



مەڭگۈتەك ئىككىنچى

سەنپ

ئىككىنچى دەرس

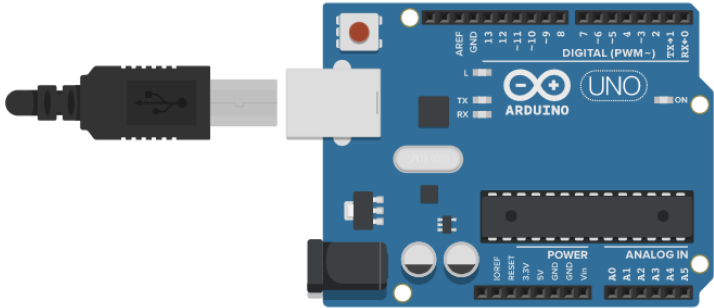
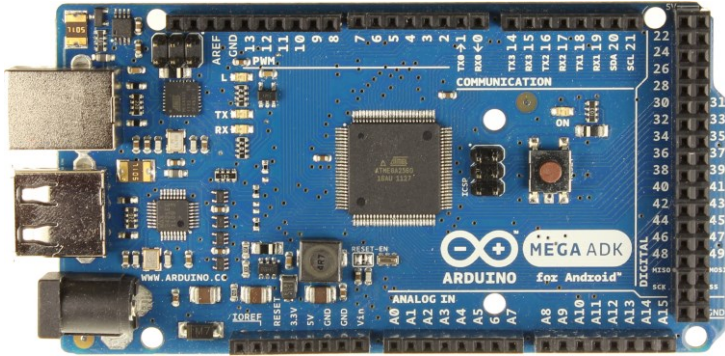
دوكتور مەمەتجان ياسىن

20-01-2024



# دەرس پىلانى (Course Plan)

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TinkerCad ●

ئاردۇينو (Arduino) ●

C++ كود ●

Scratch ●

3D Modelling ●

AI / Robotics ●

Bloket ●

# Tinkercad نى تونۇشتۇرۇش

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- Tinkercad بولسا Arduino نى ئاساس قىلغان سىستېمىلارنى تەقلىد قىلالايدىغان ئېسىل قورال .

<https://www.tinkercad.com/joinclass/TAL58TR2C>

<http://www.mengutech.com/tinkercad/>

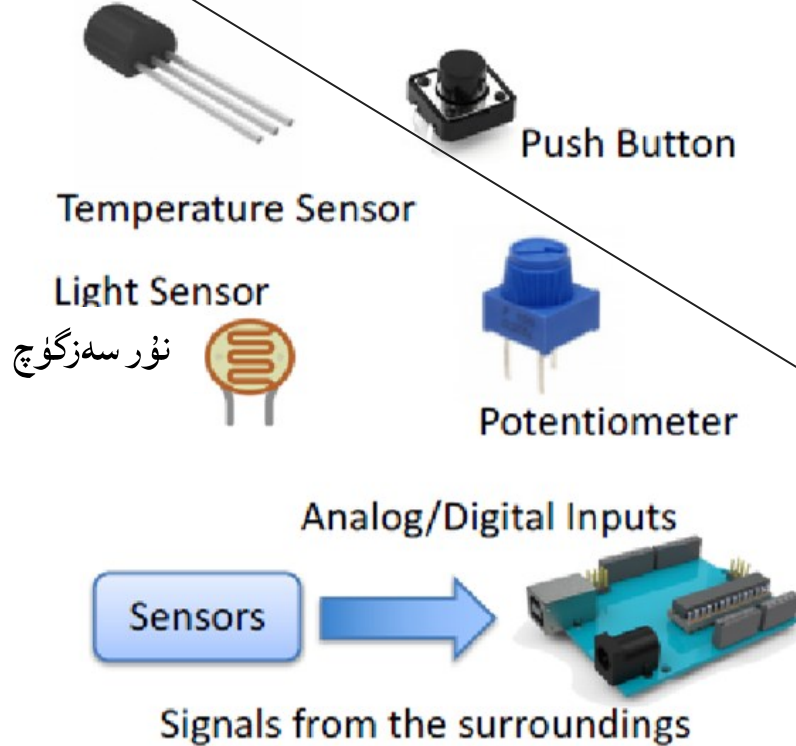
- Arduino نى نەدىن سېتىۋاليمىز؟
- مەڭگۈتەك تور بىتدە “ ” Buy Arduino Kit نى ئىزدەڭ

