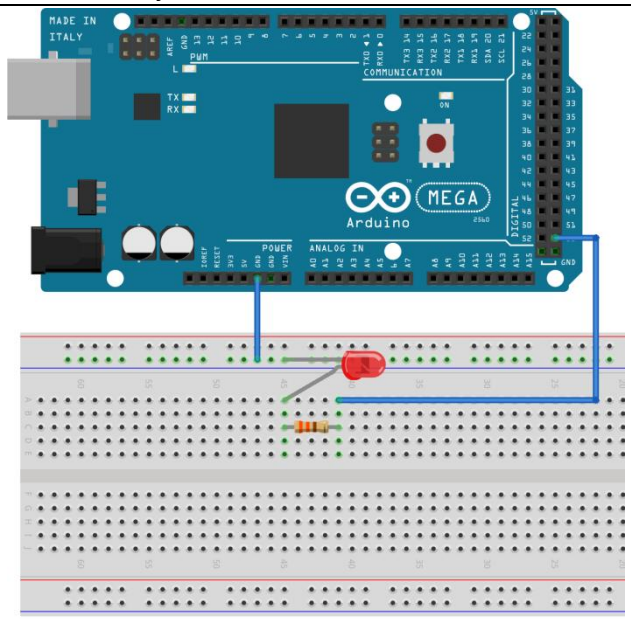
Uygulama	LED YAKIP SÖNDÜRME
Malzemeler	1 x 330 Ω direnç, 1 x LED
Devre şeması	

Kod

```
// LED yakıp söndürme
void setup() {
  pinMode(53,OUTPUT);
}

void loop() {
  digitalWrite(53,HIGH);
  delay(1000);
  digitalWrite(53,LOW);
  delay(1000);
}
```

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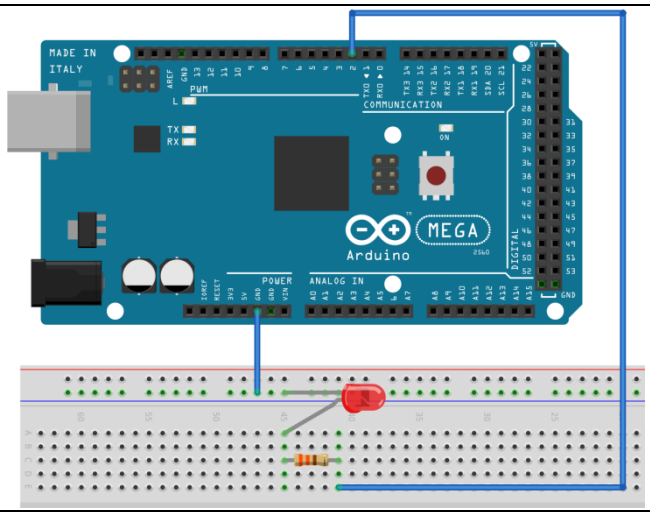
Uygulama	PWM İLE LED'İN IŞIK ŞİDDETİNİ DEĞİŞTİRME
Malzemeler	1 x 330 Ω direnç, 1 x LED
Devre şeması	
Kod	

```
// PWM ile LED'in ışık şiddetini değiştirme
void setup() {
  pinMode(2,OUTPUT);
}

void loop() {
  for(int i=0;i<256;i++)
     { analogWrite(2,i); delay(50); }
}
```

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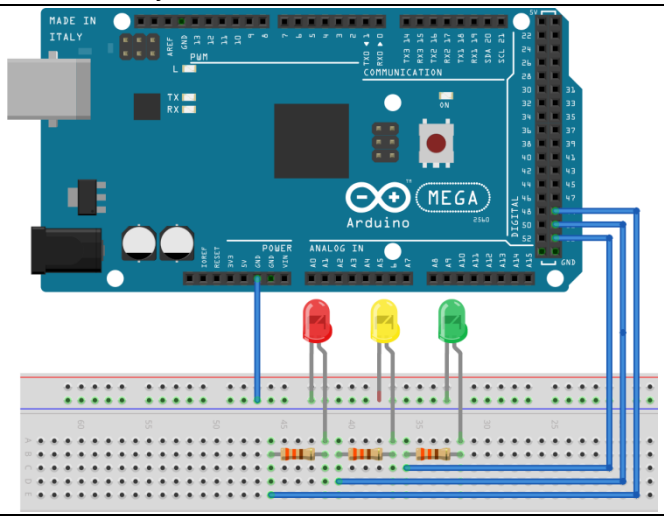
Uygulama	TRAFİK LAMBALARI
Malzemeler	3 x 330 Ω direnç, 3 x LED
Devre şeması	

