

ئۈچىنچى دەرس
ئىدىيەدىن پروتوتىپقىچە

Idea to Prototype / Innovation

دوكتور مەمەتجان ياسىن

22-01-2023

مەڭگۈتەك تەربىيەلەش
مەركىزى



مۇندەرىجە

- Arduino تاختىسى
- مەسلە ھەل قىلىشنىڭ يوللىرى
- كود - بلوكلار
- مىسال

Tinkercad نى تونۇشتۇرۇش

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

مەسلە ھەل قىلىشنىڭ يوللىرى

- سىم يولىنى تەكشۈرۈڭ
- Pin نومۇرىنى تەكشۈرۈڭ
- توك مەنبەسىنى تەكشۈرۈڭ
- قارشىلىق قىممىتىنى تەكشۈرۈڭ
- زىننەت چىرىقىنىڭ يۆلىنىشىنى تەكشۈرۈڭ

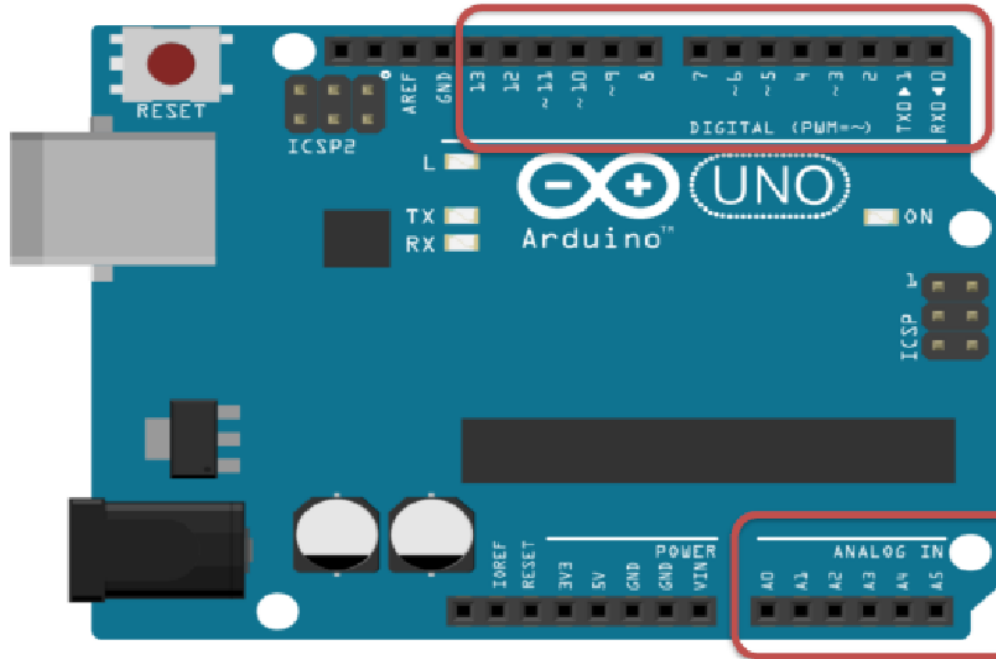
Tips for debugging

- Check wiring
- Check Pin numbers
- Check Power supply
- Check Resister values
- Check LED direction

آردوینو Arduino

Inputs and Outputs (Analog and Digital)

