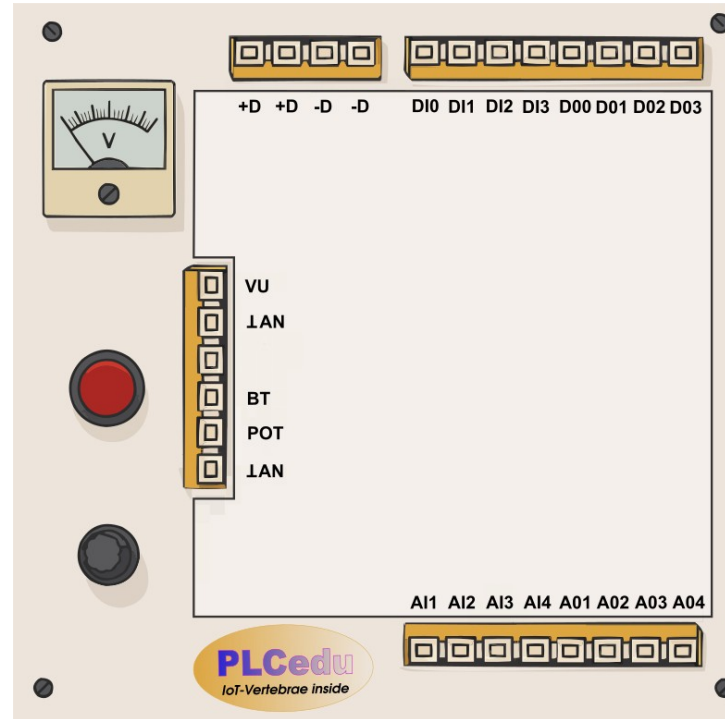
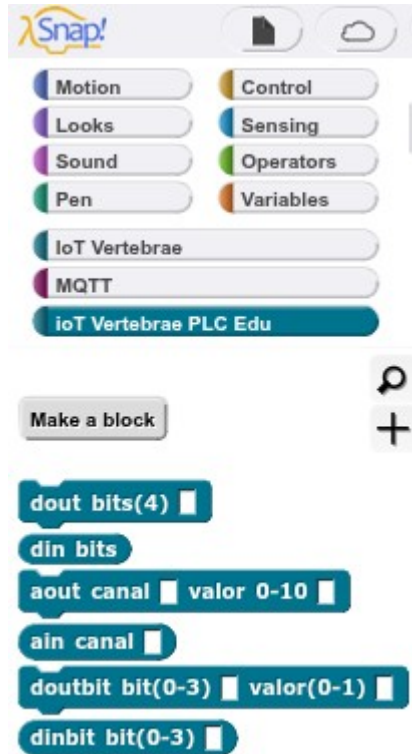


PLCedu

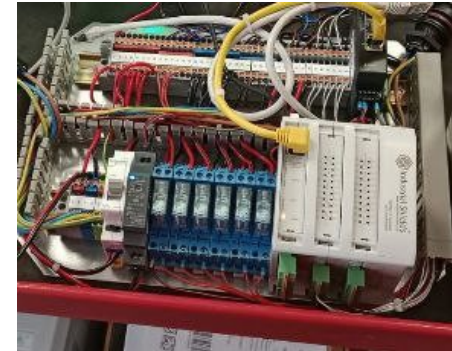
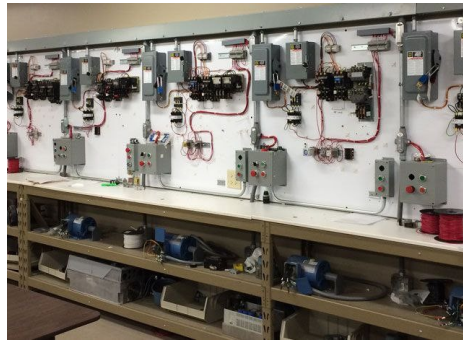
Educational PLC with Snap!



What is a PLC?