Kod	`// Trafik ışıkları`
	`void setup() {`
	`  pinMode(49,OUTPUT); pinMode(51,OUTPUT); pinMode(53,OUTPUT);`
	`}`
	
	`void loop() {`
	`  digitalWrite(49,HIGH); delay(10000);`
	`  digitalWrite(49,LOW); digitalWrite(51,HIGH); delay(2000);`
	`  digitalWrite(51,LOW); digitalWrite(53,HIGH); delay(2000);`
	`  digitalWrite(53,LOW); digitalWrite(51,HIGH); delay(2000);`
	`  digitalWrite(51,LOW);`
	`}`

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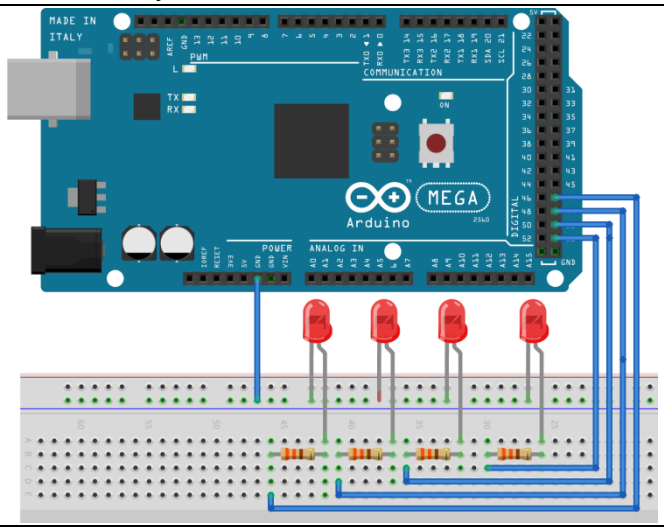
Uygulama	YÜRÜYEN IŞIKLAR
Malzemeler	4 x 330 Ω direnç, 4 x LED
Devre şeması	

Kod	`// Yürüyen ışıklar`
	`byte pin[]={47,49,51,53};`
	`int i,t=1000;`
	`void setup() {`
	`  for(i=0;i<4;i++)`
	`  pinMode(pin[i],OUTPUT);`
	`}`
	
	`void loop() {`
	`  for(i=0;i<4;i++)`
	`  { digitalWrite(pin[i],HIGH); delay(t); digitalWrite(pin[i],LOW); }`
	`  for(i=2;i>0;i--)`
	`  { digitalWrite(pin[i],HIGH); delay(t); digitalWrite(pin[i],LOW); }`
	`}`

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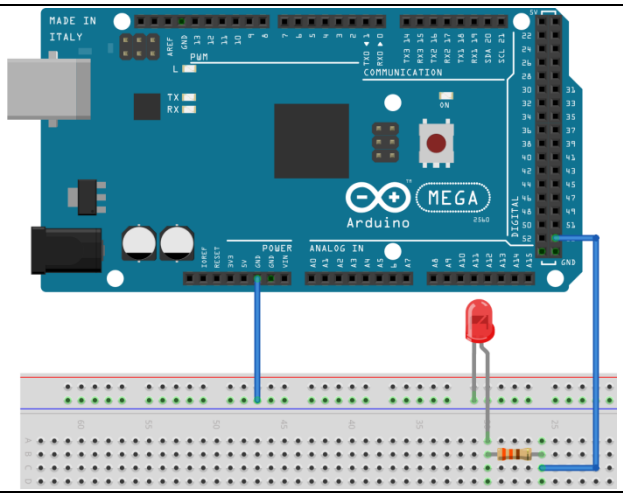
Uygulama	MATLAB ORTAMINDAN LED YAKIP SÖNDÜRME
Malzemeler	1 x 330 Ω direnç 1 x LED
Devre şeması	

Kod

```
// MATLAB - Arduino LED yak-söndür
void setup() {
  pinMode(53,OUTPUT);
  Serial.begin(9600);
}

void loop() {
  if (Serial.available())
    {
      char x=Serial.read();
      if (x=='A') digitalWrite(53,HIGH);
      if (x=='K') digitalWrite(53,LOW); }
}
```

```
function ornek1_OpeningFcn(hObject, eventdata, handles,
varargin)

clear all
global a
a=serial('COM3','BaudRate',9600);
fopen(a);

function pushbutton1_Callback(hObject, eventdata, handles)

global a
fprintf(a,'A');
set(handles.uipanel1,'BackgroundColor',[1 0 0]);

function pushbutton2_Callback(hObject, eventdata, handles)

global a
fprintf(a,'K');
set(handles.uipanel1,'BackgroundColor',[0.941 0.941 0.941]);

function pushbutton3_Callback(hObject, eventdata, handles)

global a
fclose(a); delete(a); clear a;
close;
```