Digital Inputs and Digital Outputs



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

Analog Inputs

PWM - Pulse Width Modulation

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

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

Components Basic

Search

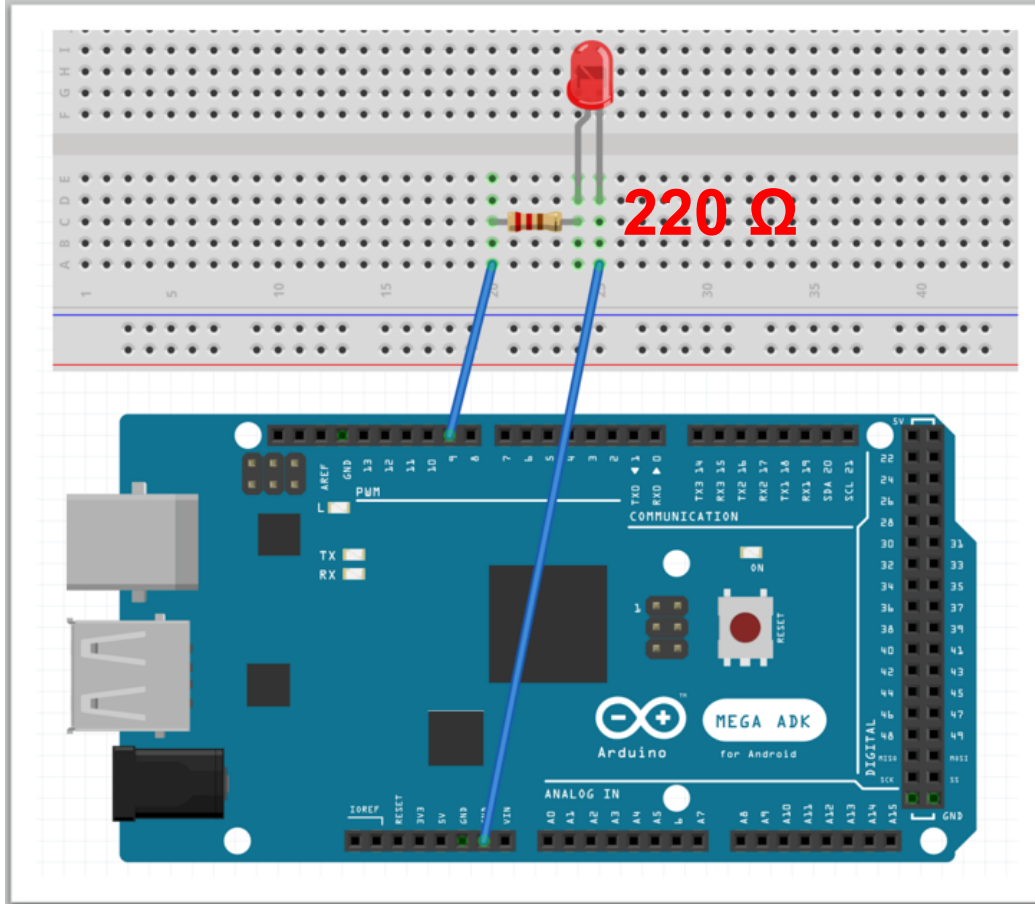
Resistor LED Pushbutton Potentiometer

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

The image is a screenshot of the Tinkercad web application interface. It features several numbered annotations (1-7) and lettered shortcuts (a-f) in blue circles and boxes. Annotation 1 points to the 'File Name' input field containing 'Test'. Annotation 2 points to the 'Search Component' search bar. Annotation 3 points to a red arrow that originates from the text '* Click to Pick Component' and points to a 'Resistor' component in the components panel. Annotation 4 points to a row of six icons labeled a through f. Annotation 5 points to the top right corner where user avatars 'a' and 'b' are shown. Annotation 6 points to the 'Code' button. Annotation 7 points to the 'Start Simulation' button. The lettered shortcuts are: 'a' for Rotate, 'b' for Delete, 'c' for Undo, 'd' for Redo, 'e' for Annotation, and 'f' for Show/Hide Annotation. The components panel on the right shows 'Resistor', 'LED', 'Pushbutton', and 'Potentiometer' components.