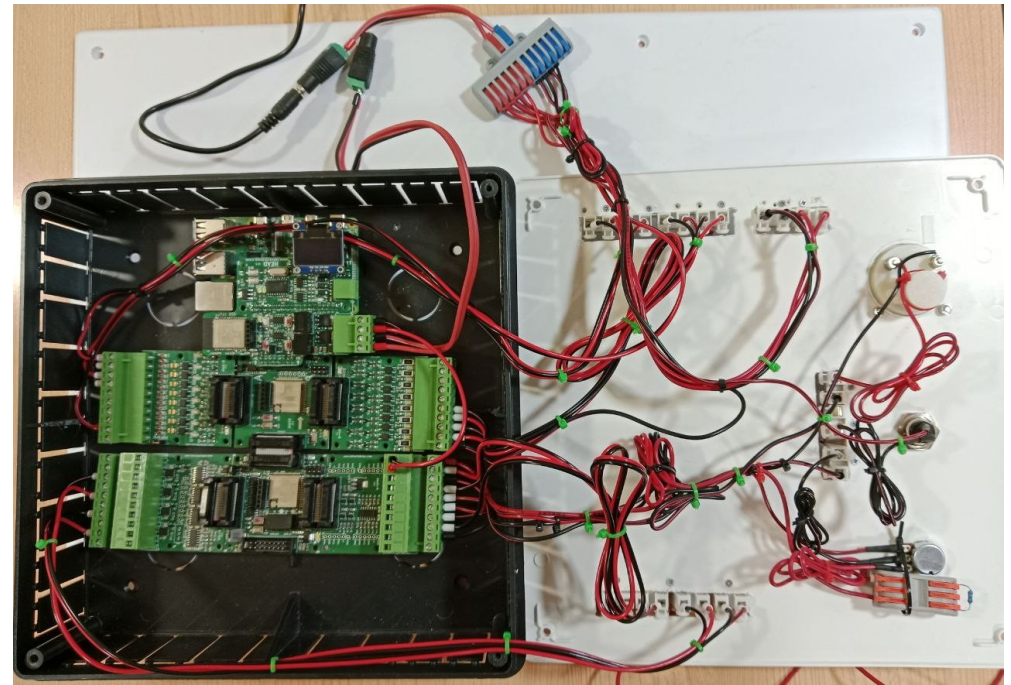
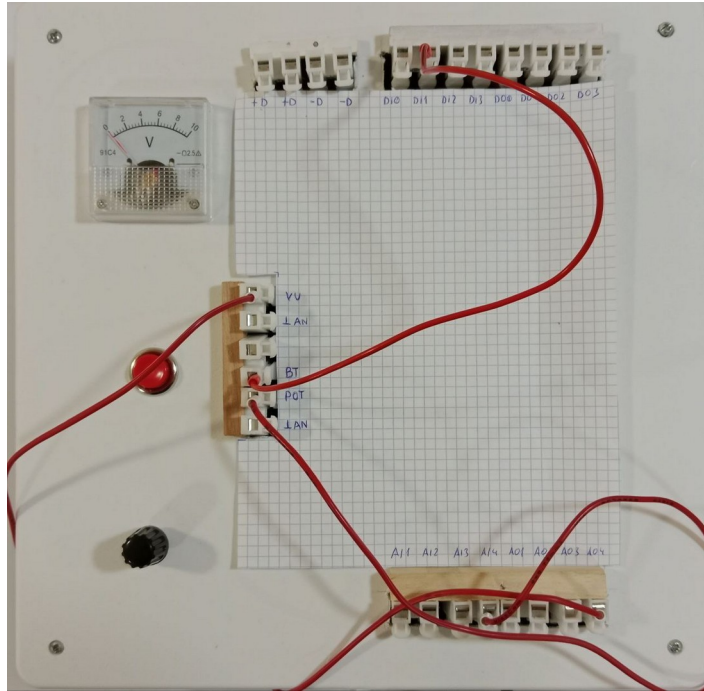


A **programmable logic controller** (PLC) or **programmable controller** is an **industrial computer** that has been **ruggedized** and adapted for the control of manufacturing processes, such as assembly lines, machines, robotic devices, or any activity that **requires high reliability, ease of programming, and process fault diagnosis.**