# دەرس ماتېرىيالى ۋە ئۇلانمىلار

- تىنكەركاد سىنىپى (<https://www.tinkercad.com/joinclass/TAL58TR2C>)
- مەڭگۈتەك تور بىتى (<http://www.mengutech.com/>)
- [www.mengutech.com/mengutech\\_second](http://www.mengutech.com/mengutech_second)
- YouTube قانىلى (<https://www.youtube.com/channel/UCBbQ81-Lfs2xxYLR4eo5zaw>)
- ئېنگىلىزچە تور بىتى  
<https://wiki.nus.edu.sg/display/Arduino/Arduino>  
<https://docs.arduino.cc/learn/electronics/lcd-displays>

# سەزگۈچ (System Input: Sensors)

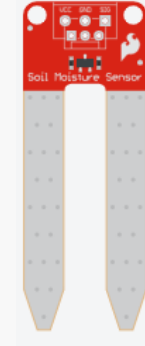
(Analog) ئانالوگ



Slideswitch  
ئۆز-چات

نەملىك سەزگۈچ  
Moisture Sensor

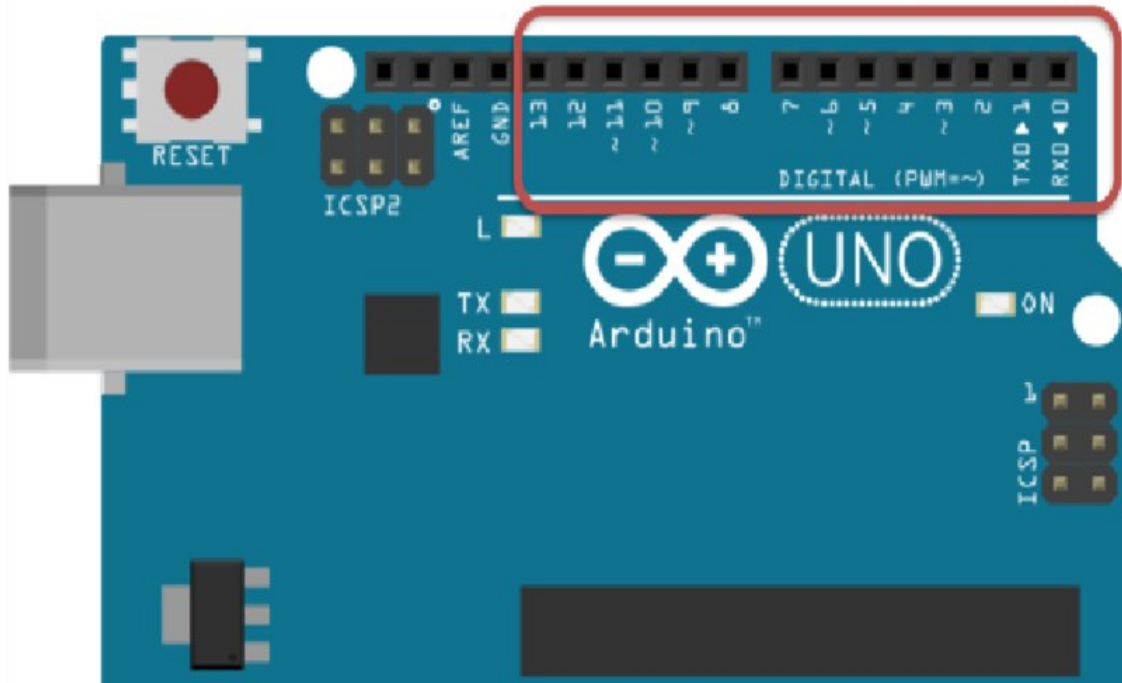
ھەركەت سەزگۈچ  
PIR Sensor



Arduino تاختىلىرى كىرگۈزگۈچلەرنى ئوقۇيالايدۇ. ئۇ ماتورنى قوزغىتىدۇ

# رہقەملىك كىرىش (Digital Input)

رہقەملىك كىرىش ۋە چىقىش Digital Inputs and Digital Output



You can choose from the code if they are to be inputs or outputs

Those marked with ~ can also be used as "Analog Outputs", so-called PWM outputs

# Tinkercad نى تونۇشتۇرۇش

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مەڭگۈتەك تور بىتى (ئۇيغۇرچە)

<http://www.mengutech.com/tinkercad/>

ئېنگىلىزچە تور بىتى

<https://wiki.nus.edu.sg/display/Arduino/Tinkercad>

- Tinkercad بولسا ئاردۇينونى ئاساس قىلغان سىستېمىلارنى تەقلىد قىلالايدىغان ئېسىل قورال .
- تەييارلىغان كودنى (Arduino IDE) ئاردۇينو ئىجادىيەت مۇھىتى غا چۈشۈرۈپ / چاپلاپ ، ھەقىقىي ئاردۇينو تاختىسىدا سىنىيالايمىز .
- Tinkercad نى ئىشلىتىش قەدەملىرى