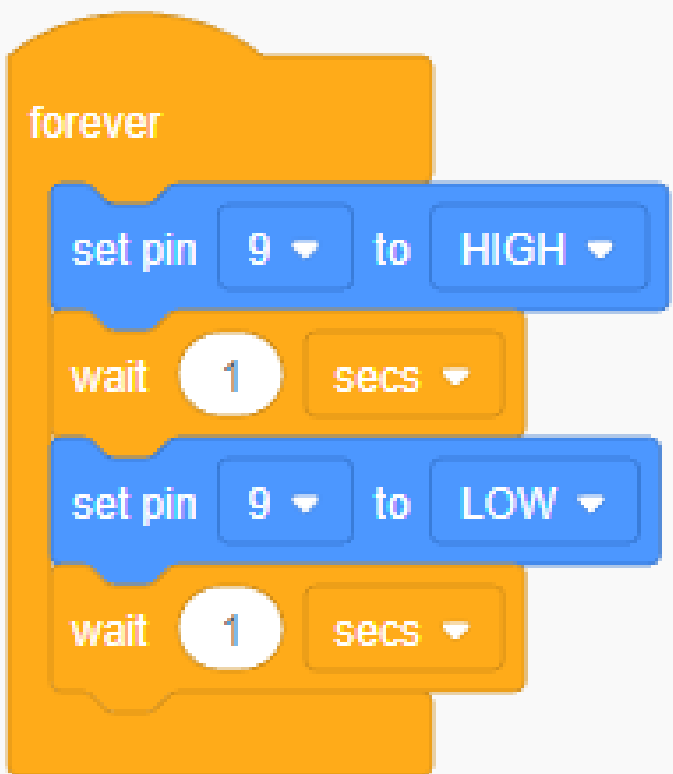
ئاردۇينو



50 Ω
220 K Ω

بلوکلار مسالې

Blocks example

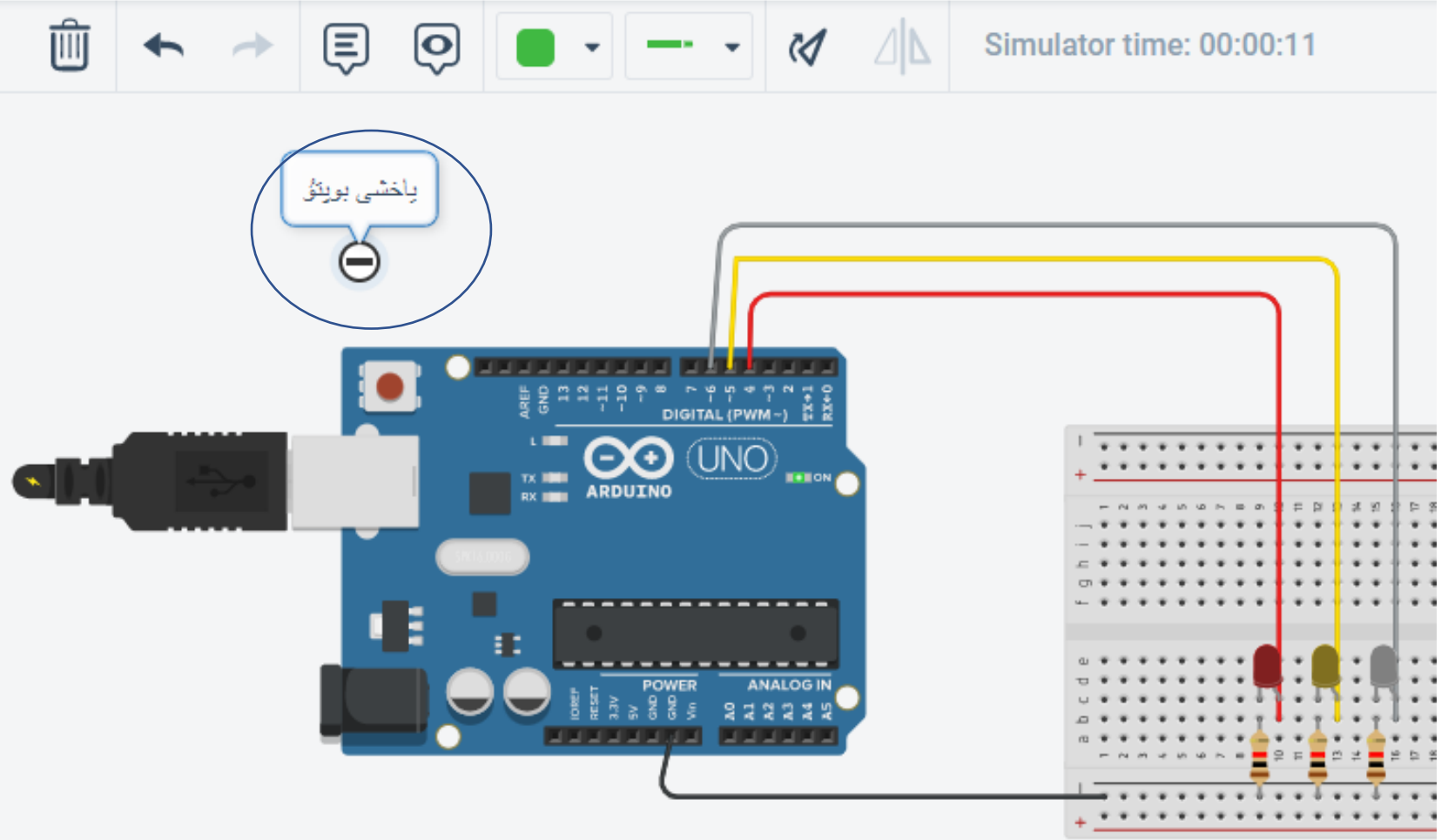


C++ کودي

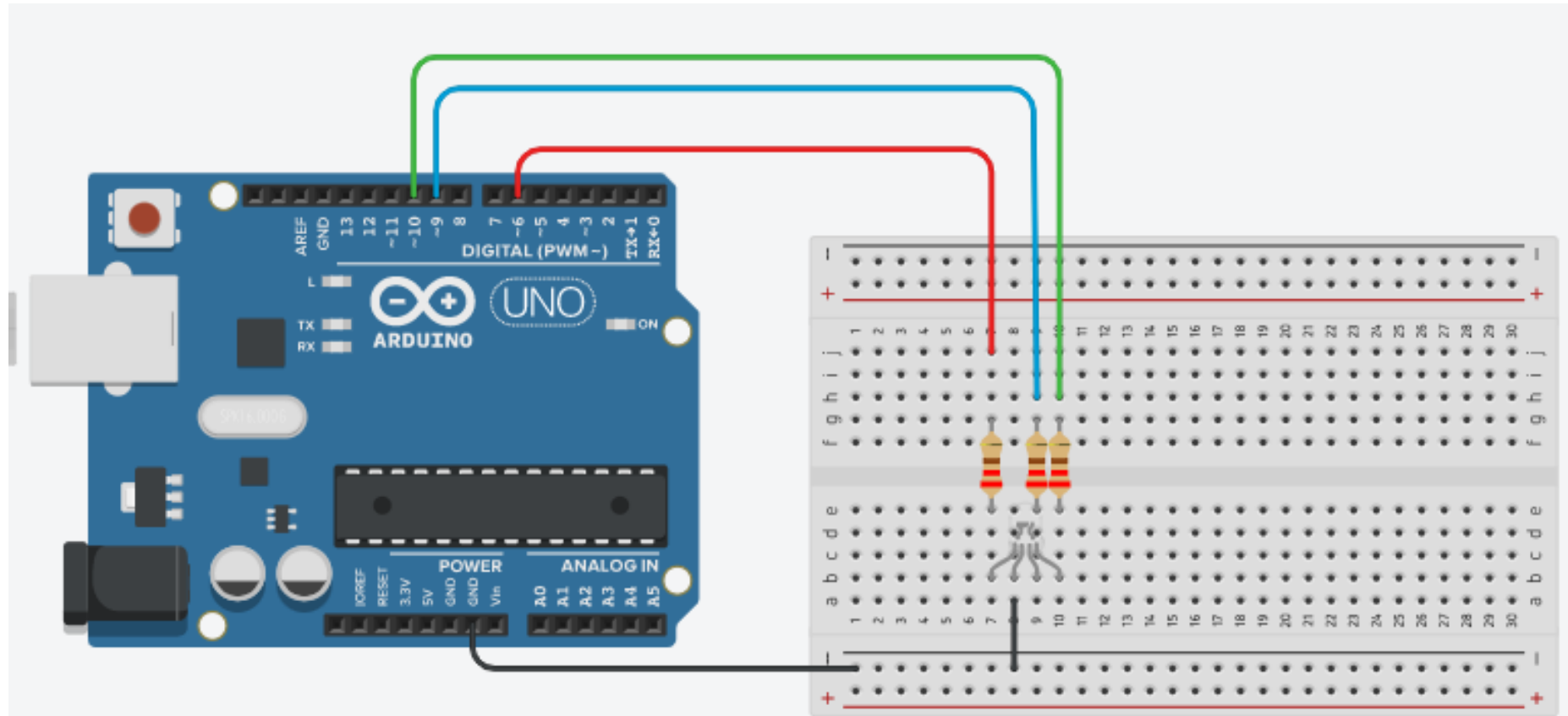
```
void setup()
{
  pinMode(9, OUTPUT);
}

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