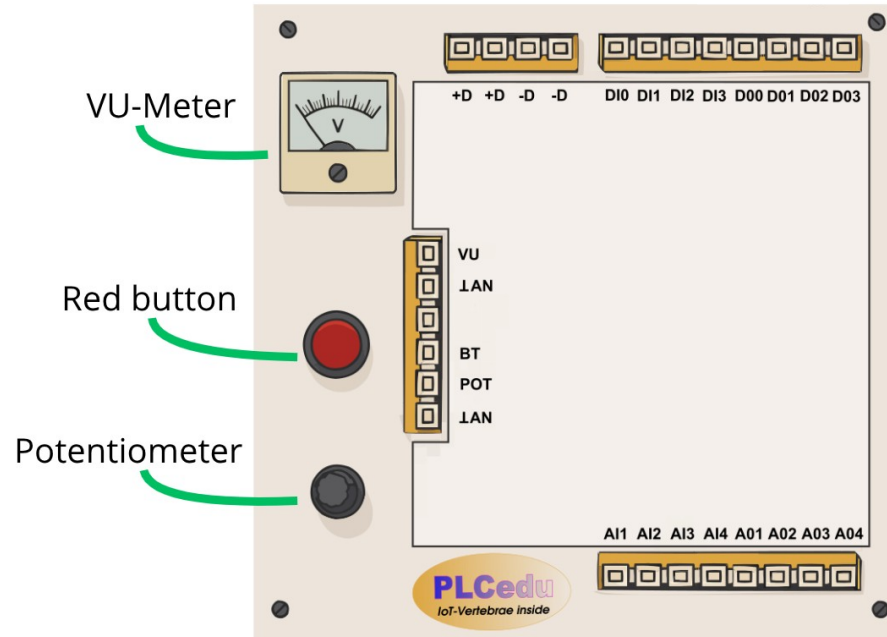


What is PLCedu?

A basic programmable logic controller (PLC) based on IoT-Vertebrae (Open Source Hardware)



Glossary



VU is VU-Meter input. Analog grounding

LAN is analog ground

BT is red button output. Digital grounding

POT is potentiometer output. Analog grounding

+D is 12 volts digital power supply. Digital grounding

-D is digital ground

DI0 .. DI3 are 4 digital inputs. Digital grounding

DO0 .. DO3 are 4 digital outputs. Digital grounding

AI1 .. AI4 are 4 analog inputs. Analog grounding

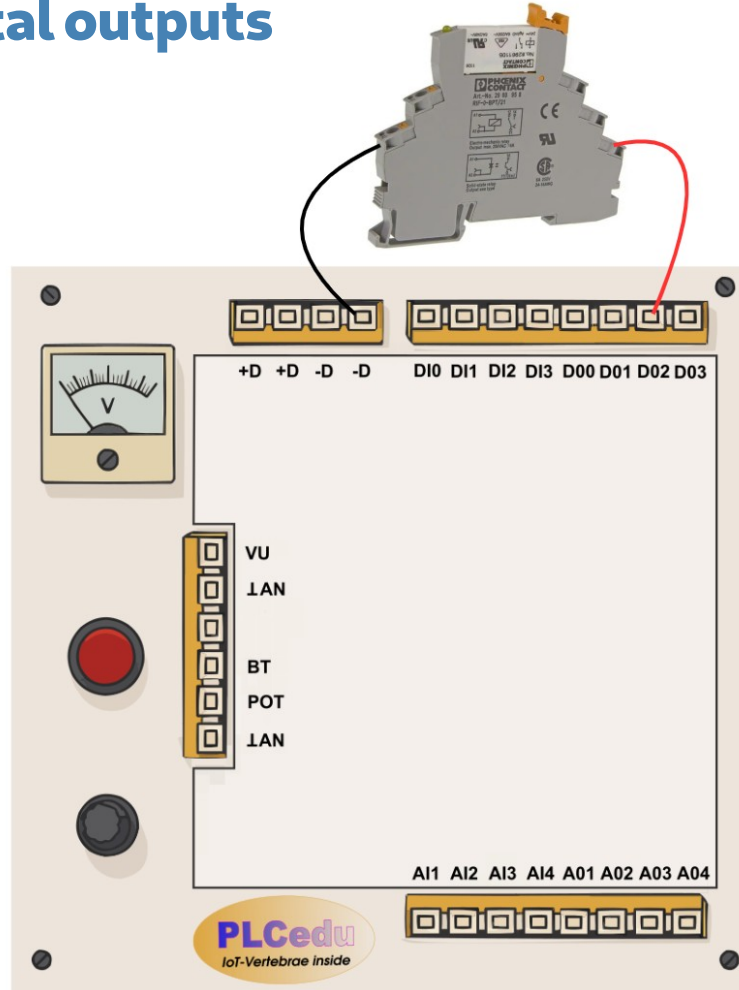
AO1 .. AO4 are 4 analog outputs. Analog grounding