Circuit design Fabulous Juttuli | T x

tinkercad.com/things/4YbIhuq8wBs-fabulous-juttuli/editel

5 a b

1 File Name

Test

2 Search Component

3

4

5

6 To Write code and/or Block Code

7 All changes saved

Code Start Simulation Export Share

a b c d e f

a: To Rotate  
b: To Delete  
c: Undo  
d: Redo  
e: Annotation  
f: Show/Hide Annotation

\* Click to Pick Component  
\* Click again to place component

Resistor LED Pushbutton Potentiometer

The image is a screenshot of the Tinkercad web application interface. At the top, the browser address bar shows the URL 'tinkercad.com/things/4YbIhuq8wBs-fabulous-juttuli/editel'. The interface includes a top navigation bar with icons for file management (labeled 'a', 'b'), a search bar (labeled '2'), and buttons for 'Code', 'Start Simulation', 'Export', and 'Share'. A central toolbar contains icons for rotation (labeled 'a'), deletion (labeled 'b'), undo (labeled 'c'), redo (labeled 'd'), annotation (labeled 'e'), and show/hide annotation (labeled 'f'). A components panel on the right lists various electronic components: Resistor, LED, Pushbutton, and Potentiometer. A red arrow points from the text '\* Click to Pick Component' to the Resistor component. Numbered annotations (1-7) highlight specific features: 1. File Name input field; 2. Search Component bar; 3. Component selection area; 4. Annotation tools; 5. User profile icon; 6. Code/Block Code button; 7. All changes saved status.



Circuit design Fabulous Juttuli | T x

tinkercad.com/things/4YbIhuq8wBs-fabulous-juttuli/editel

Test 1 هۆججەت ئىسمى

تەقلىدنى باشلىتىش 6 كودنى ئېچىش / يېيىش 7

5 a b

Code Start Simulation Export Share

Components Basic

Search

4 a b c d e f

a: چۈگۈلتىش  
b: ئۇچۇرۇش  
c: ئارقىغا قايتىش  
d: ئالدىغا بېرىش  
e: ئىزاھات  
f: ئىزاھاتنى ئېچىش / يېيىش

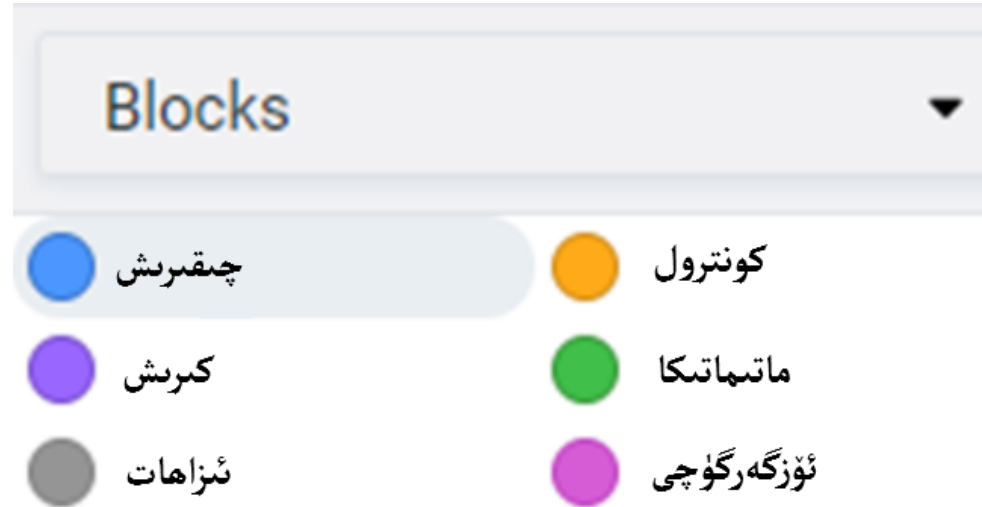
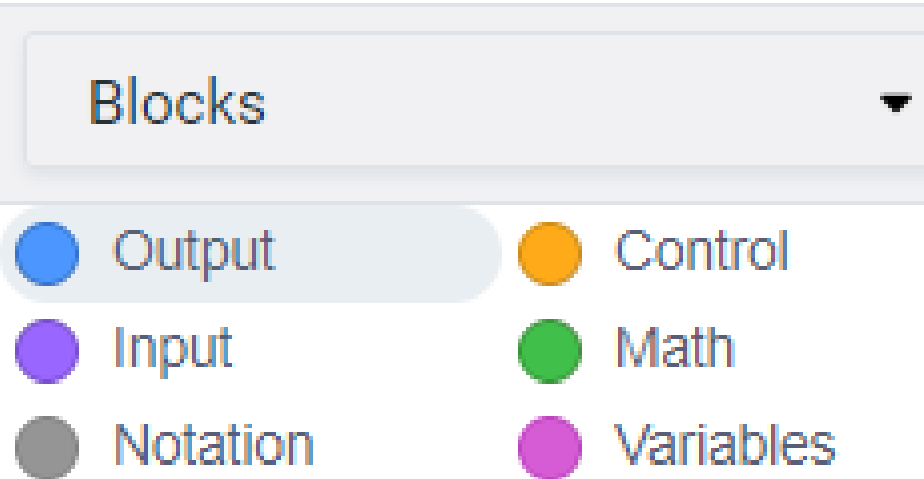
2 ئۈسكۈنە ئىزدەش

