



# project

## Oscilloscope

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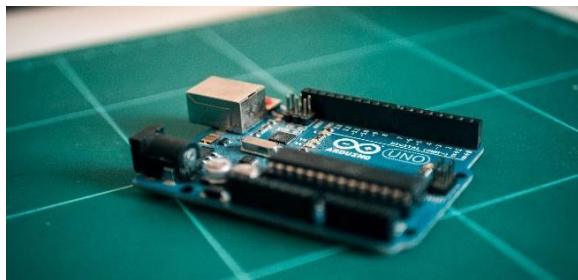
# About This Project:

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

## Components and supplies:

- **Arduino Uno**

The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output pins that may be interfaced to various expansion boards and other circuits.



- **Potentiometer**

A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an adjustable voltage divider.



# APPS AND ONLINE SERVICES :

- ARDUINO IDE

The Arduino Integrated Development Environment is a cross-platform application that is written in functions from C and C++. It is used to write and upload programs to Arduino compatible boards, but also, with the help of 3rd party cores, other vendor development boards.

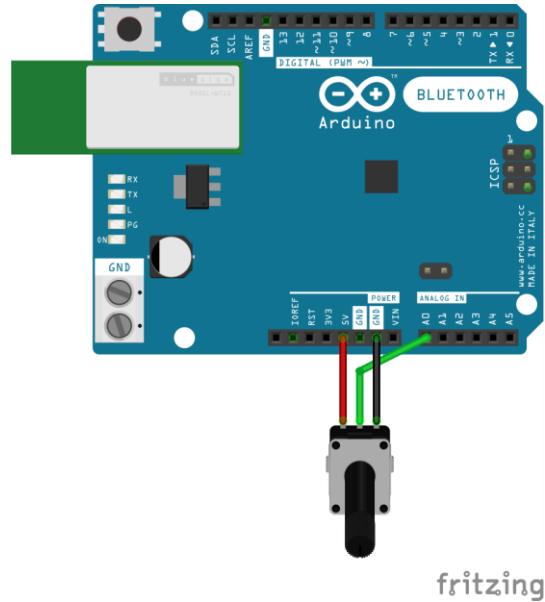


- Fritzing

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;
```

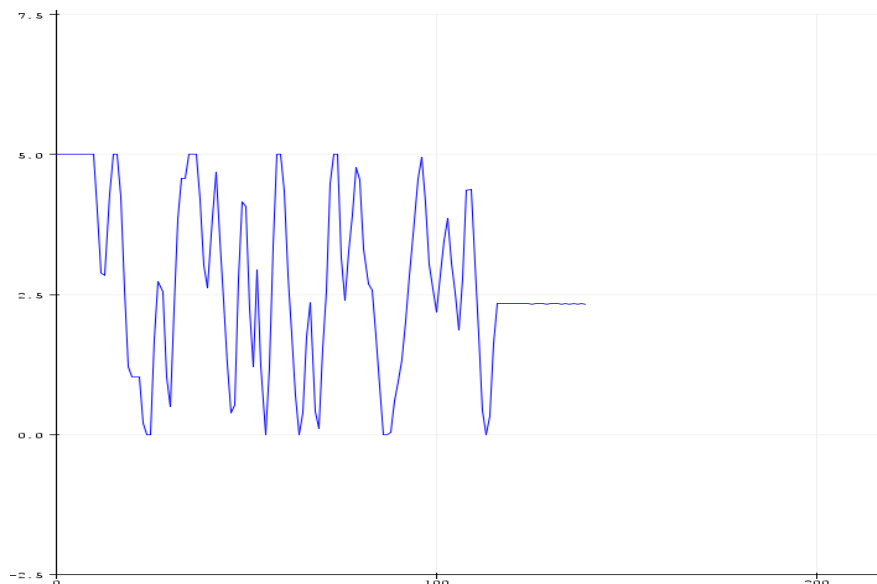
Setup

```
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 learn how to use a potentiometer with Arduino board and handle the voltage with the analog input pins of Arduino, and how to show the variation of the voltage in a diagram in order to emulate an 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 of variable resistor), test and validation (using hardware), deploying the project on a Git repo.