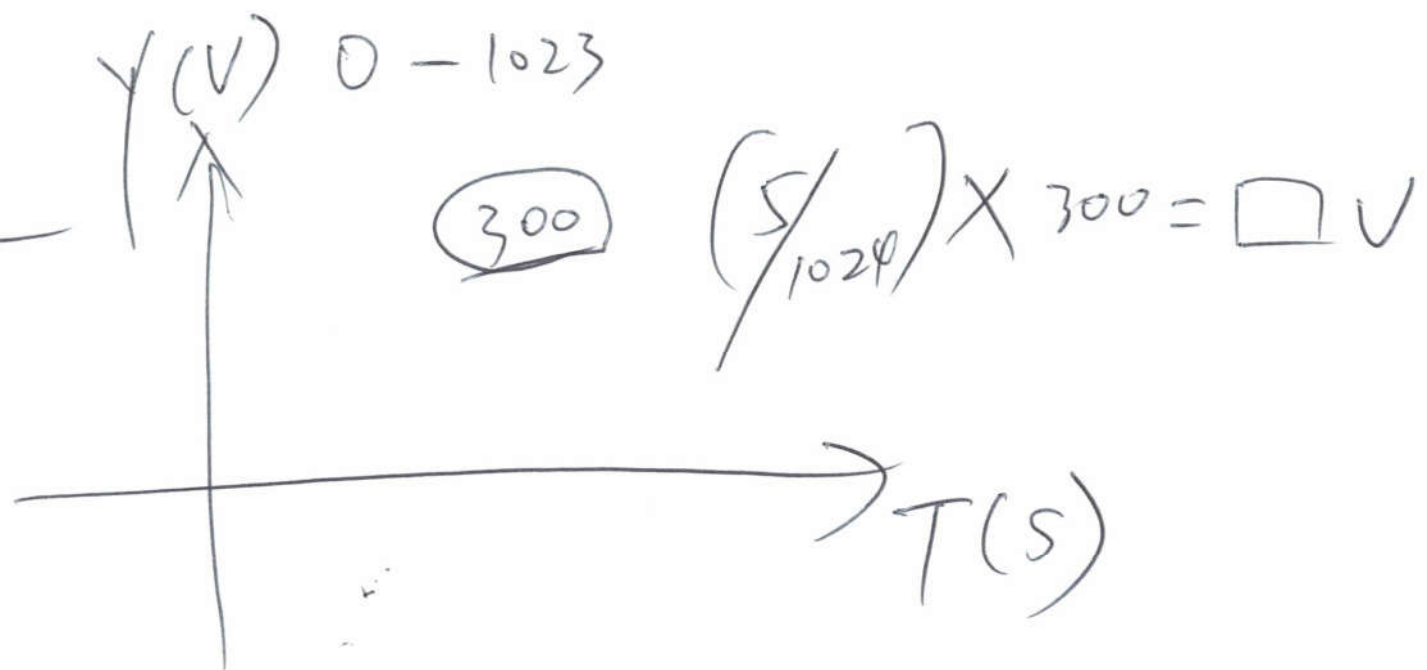
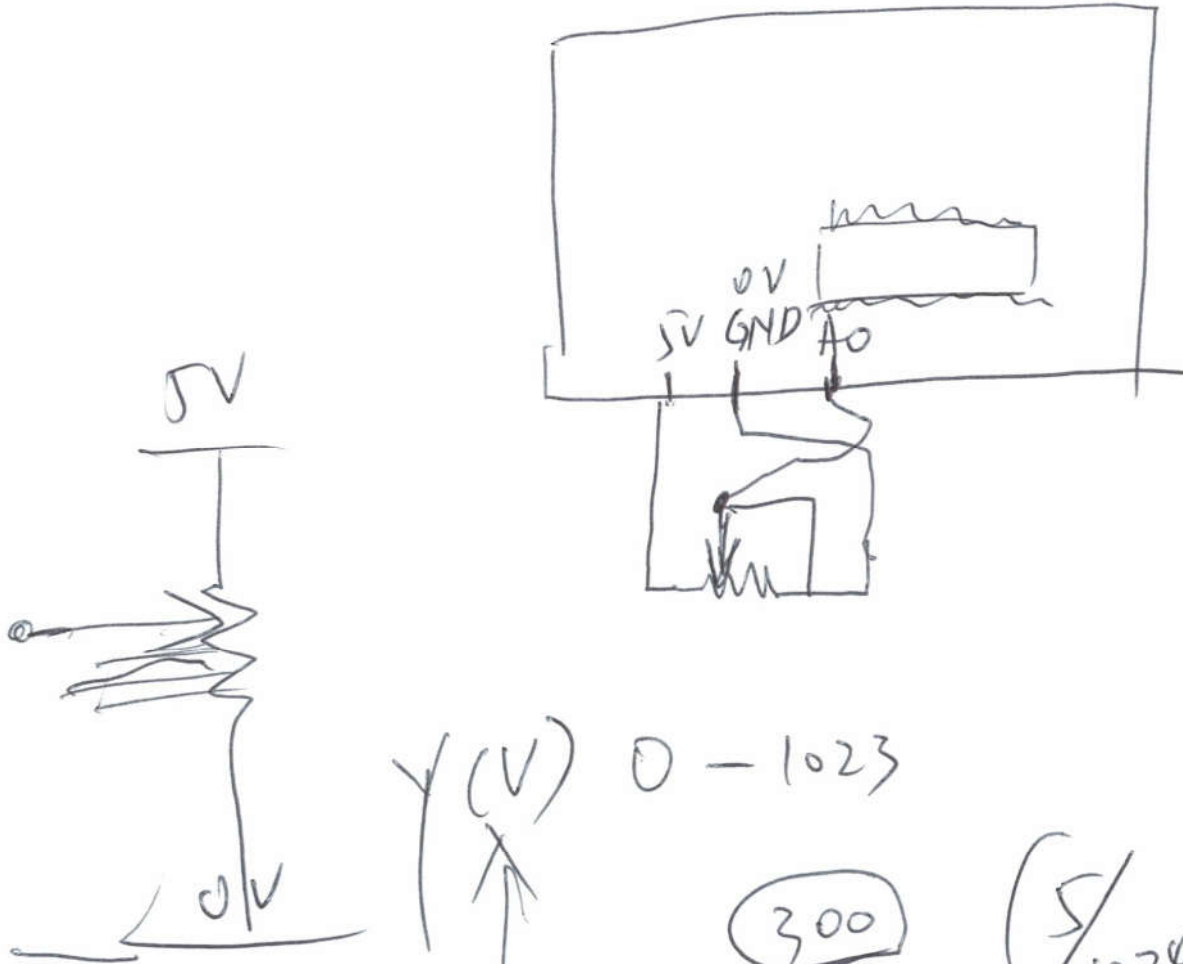
$5/1024 \approx 5\text{mV} \rightarrow$ sensitivity
of the ADC
(resolution)