3

\* ئۈسكۈنەنى تاللاش ئۈچۈن بېسىڭ  
\* ئۈسكۈنەنى قويۇش ئۈچۈن بېسىڭ

Resistor LED Pushbutton Potentiometer

# بلوكلار مسالى



<http://www.mengutech.com/programming-basics/>

ٲڪڪنڊجي دهه رس مسالي

## نورمال زىننەت چىراقى

## Tinkercad زىننەت چىراقى

ئانودنى كاتودنىڭ ئورنىغا قوشماڭ، بولمىسا زىننەت چىراقى ئىشلىمەيدۇ: مۇھىم

2 مىسال

ئاردۇينو تاختىسى (مىڭە)

قارشىلىق توك ئېقىمىنى  
ئاستىلىتىدۇ

ئۇزۇن، ئانود (+)

قىسقىسى، كاتود (-)

قارشىلىق

زىننەت چىراقى

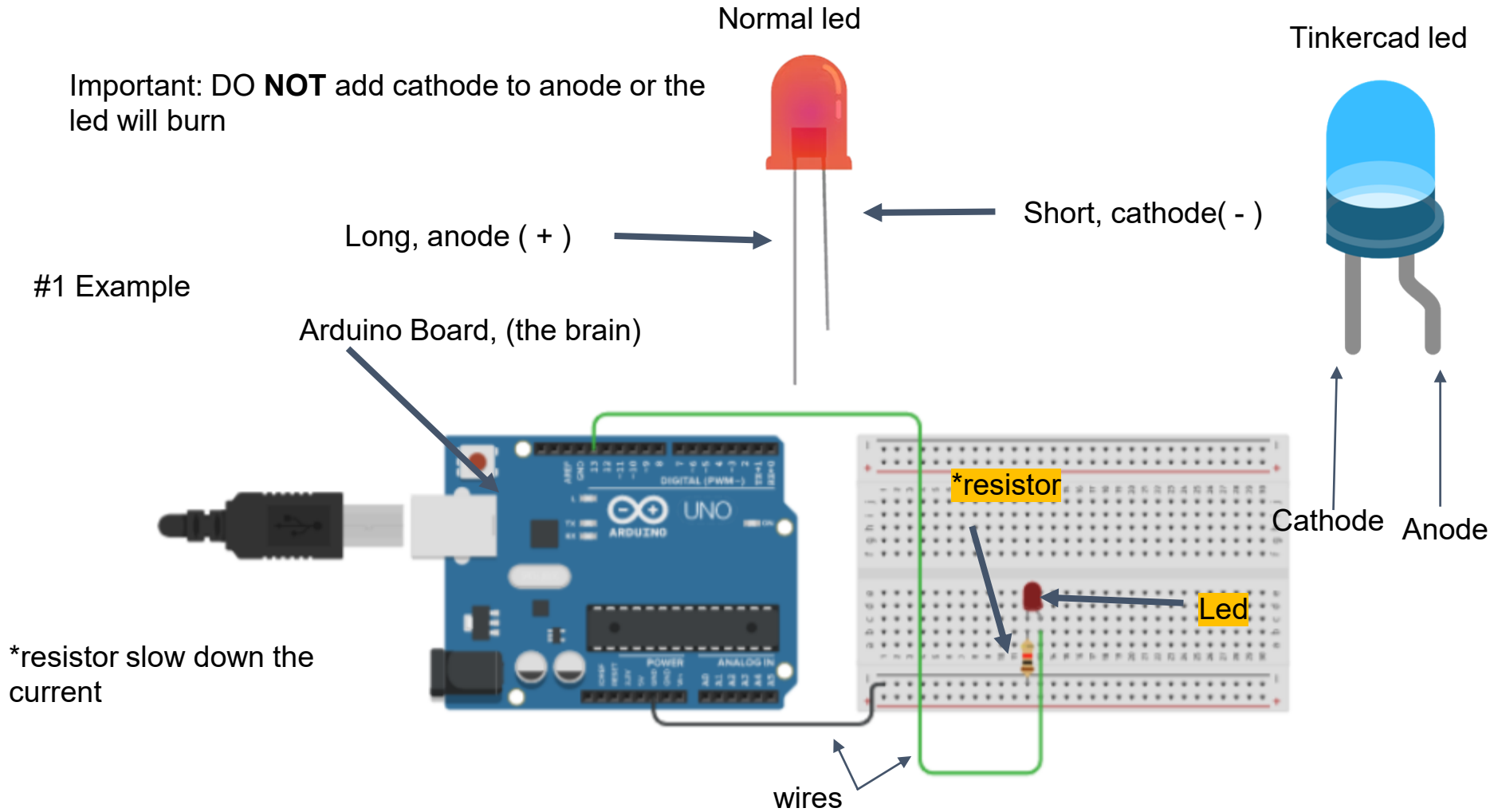
كاتود

ئانود

سىم

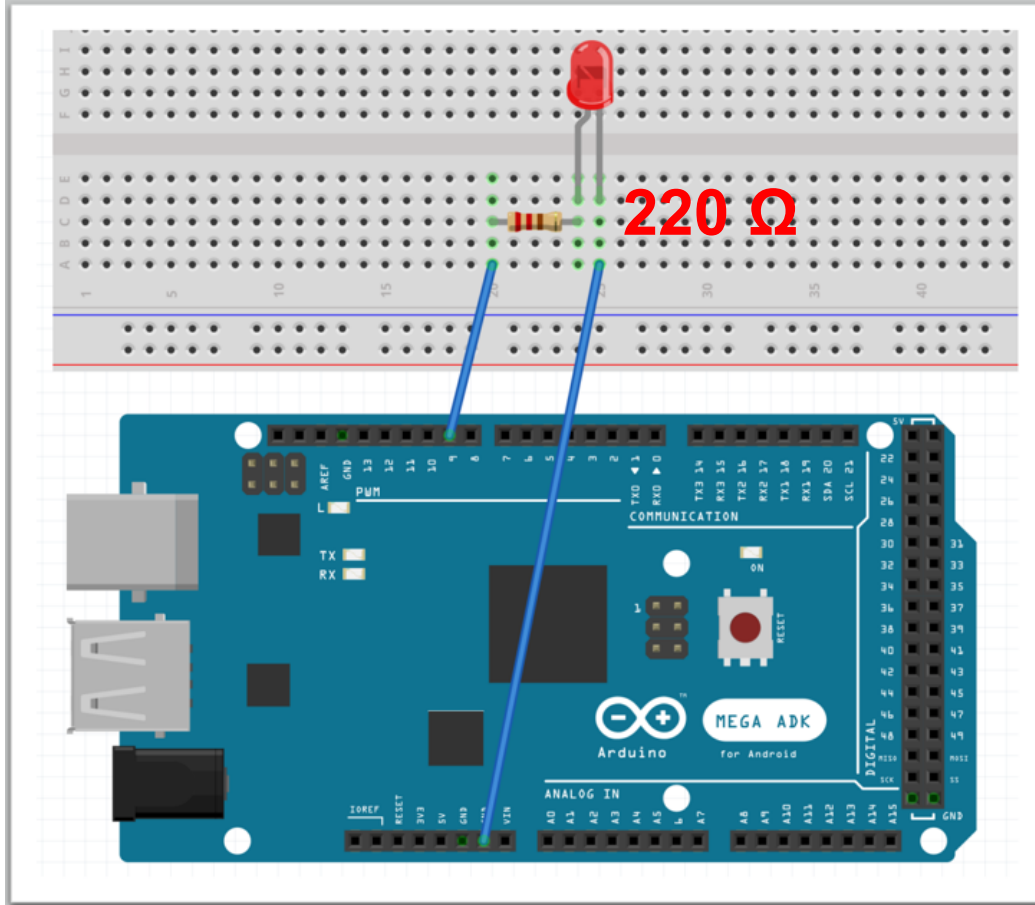
Important: DO **NOT** add cathode to anode or the led will burn