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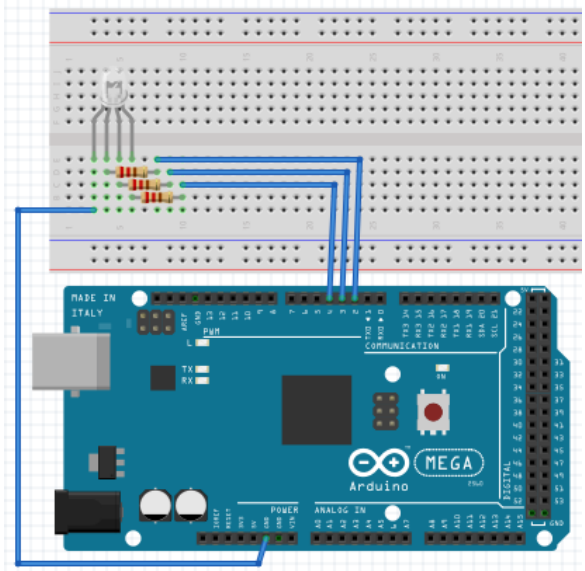
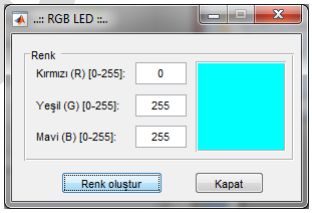
Uygulama	RGB LED
Malzemeler	3 x 220 Ω direnç 1 x RGB LED
Devre şeması	

Kod

```
// MATLAB-Arduino RGB LED
String ks,ys,ms;
int k,y,m;
void setup() {
  pinMode(2,OUTPUT);
  pinMode(3,OUTPUT);
  pinMode(4,OUTPUT);
  Serial.begin(9600);
}

void loop() {
  if (Serial.available()>0)
    { ks=Serial.readStringUntil(','); k=ks.toInt(); analogWrite(2,k);
      ys=Serial.readStringUntil(','); y=ys.toInt(); analogWrite(3,y);
      ms=Serial.readStringUntil(','); m=ms.toInt(); analogWrite(4,m);
    }
}
```




```
function ornek2_OpeningFcn(hObject, eventdata, handles,
varargin)

global port
port=serial('COM3','BaudRate',9600);
fopen(port);

function pushbutton1_Callback(hObject, eventdata, handles)

global port
r=str2num(get(handles.edit1,'String'));
g=str2num(get(handles.edit2,'String'));
b=str2num(get(handles.edit3,'String'));
set(handles.uipanel2,'BackgroundColor',[r/255 g/255 b/255]);
veri=strcat(num2str(r),',',num2str(g),',',num2str(b),',');
fprintf(port,veri);

function pushbutton2_Callback(hObject, eventdata, handles)

global port
fclose(port); delete(port); clear port;
close;
```

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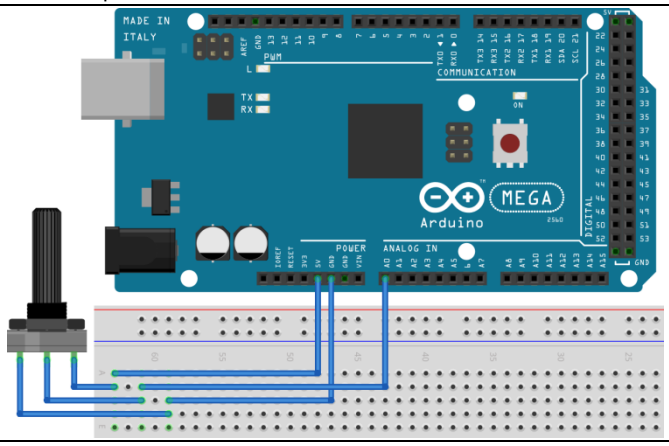
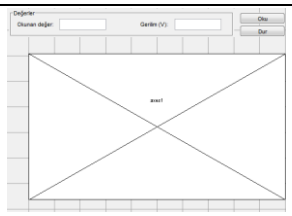
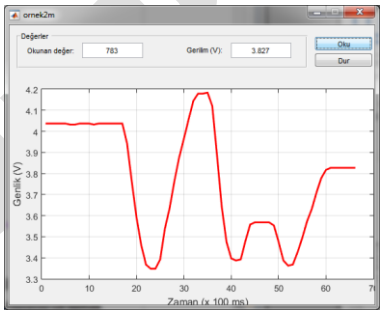
Uygulama	MATLAB ORTAMINDAN GERÇEK ZAMANLI GERİLİM OKUMA
Malzemeler	1 x 10 kΩ pot
Devre şeması	

