```
close all;clear all;clc
% Set up communications
arduino=serialport("COM4",9600,"Timeout",15)
```

```
arduino =
  Serialport with properties:

                Port: "COM4"
            BaudRate: 9600
    NumBytesAvailable: 0

  Show all properties, functions
```

```
pause(.5)

x = 0:100;
y = zeros(1,100);
y1 = zeros(1,100);
V_pc = zeros(1,100);
I = zeros(1,100);
R = zeros(1,100);
for K=0:99
flush(arduino)
write(arduino,2,'string')
pause(0.5)
a=read(arduino,4,'string');
b=read(arduino,6,'string');

flush(arduino)
y(K+1)=str2double(a);
y1(K+1)=str2double(b);

V_pc(K+1)=5-y1(K+1);
I(K+1)=y1(K+1)/5000*1000;
R(K+1)=V_pc(K+1)/I(K+1);
disp([y(K+1),y1(K+1)])
end
```

```
    0.0100    3.4500

    0.0200    3.4800

    0.0300    3.4100

    0.0400    3.4200

    0.0500    3.4300

    0.0600    3.4800

    0.0700    3.5600

    0.0800    3.5100

    0.0900    3.5100

    0.1000    3.5200
```

0.1100 3.5400

0.1200 3.5400

0.1300 3.7100

0.1400 3.6500

0.1500 3.6300

0.1600 3.6200

0.1700 3.6100

0.1800 3.6000

0.1900 3.7500

0.2000 3.7700

0.2100 3.7100

0.2200 3.6900

0.2300 3.6700

0.2400 3.6400

0.2500 3.7000

0.2600 3.7700

0.2700 3.7700

0.2800 3.7700

0.2900 3.6700

0.3000 3.6800

0.3100 3.7900

0.3200 3.9200

0.3300 3.8500

0.3400 3.7800

0.3500 3.7500

0.3600 3.7300

0.3700 3.8200

0.3800 3.9600

0.3900 3.9900

0.4000 3.9000

0.4100 3.8600

0.4200 3.8300

0.4300 3.8200

0.4400 3.9100

0.4500 3.9300

0.4600 3.9400

0.4700 3.8500

0.4800 3.8200

0.4900 3.8400

0.5000 4.0100

0.5100 4.0300

0.5200 4.0200

0.5300 3.8300

0.5400 3.8700

0.5500 3.8300

0.5600 4.0200

0.5700 4.0400

0.5800 4.0900

0.5900 4.0000

0.6000 3.9800

0.6100 3.9700

0.6200 4.0800

0.6300 4.1200

0.6400 4.1300

0.6500 4.1200

0.6600 4.0200

0.6700 3.9800

0.6800 4.1000

0.6900 4.1400

0.7000 4.1500

0.7100 4.1500

0.7200 4.0700

0.7300 3.9600

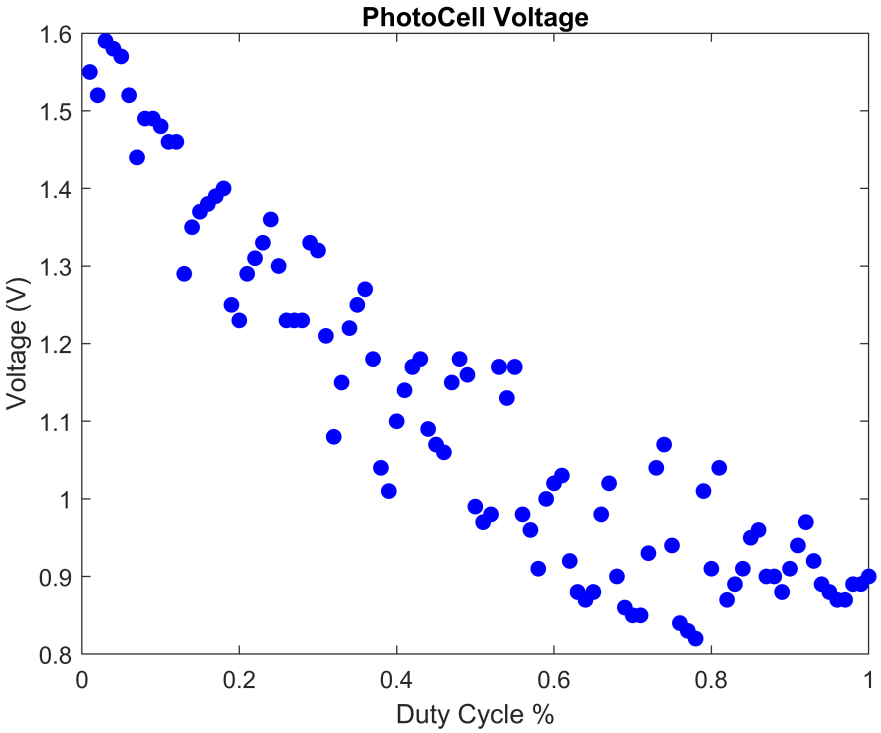
0.7400 3.9300

```
    0.7500    4.0600

    0.7600    4.1600

    0.7700    4.1700

    0.7800    4.1800

    0.7900    3.9900

    0.8000    4.0900

    0.8100    3.9600

    0.8200    4.1300

    0.8300    4.1100

    0.8400    4.0900

    0.8500    4.0500

    0.8600    4.0400

    0.8700    4.1000

    0.8800    4.1000

    0.8900    4.1200

    0.9000    4.0900

    0.9100    4.0600

    0.9200    4.0300

    0.9300    4.0800

    0.9400    4.1100

    0.9500    4.1200

    0.9600    4.1300

    0.9700    4.1300

    0.9800    4.1100

    0.9900    4.1100

    1.0000    4.1000
```