تاپشۇرۇققا ئىزاھات يېزىش



RGB LED



forever

set RGB LED in pins 6 ▼ 9 ▼ 10 ▼ to color 

wait 1 secs ▼

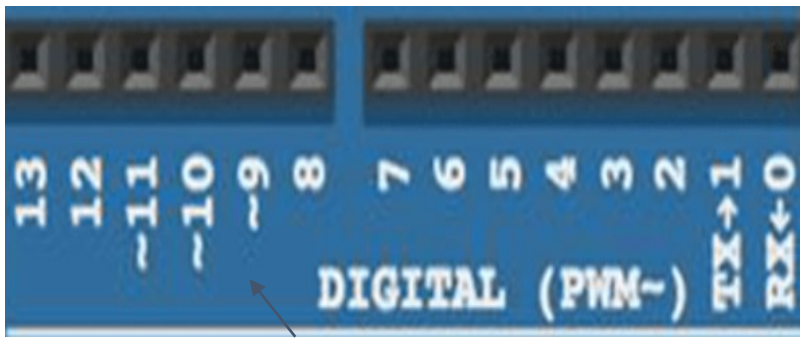
set RGB LED in pins 6 ▼ 9 ▼ 10 ▼ to color 

wait 1 secs ▼

set RGB LED in pins 6 ▼ 9 ▼ 10 ▼ to color 

wait 1 secs ▼

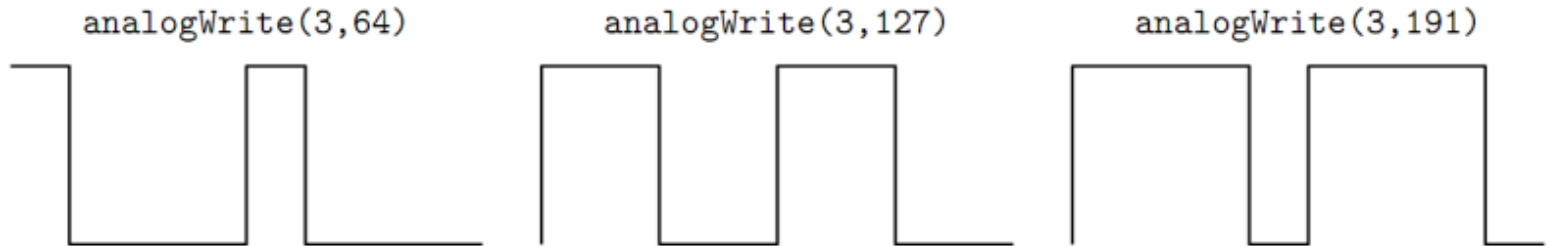