Kod

```
// MATLAB - Arduino 10k potansiyometreden gerilim okuma
int x=0;
void setup() {
  Serial.begin(9600);
}

void loop() {
        char y=Serial.read();
        if (y=='B')
           { x=analogRead(A0); Serial.println(x); delay(100); }
}
```






```
function ornek2_OpeningFcn(hObject, eventdata, handles,
varargin)

clear all
global port
global islem
islem=1;
port=serial('COM3','BaudRate',9600);
fopen(port);

function pushbutton1_Callback(hObject, eventdata, handles)

global port
global islem
cla(handles.axes1);
t=1;v=0;
while (islem==1)
    fprintf(port,'B');
    a=fscanf(port,'%d');
    set(handles.edit1,'String',num2str(a));
    v(t)=5*a/1023;
    set(handles.edit2,'String',num2str(v(t)));
    drawnow();
    plot(v,'r','LineWidth',2);
    grid on; xlabel('Zaman (x 100 ms)');
    ylabel('Genlik (V)');
    t=t+1; pause(0.1);
end

function pushbutton2_Callback(hObject, eventdata, handles)

global port
global islem
islem=0;
fclose(port); delete(port); clear port;
close;
```

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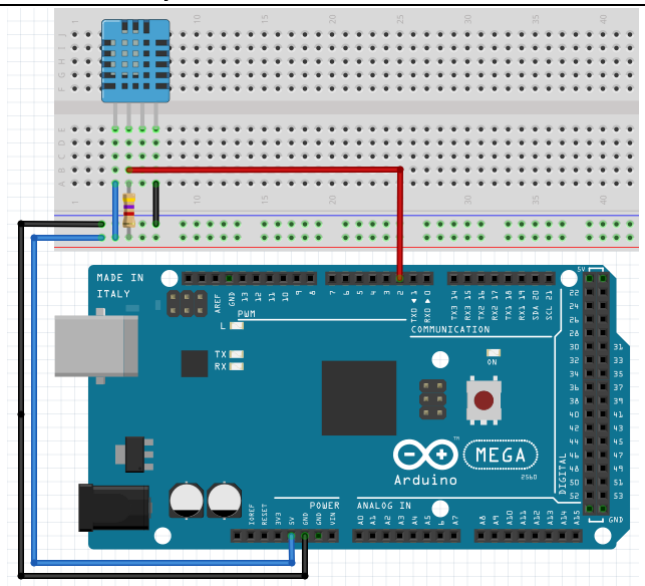
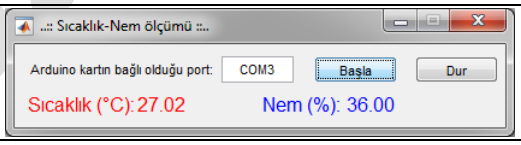
Uygulama	GERÇEK ZAMANLI SICAKLIK-NEM ÖLÇÜMÜ
Malzemeler	1 x DHT11 sıcaklık-nem sensörü 1 x 4.7 kΩ direnç
Devre şeması	

Kod

```
// MATLAB - Arduino sıcaklık ve nem ölçme
#include <DHT11.h>
DHT11 sensor(2);
void setup() {
       Serial.begin(9600);
}
void loop()
{
  float nem,isi;
  int veri=sensor.read(nem,isi);
  Serial.print(nem,2);
  Serial.print(",");
  Serial.print(isi,2);
  Serial.println();
  delay(2000);
}
```




```
function pushbutton1_Callback(hObject, eventdata, handles)

global port;
global basla;
port=serial(get(handles.edit1,'String'),'BaudRate',9600);
fopen(port);
basla=1;
while (basla==1)
    a=fscanf(port,'%s'); b=strsplit(a,',');
    set(handles.text4,'String',b(2)); set(handles.text5,'String',b(1));
    pause(2);
end

function pushbutton2_Callback(hObject, eventdata, handles)

global port;
global basla
basla=0;
fclose(port); delete(port); clear port; close;
```

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