## #1 Example



\*resistor slow down the current

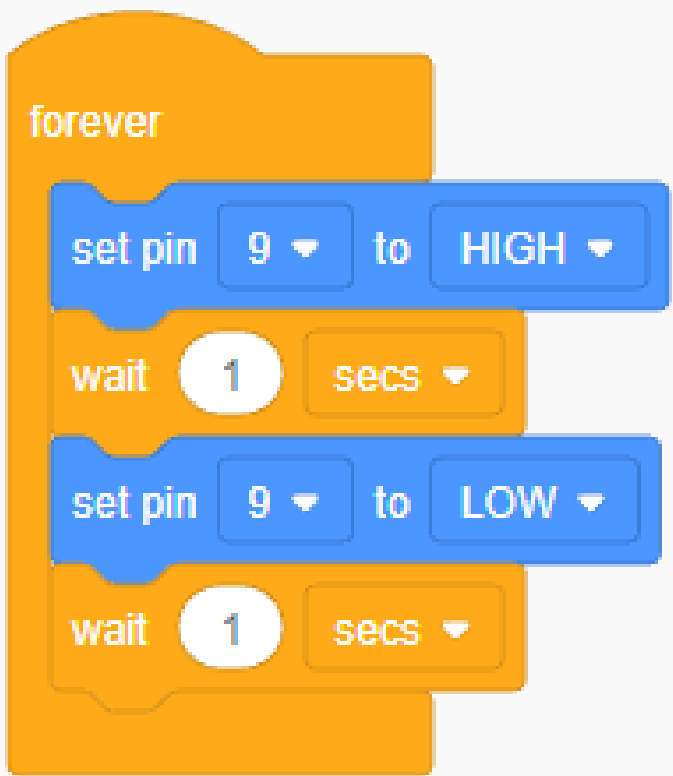
# ئاردۇينو



50  $\Omega$   
220 K $\Omega$

# بلوکلار مسالې

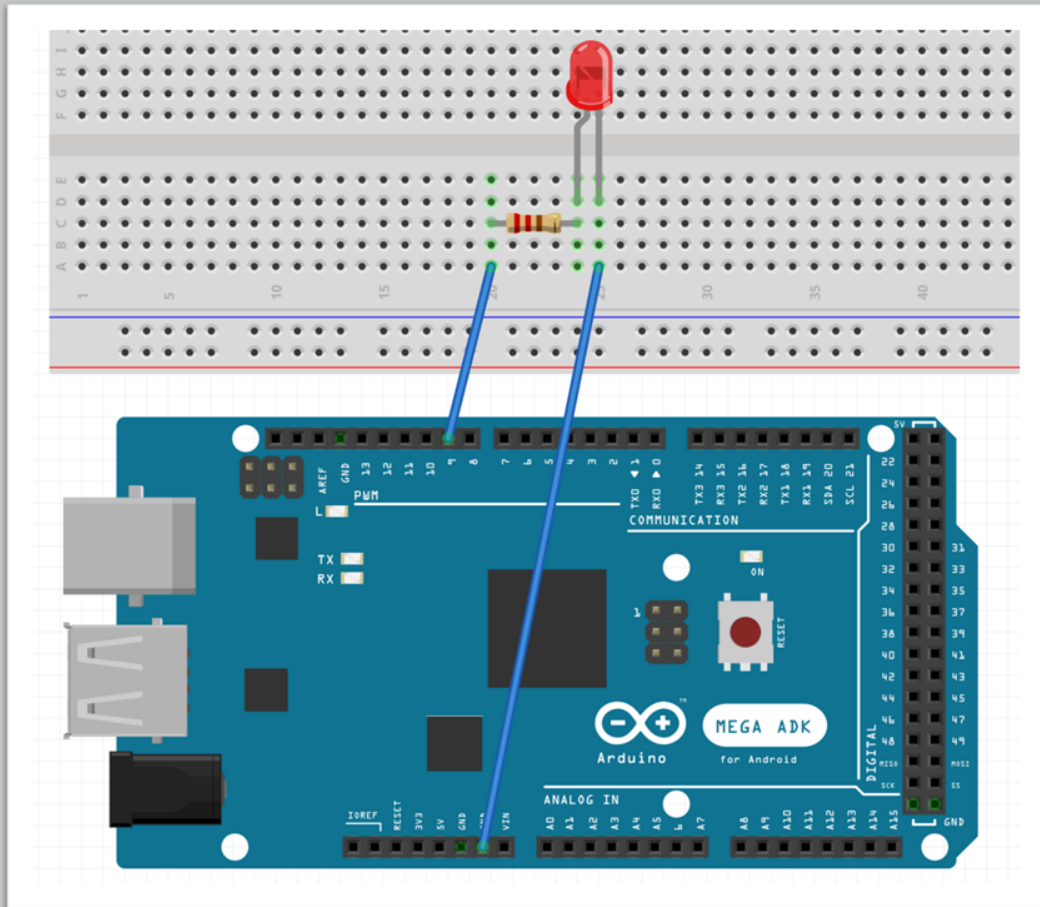
## Blocks example



## C++ کودي

```
void setup()
{
  pinMode(9, OUTPUT);
}

void loop()
{
  digitalWrite(9, HIGH);
  delay(1000); // 1000 ميلليسيكونوت سخلايدۇ
  digitalWrite(9, LOW);
  delay(1000); // 1000 ميلليسيكونوت سخلايدۇ
}
```



# Wiring LEDs

```