VU-Meter reads voltage from 0 to 10 volts. Analog grounding (GND is LAN)

Red button gives 12 volts when pressed (0 otherwise). Digital grounding (GND is -D)

Potentiometer output voltage is from 0 to 10 volts. Analog grounding (GND is LAN)

Digital outputs



```
dout bits(4) 0100
```

```
dout bits(4) 0000
```

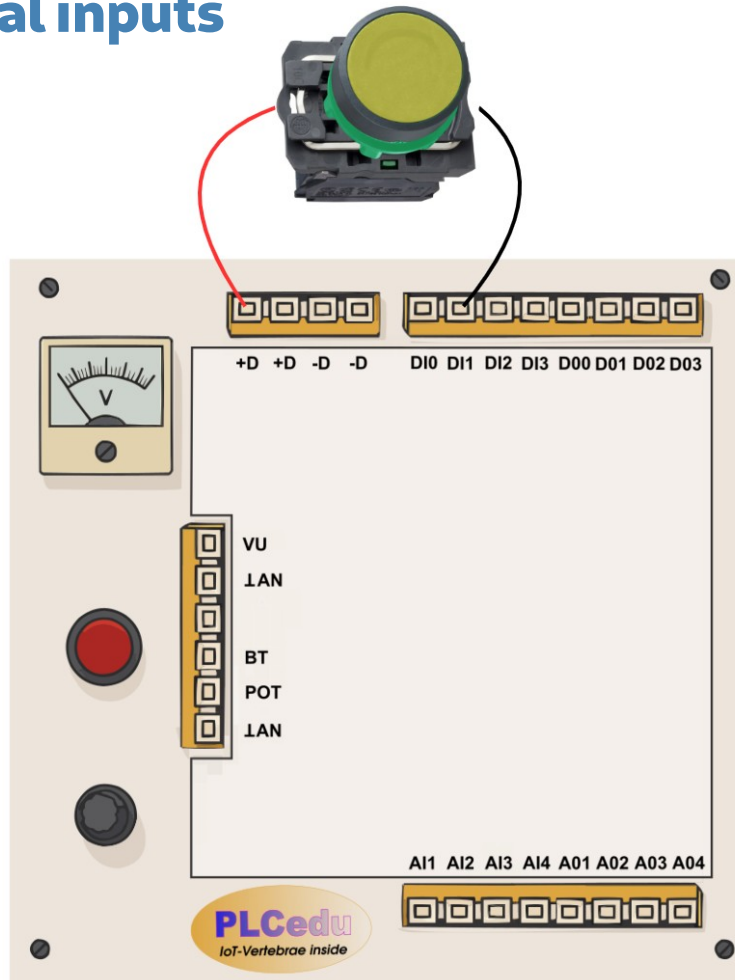
```
doutbit bit(0-3) 2 valor(0-1) 1
```

```
doutbit bit(0-3) 2 valor(0-1) 0
```

```
from plcEdu import *  
import time  
  
dout(0x4) # 0100  
time.sleep(5) # 5 seconds  
dout(0x0) # 0000
```

```
from plcEdu import *  
import time  
  
doutbit(2,1)  
time.sleep(5) # 5 seconds  
doutbit(2,0)
```