مەسلە ھەل قىلىشنىڭ يوللىرى



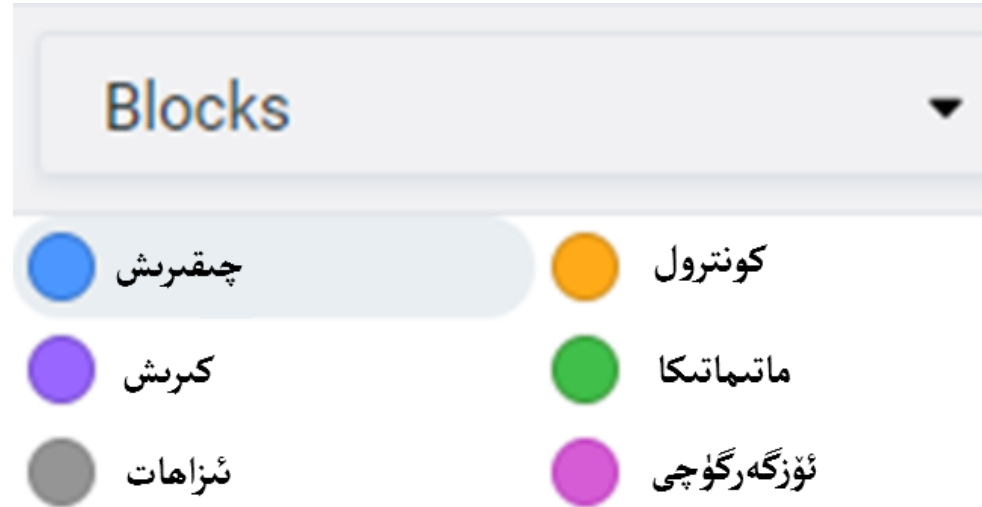
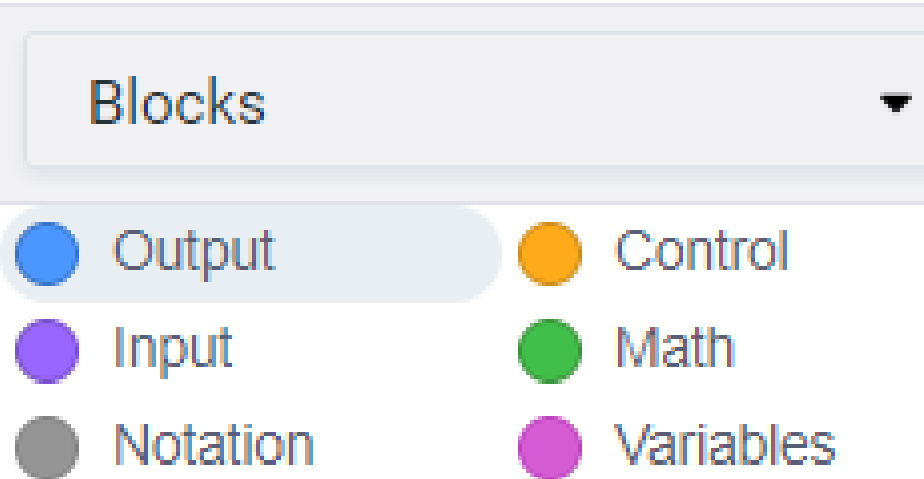
Digital I/O (Input/Output) دېقەملىك كىرىش



PWM



بلوكلار مسالى

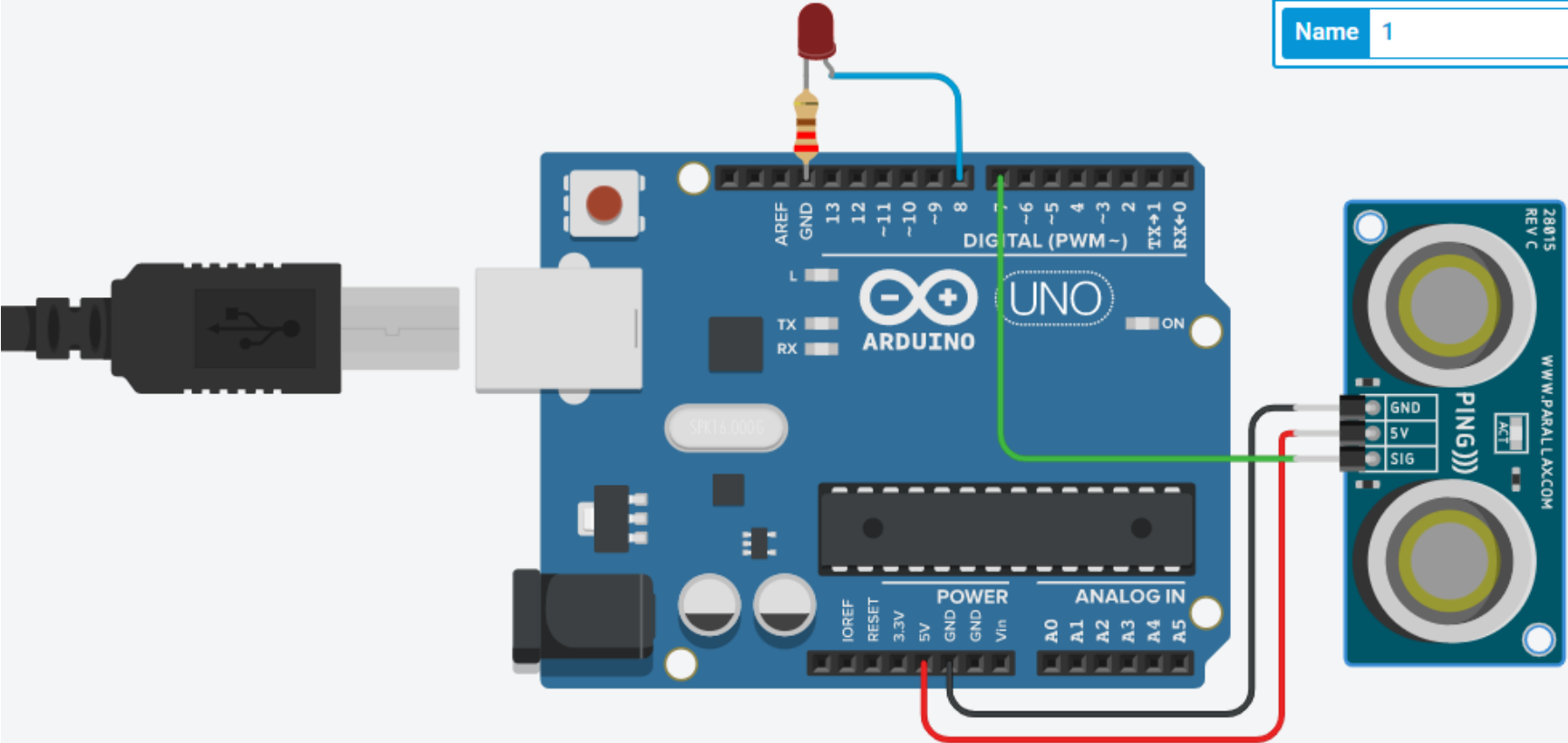


<http://www.mengutech.com/programming-basics/>

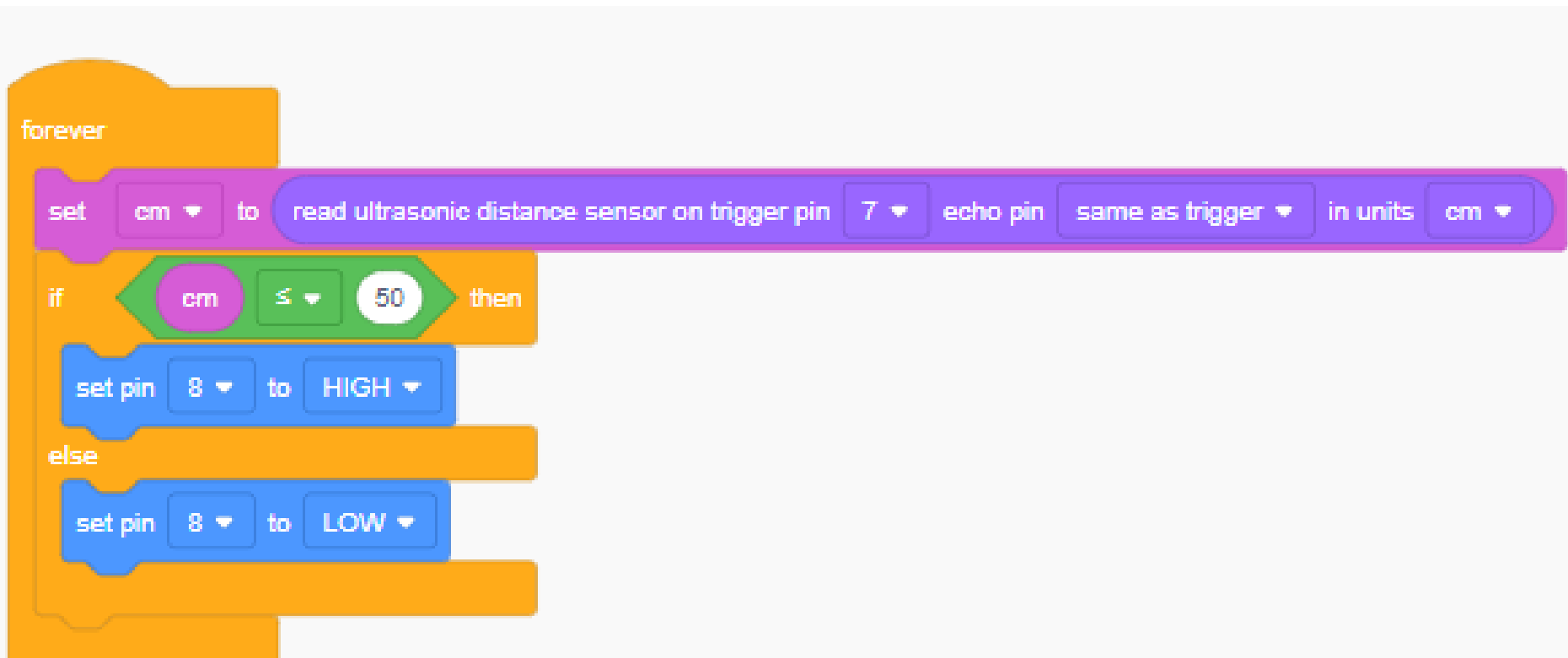
