project

Oscilloscope

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About This Project:

In This project is we are going to use Arduino card and a potentiometer to create a simple oscilloscope.

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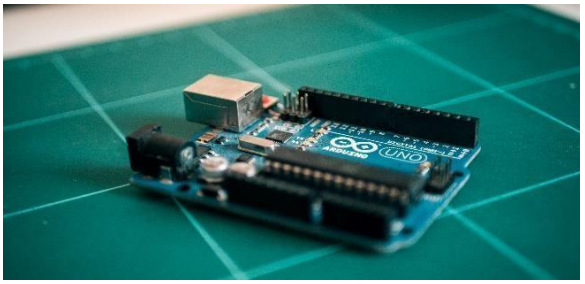
Components and supplies:

- Arduino Uno

  The Arduino Unoisanopen-sourcemicrocontrollerboardbased on the Microchip ATmega328P microcontrolleranddeveloped by Arduino.cc. Theboardisequipped withsetsofdigitalandanalog input/output pins that may be interfacedtovarious expansionboardsandothercircuits.



- Potentiometer

  Apotentiometerisathree-terminalresistorwithaslidingorrotatingcontactthatforms an adjustable voltage divider.

APPS AND ONLINE SERVICES :

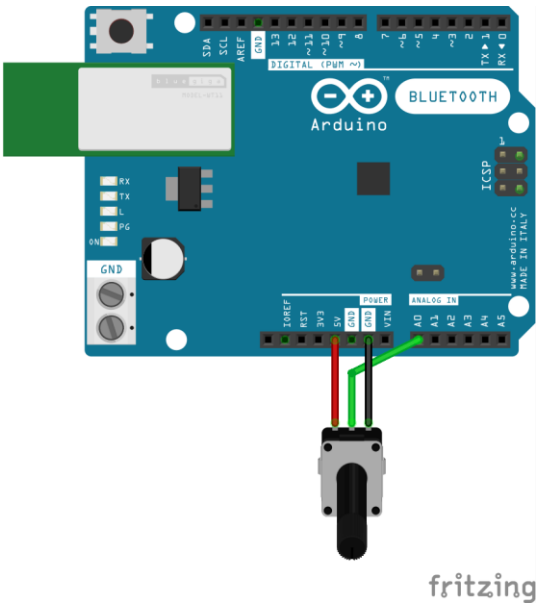
- ARDUINO IDE

  The Arduino Integrated Development Environmentisacross-platformapplicationthatiswrittenin functionsfrom Cand C++. It is used to writeanduploadprogramsto Arduinocompatibleboards, but also, with the help of 3rd party cores, other vendor development boards.

- Fritzing

  Fritzing is an open-source initiative to develop amateur or hobby CAD software for the design of electronics hardware, to support designers and artists ready to move from experimenting with a prototype to building a more permanent circuit

Schematics:



Code

Define Arduino pins numbers

```
int pot =A0;
```

Define global variables

```
int value =0;
float result =0;
```

Setup

```
void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);

  // make pin A0 as an input pin
  pinMode(pot,INPUT);
}
```

the super loop :

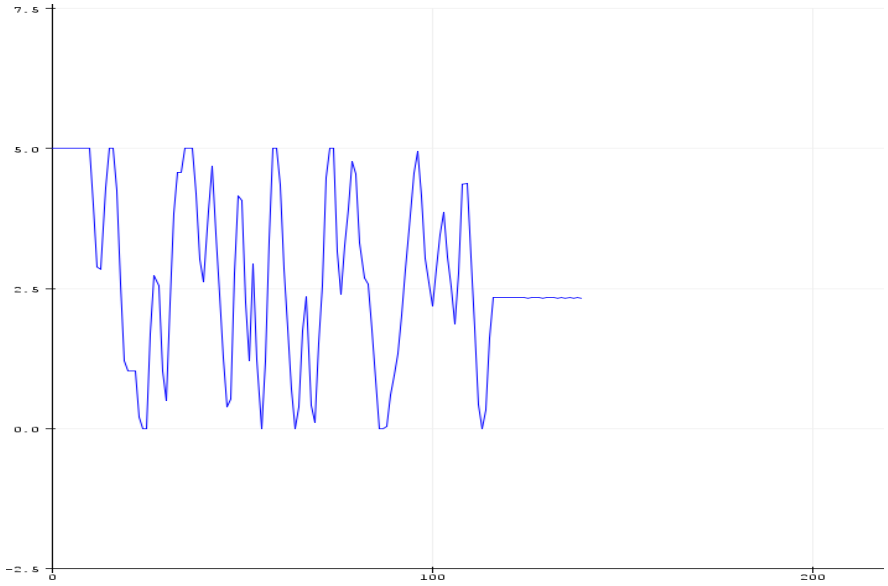
```
void loop() {
  // put your main code here, to run repeatedly:
 // read the data from the A0 pin
value = analogRead(pot);

//  normalize data to be between 0v and 5 v
result = (value*5)/1023.0;

// print the result in screen
Serial.print(result);
Serial.println();

// wait for 200 ms
delay(200);
}
```

the result:



Video:

This a link to a video of this app in YouTube:

https://www.youtube.com/watch?v=-FJktaGx3QI

Conclusion

In this application we learnhowto useapotentiometer with Arduinoboard andhandlethe voltage withthe analoginputpinsof Arduino, andhowto showthe variation of the voltage in a diagraminotherto emulatean oscilloscope

Credit author statement

Youssef El kantri: documentation (report), conceptualization (fritzing-software), coding (showing output variation in oscilloscope).

Anas Mansouri: coding (reading and processing values from a potentiometer), test and validation (using hardware), deploying the project on a Git repo.