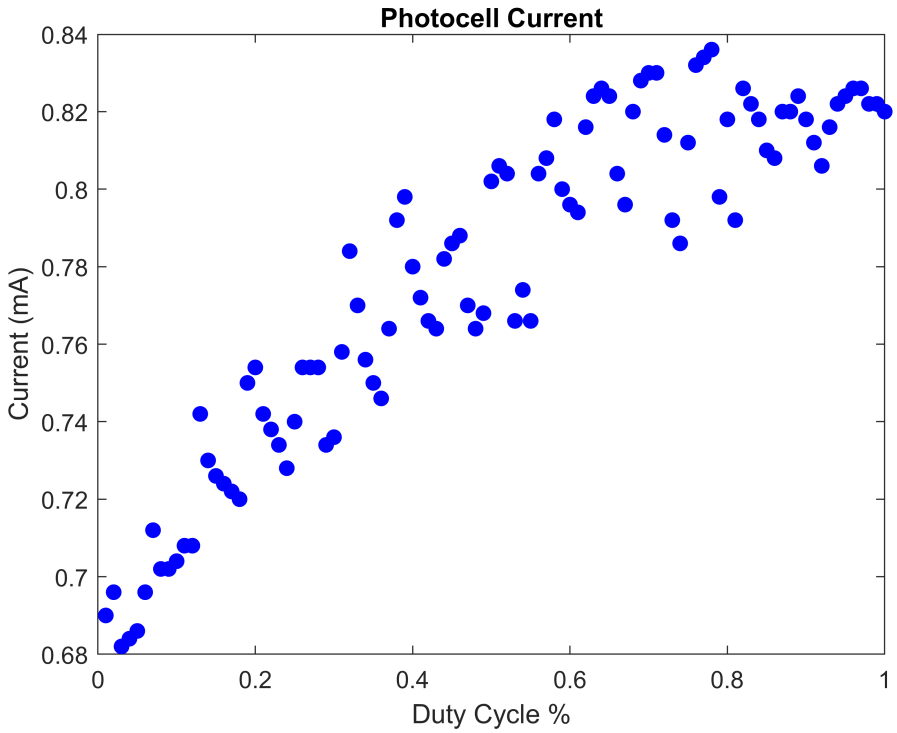
```
delete(arduino);
clear arduino;
```

```
%plot(y,y1,'bo','MarkerFaceColor','blue')
%xlabel('Duty Cycle (%)')
%ylabel('Output Voltage (V)')
```

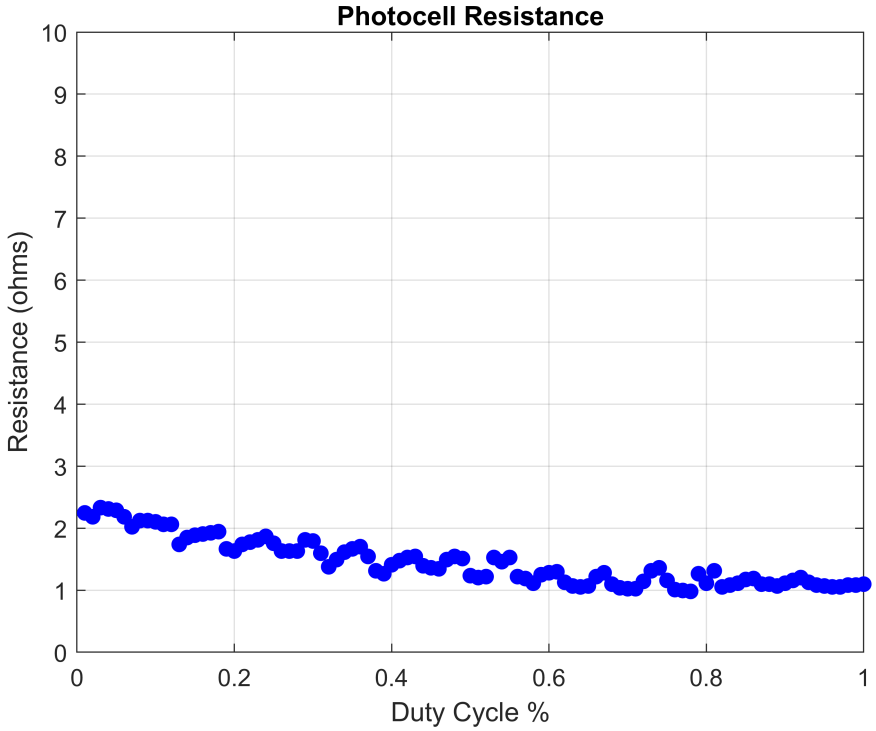
```
figure
plot(y(1:(K+1)),V_pc(1:(K+1)),'bo',"MarkerFaceColor",'b')
title( 'PhotoCell Voltage')
xlabel( 'Duty Cycle %')
ylabel( 'Voltage (V)')
```




```
figure
plot(y(1:(K+1)),I(1:(K+1)),'bo',"MarkerFaceColor",'b')
title('Photocell Current')
xlabel('Duty Cycle %')
ylabel('Current (mA)')
```




```
figure
plot(y(1:(K+1)),R(1:(K+1)),'bo',"MarkerFaceColor",'b')

title( 'Photocell Resistance')
xlabel( 'Duty Cycle %')
ylabel( 'Resistance (ohms)')
ylim([0 10])
grid on
```


Photocell Resistance
Resistance (ohms)
Duty Cycle %
0
1
2
3
4
5
6
7
8
9
10
0
0.2
0.4
0.6
0.8
1