1- ئەقلىلىق ماشىنا توختىتىش ياردەمچى مىسالى

Ultrasonic Distance Sensor

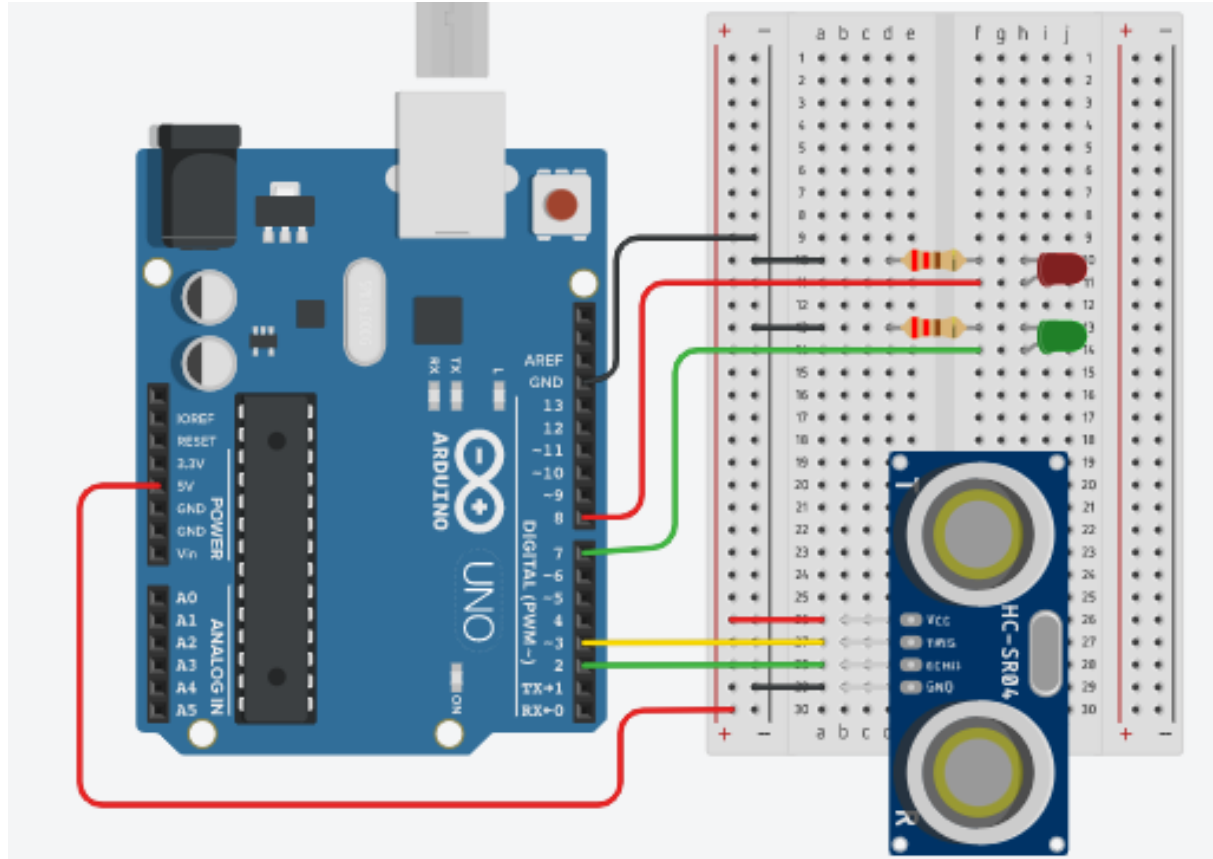
Name 1



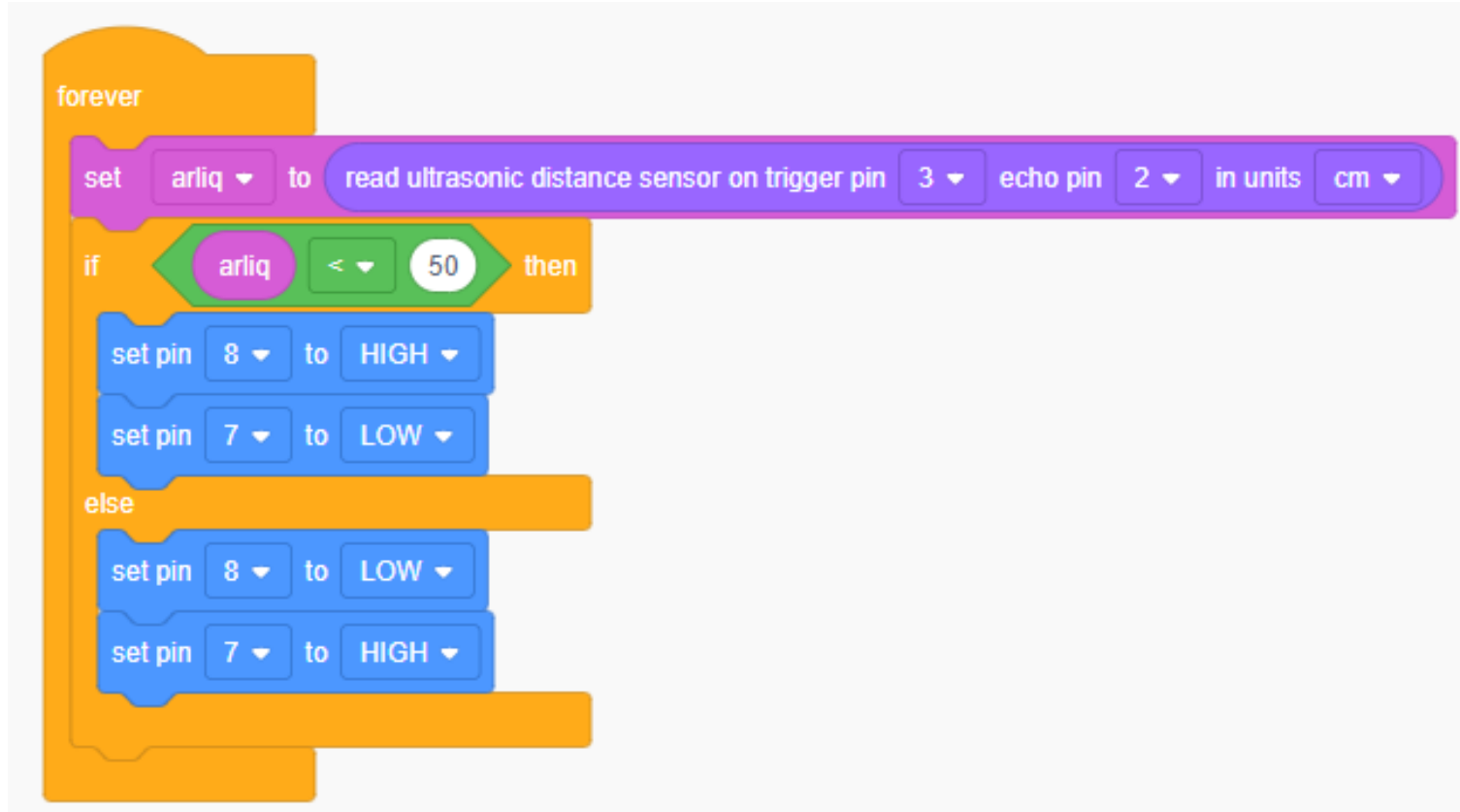
تہ قلیق ماشنا توختش یارده چی مسالی



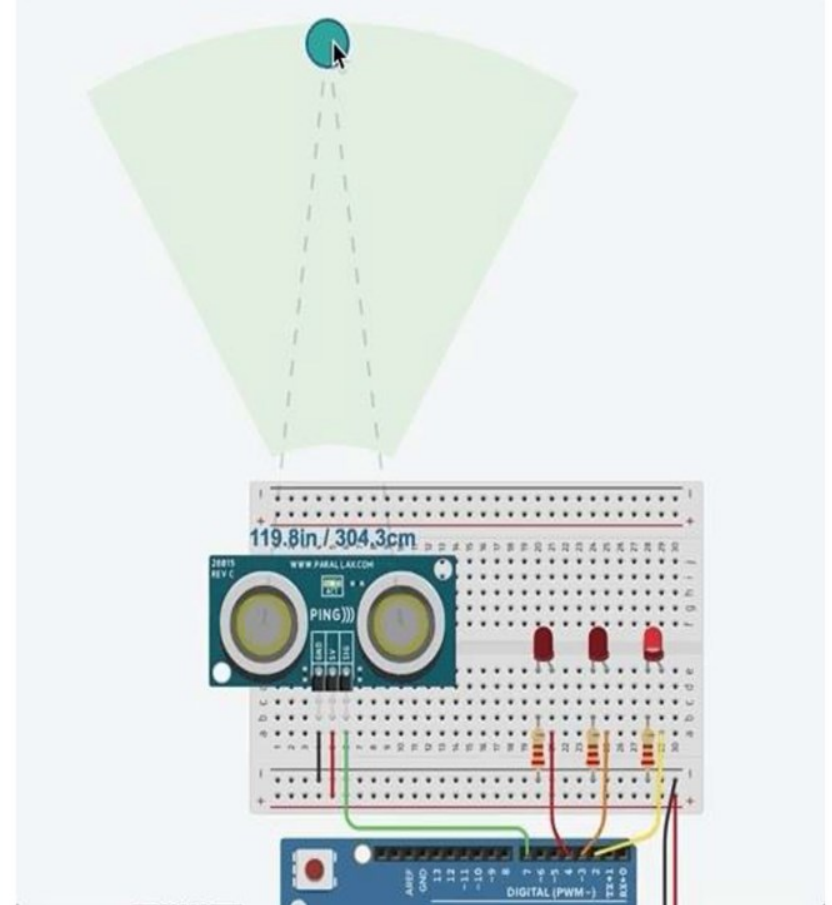
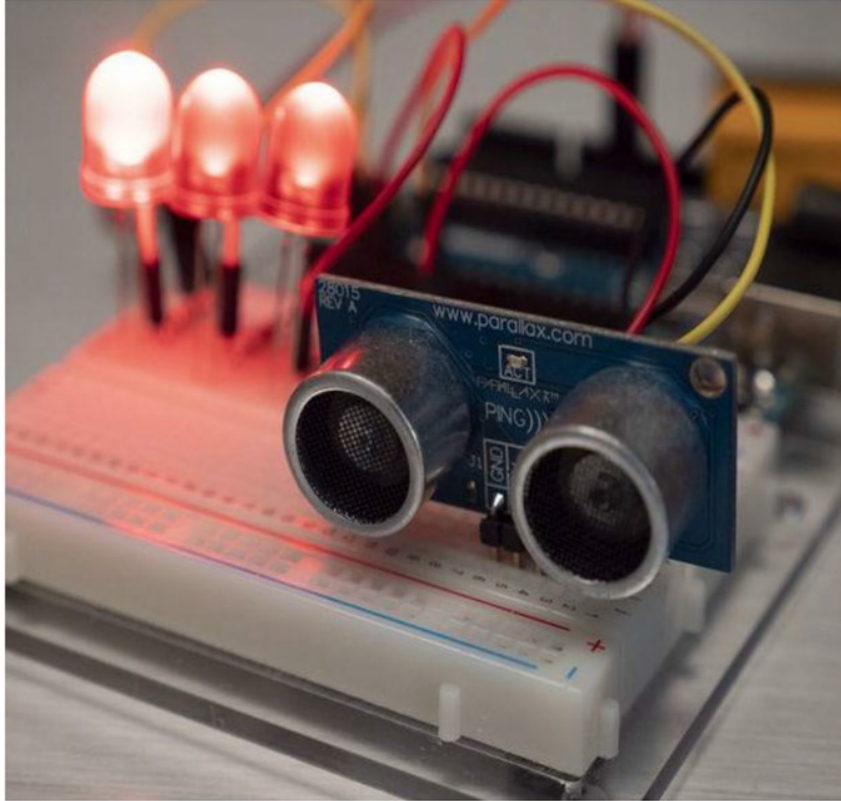
2- نه قلیلق ماشنا توختتش یارده چی مسالی



ئەقىللىق ماشىنا توختىتىش ياردەمچى مىسالى-2



ئەقلىق ماشىنا توختىتىش ياردەمچىسى 2



دەرس ماتېرىيالى

- تىنكىركاد سىنىپى

- مەشگۈتەك تور بىتى (ئۇيغۇرچە)

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

- ئېنگىلىزچە تور بىتى

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

- YouTube قانىلى

<https://www.youtube.com/@mengutech>

تاپشۇرۇق پىلانى

- كومپيۇتۇر ئۈستىدە تەقلىد قىلىش - Tinkercad
- تاپشۇرۇق
- ماۋزۇسى
- ئىزاھات يېزىش
- تاپشۇرۇق تاپشۇرۇش مۆھلەتى
- باھالاش
- سوئاللىرىڭىز بولسا، تور بېتىمىزدىكى ھەر بىر دەرسنىڭ سوئال سورايدىغان يىرىگە يېزىڭ!!

تۈگىدى