Digital inputs



din bits

dinbit bit(0-3) 1

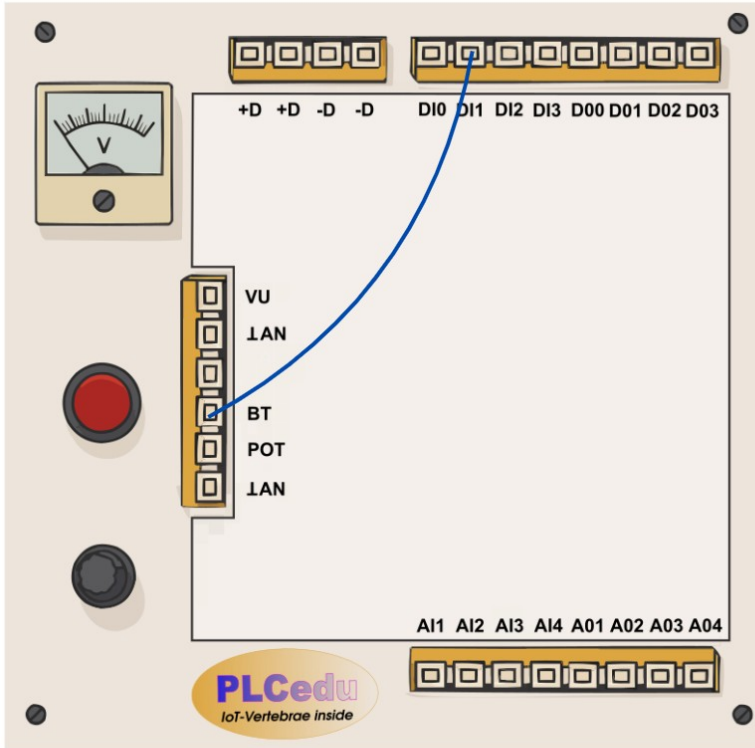
```
from plcEdu import *
```

```
reading = din()  
print("Reading: %s"%reading)
```

```
from plcEdu import *  
import time
```

```
for bit in range(4):  
    readBit = dinbit(bit)  
    print("bit %d: %s"%(bit,readBit))  
    time.sleep(0.1)
```

Digital inputs



din bits

dinbit bit(0-3) 1

```
from plcEdu import *
```

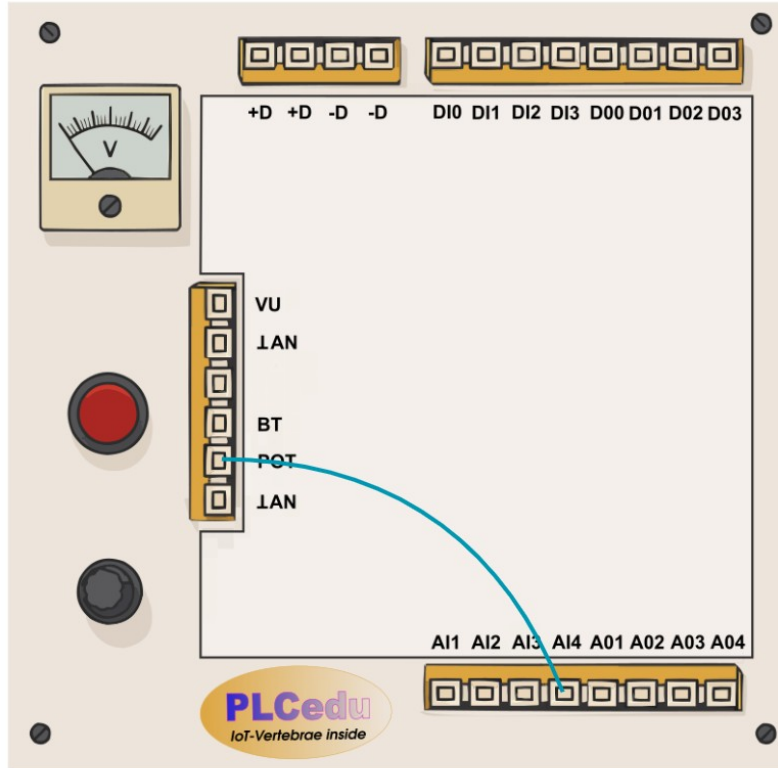
```
reading = din()  
print("Reading: %s"%reading)
```

```
from plcEdu import *  
import time
```

```
for bit in range(4):  
    readBit = dinbit(bit)  
    print("bit %d: %s"%(bit,readBit))  
    time.sleep(0.1)
```