const int LED=9;    // Define LED for Pin 9
```

```
void setup(){  
  pinMode (LED, OUTPUT); // Set the LED  
  as an output
```

```
}
```

```
void loop(){  
  for (int i=100; i<=1000; i=i+100) {  
    digitalWrite(LED, HIGH);  
    delay(i);  
    digitalWrite(LED, LOW);  
    delay(i);
```

```
}
```

```
}
```

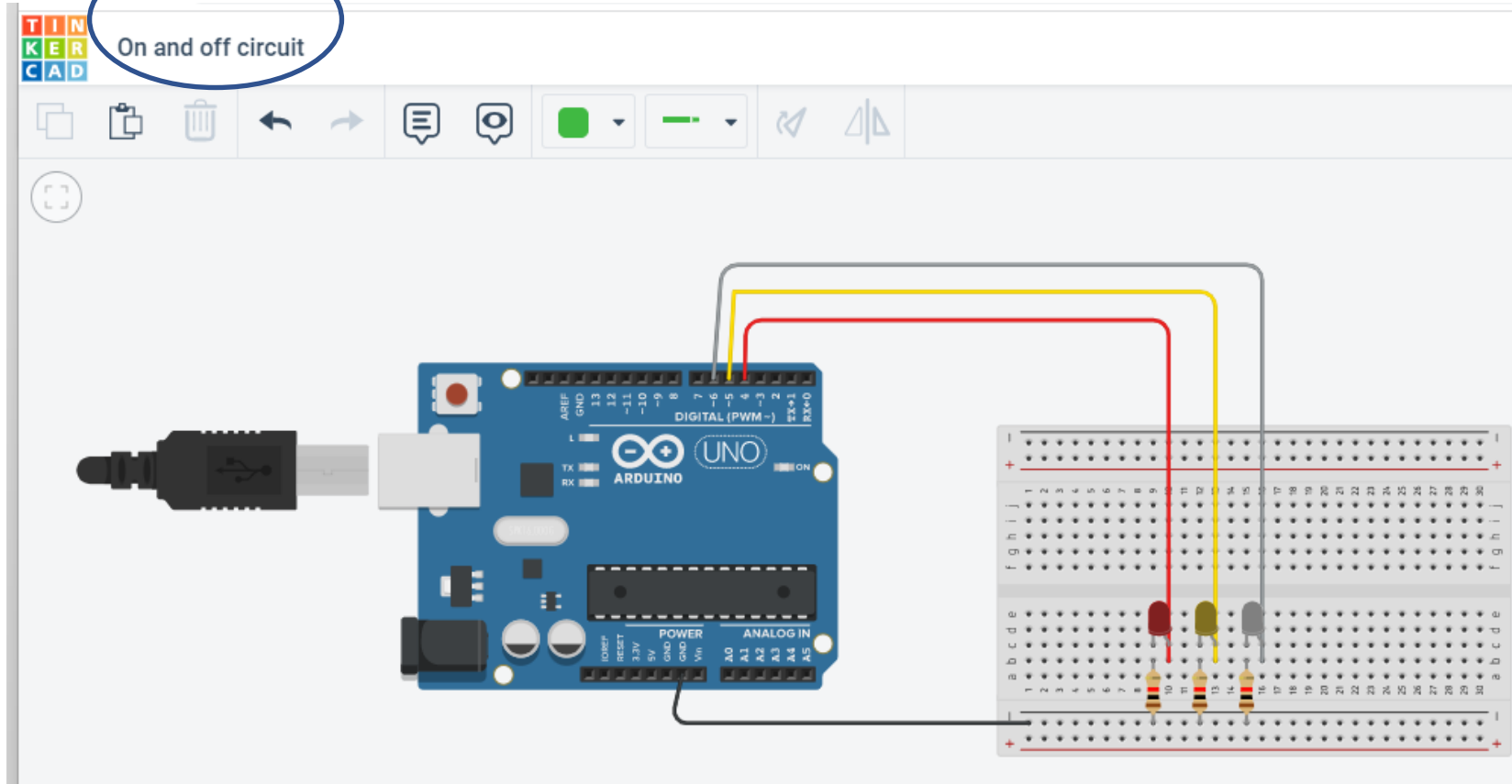


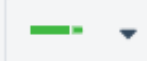
# Tinkercad Simulation Make Traffic Lights