$$\frac{2^{12}}{=} 1024 \times 2 \times 2$$

$$\underline{Q} = \underline{4096}$$

$$5/4096 \approx 1\text{mV}$$

②



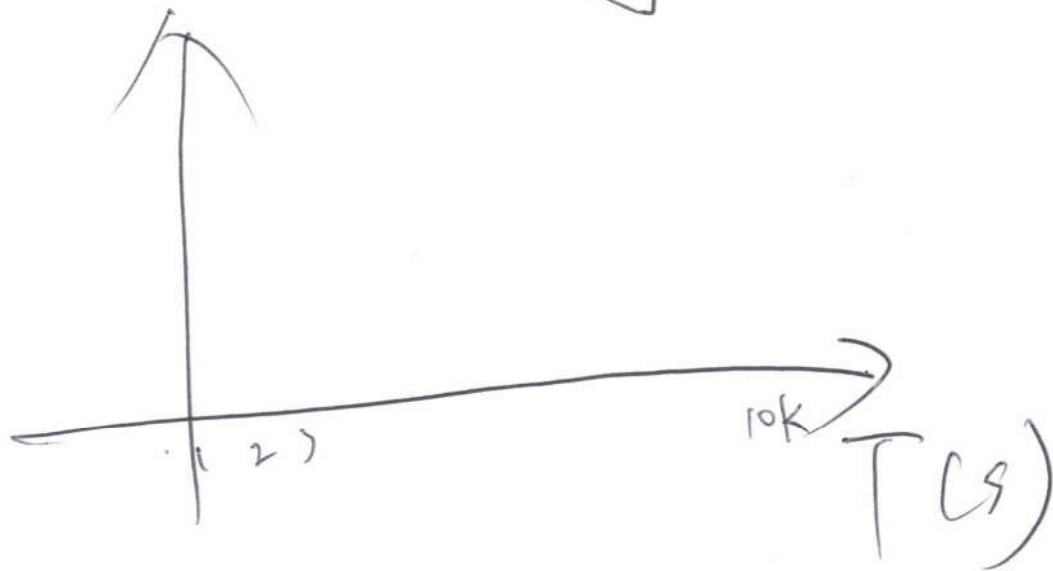
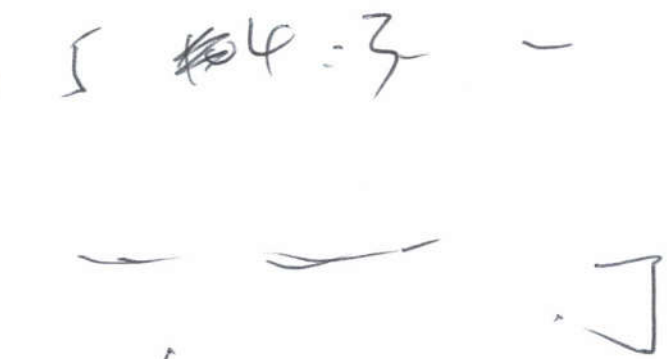
3