DI1 (digital input 1) is connected to BT (when red button is pressed BT gives 12 volts)

Analog inputs

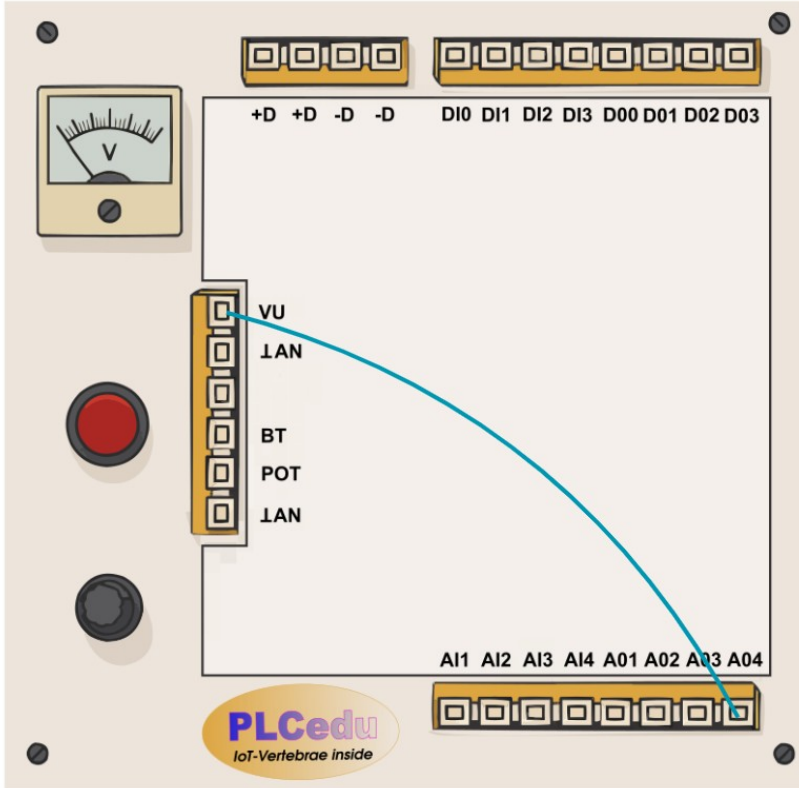


ain canal 4

```
from plcEdu import *  
  
canal = 4  
aVal = ain(canal)  
print("Reading ",aVal," volts at canal ",canal)
```

AI4 (analog input 4) is connected to POT (potentiometer output voltage is from 0 to 10 volts)