قاتناش چىرىغى ياساڭ

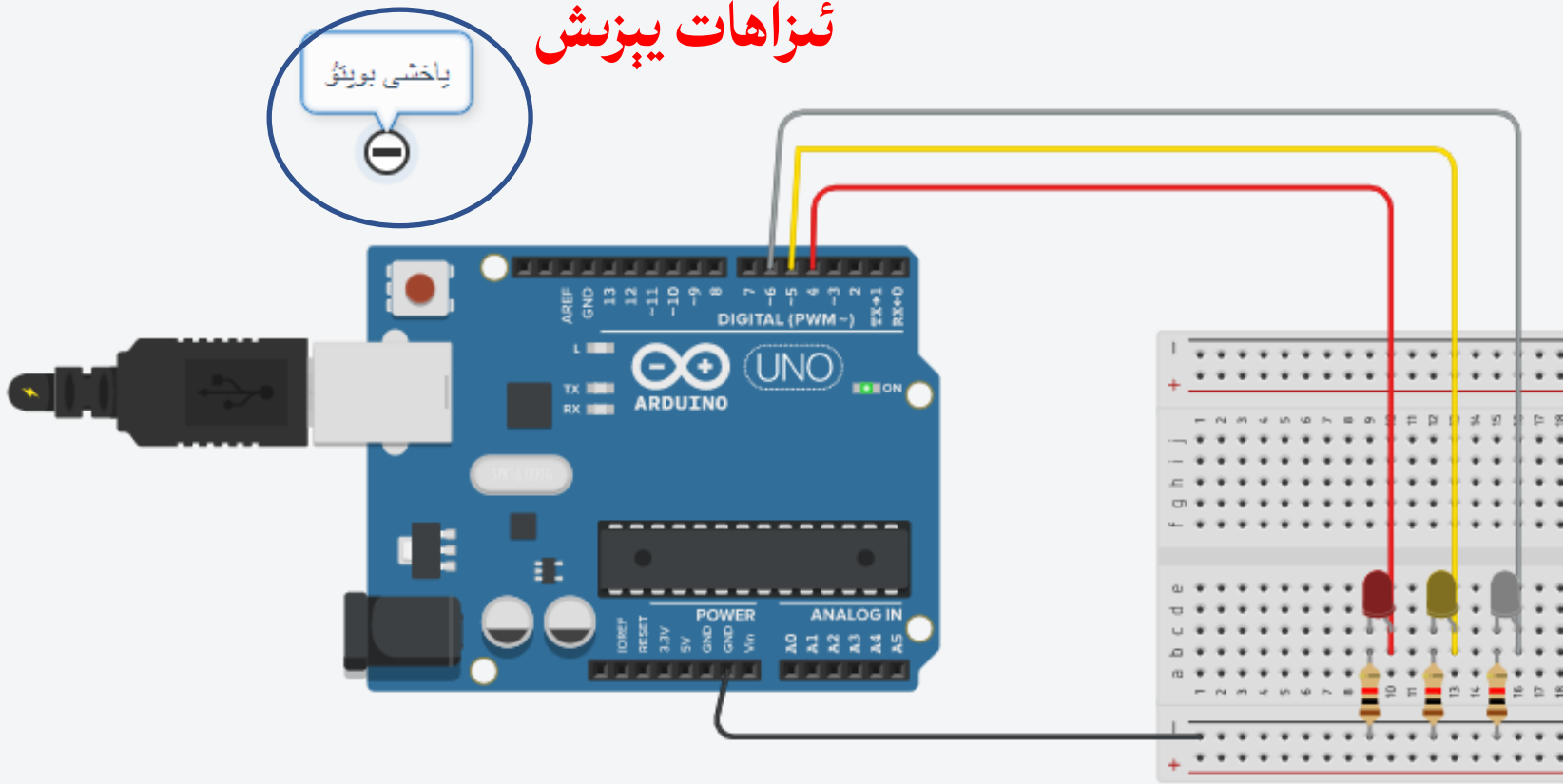
# ماڧزۇسى

On and off circuit





Simulator time: 00:00:11



تَزاہات پَیژش

ياخشى بولتۇ