Sampling Rate: 9600 bits/s
 every data point is: 8 bits

How many ~~data~~ data points per second:

$$(9600/8) / s$$

$$(8/9600) s / \text{Sample}$$



(4)

~~X = linspace(1, 10000, 1);~~ linspace(1, 1000, 1000);

XX = X * (8/9600);

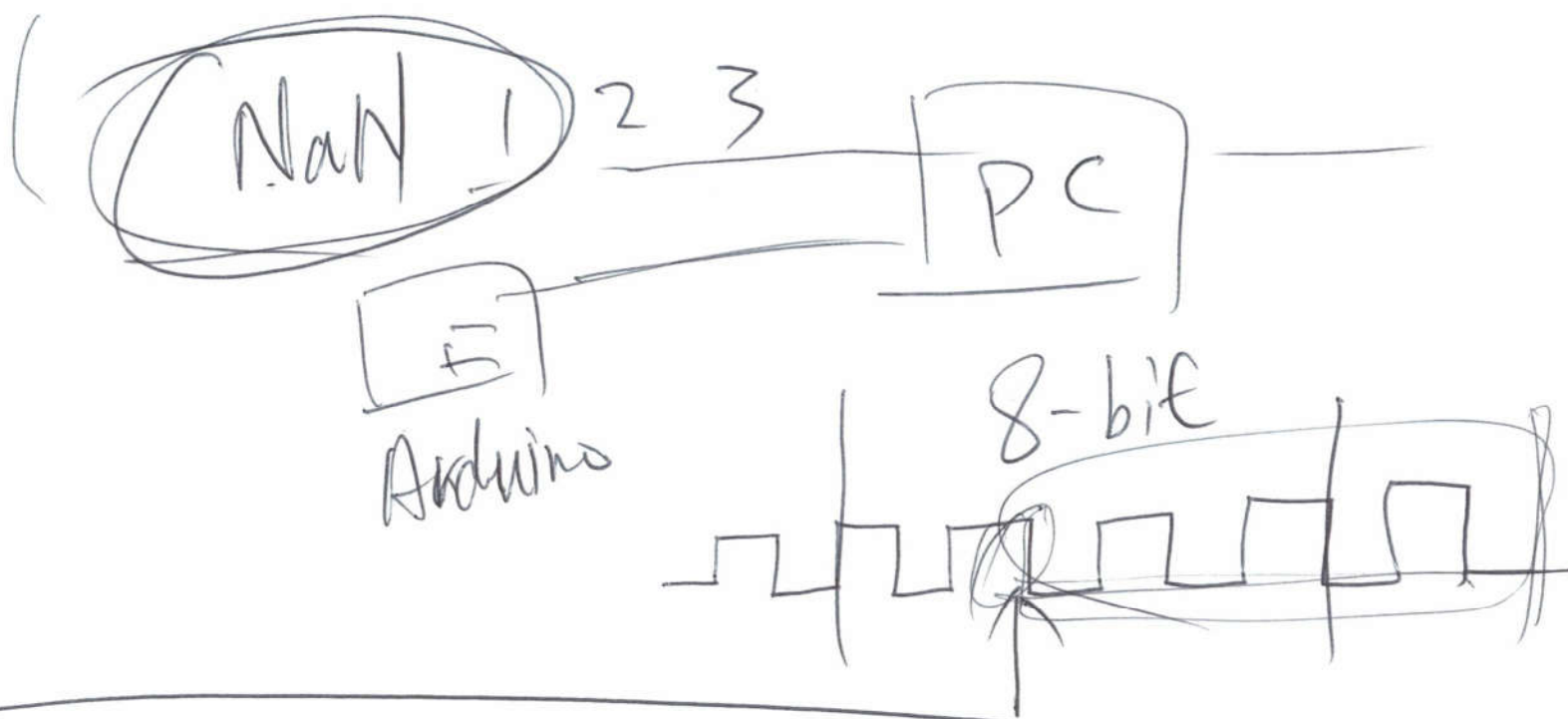
↓
time

clear all
close all

{ delete(instrfind('Port', 'COM[]'));
S = serial('COM[]', 'Baudrate', 9600, 'DataBits', 8);

for loop {
fopen(S);
voltage = fscanf(S);
y = str2double(voltage);





```
for i = 1:20  
    voltage = fscanf(s);  
    y(i) = str2double(voltage);  
end
```

△ Matlab stop watch.

tic

Your script

toc