Analog outputs



aout canal 4 valor 0-10 7

```
from plcEdu import *

canal = 4
value = 7.5
aout(canal,value)
print("Sending ", value," volts to channel ", canal)

from plcEdu import *
import time

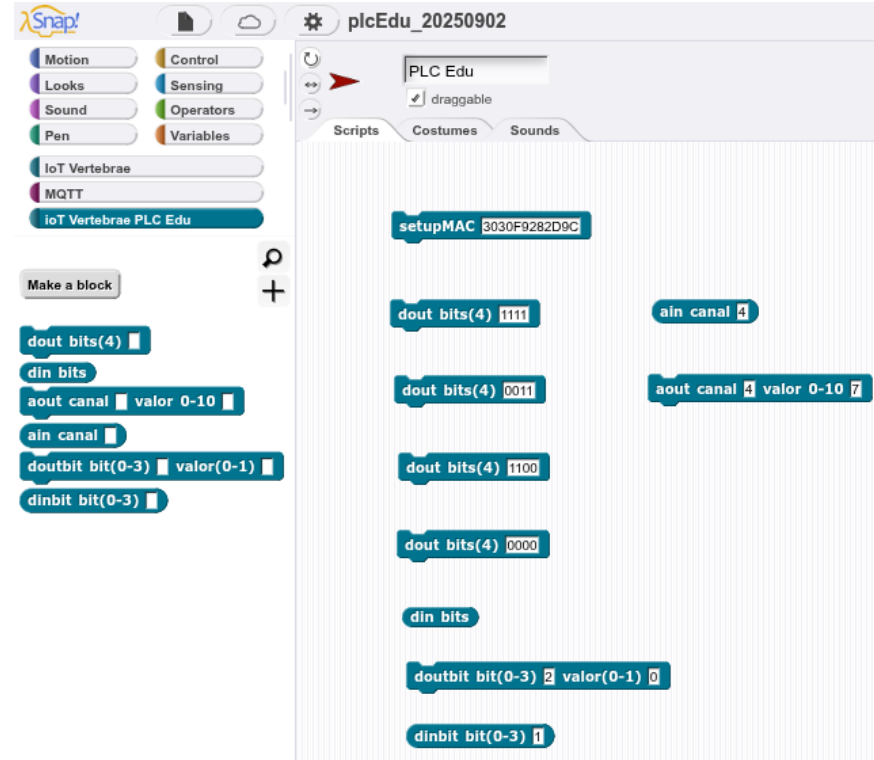
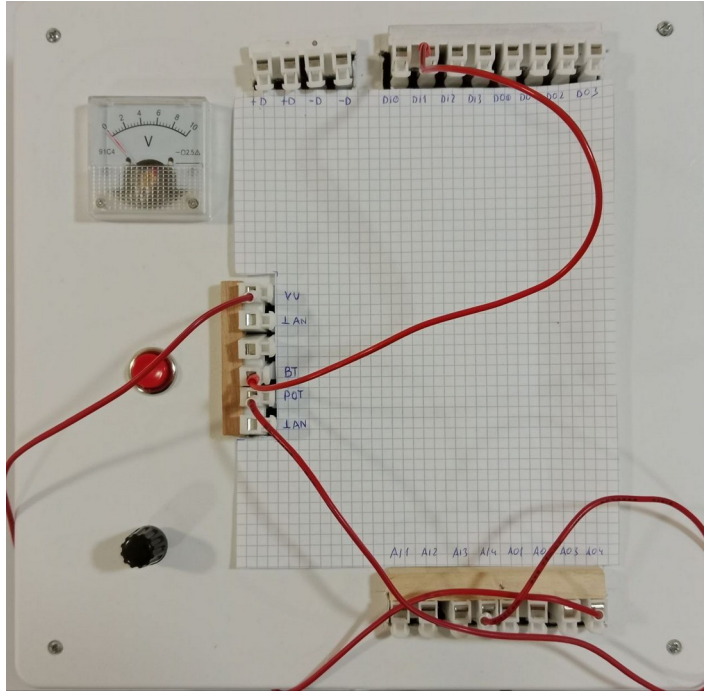
canal = 4
for value in range(11):
    aout(canal,value)
    print("Sending ", value," volts to channel ", canal)
    time.sleep(0.5)
    if value != 10:
        aout(canal,value+0.5)
        print("Sending ", value+0.5," volts to channel ", canal)
        time.sleep(0.5)
value = 5
aout(canal,value)
print("Sending ", value," volts to channel ", canal)
```

AO4 (analog output 4) is connected to VU (VU-Meter reading from 0 to 10 volts)

How it works



Practical demonstration



PLCedu Snap! example link on GitHub

how where ? when !
who how what ! when why
how who what how why
Questions!
? ! ? how where who ! how
who ! why what how when
? how when ? why ! where !
! when

Thank you for watching!

This presentation on GitHub

by Jordi Binefa: jordibinefa@gmail.com