



All .pdf links are easy to click on www.didel.com/educ/EduC.html

What is an Edu-C?

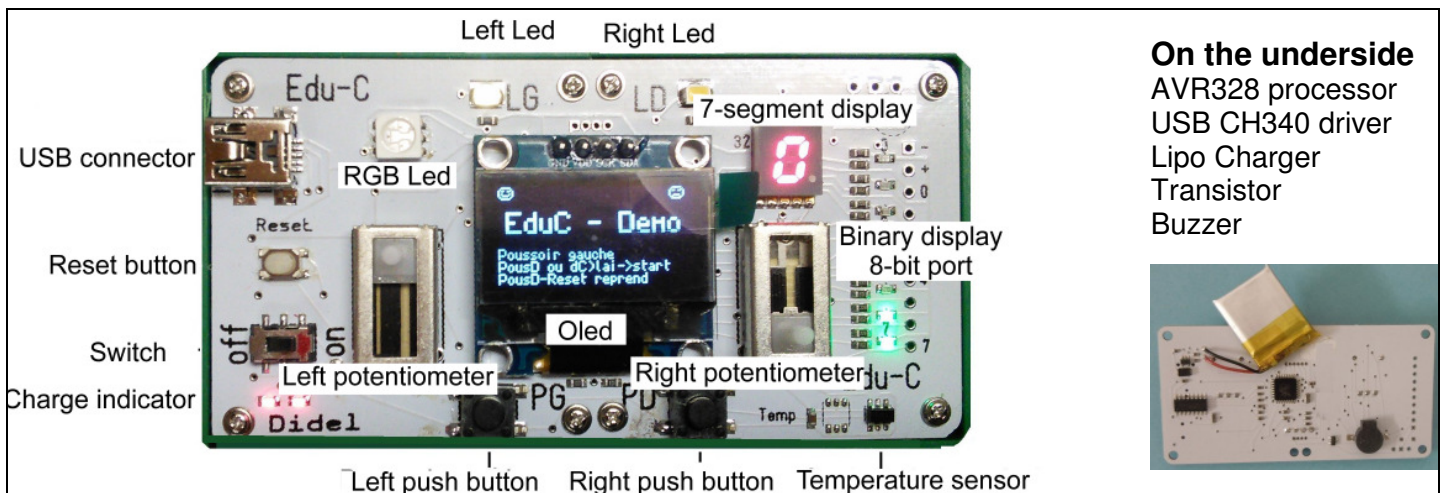
It is an "Arduino" card already populated with motivating input-outputs, easy to be connected to a PC to learn to program, modify the games on offer, invent new ones. Moreover, it is autonomous with its Lipo battery

Why an Edu-C?

Arduino is perfect for understanding how to interact with the processor pins, but one is then limited enough to make a reliable complex mount. Arduino software for beginners is simplistic and focuses too much on "standard" components and libraries.

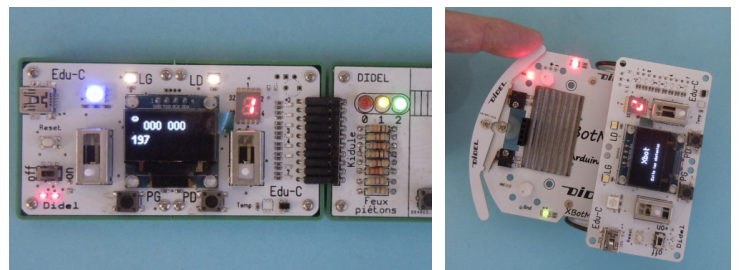
Who is Edu-C for?

| | |
|--|---|
| <p>Curious. What does a real programming language look like? It's not too complicated for me? 12 years old, is it too young?</p> | <p>EduC-Clair complies with the syntax of C and Arduino IDE constraints, but uses instructions in French (Repeat, Loop, ...) to better focus on the structure of some simple programs. www.didel.com/educ/EduC-Clair.pdf (still in French)</p> |
| <p>Interested. I want to start, but it must be fun. If I like it, I'll go in due time.</p> | <p>EduC-Fun explains how we get to the game of ping-pong by first playing with simple programs to read knobs, position objects on the screen, compare values. Reflex games are easier. www.didel.com/educ/EduC-Fun-En.pdf</p> |
| <p>Concerned. A language, I know that it can be learned patiently; i like math and logic games, programming offers lots of possibilities. Ok for a first class. The 2nd course may be the EPFL MOOC or a C ++, Java, Python course.</p> | <p>EduC-Mod introduces the C language in 7 modules and uses many simple examples to understand the basic concepts of procedural languages. www.didel.com/educ/EduC-ModResume.pdf (still in French) <i>Nota bene: Our docs are not perfects; please interact to improve and evolve them.</i></p> |



We see that the card has 2 PG PD push-buttons, 2 LG LD white leds, a tri-color led, two potentiometers, a temperature sensor. Eight bits are assigned to LEDs and an optional Kidule connector.

The 8 segments of a display are wired in parallel. The Oled display of 128x64 pixel allows pretty applications. By adding the connector you can interact with the Educational Kids (traffic lights, motor step-by-step, ...) or with the Xbot database.



Getting started

Snap. Two red LEDs indicate if the battery is fully charged. Recharge via USB if an LED is faded. It's the 7-segment display that consumes the most; it empties the battery in 2 hours.

Sixteen demo programs are loaded in flash memory, easy to understand, modify, complete.

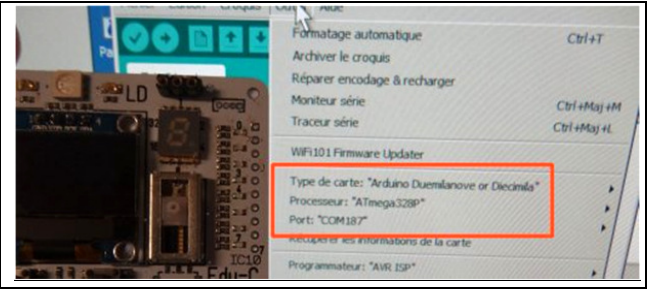
At startup the program displays a 0. As long as the left LED is flashing, you can act on the left pusher to increase the value (saturates F). If you press on the right pusher, or without action for a few seconds, the demo corresponding to the no is called. The push button "reset" restarts the choice, but if the right pusher is pressed, we go directly into the last

called demo. . www.didel.com/educ/EduC-Demos-En.pdf

Program Edu-C

EduC installs like an Arduino board and uses the USB CH340 circuit which you have to install the driver if necessary. See www.didel.com/EduCInstall.pdf

You have to select Duemilanove, AVR328 in the Arduino Tool menu and with Windows choose the highest port of no. On Mac, the letters WCH are part of the driver name.



Libraries EduC.h and Oled.h - details under www.didel.com/educ/EduC-Fonctions.pdf (French)

Macros and functions of EduC.h - setup SetupEduC();

```
Del160us (); Del1200us (); Délais de 60 et 200 microsecondes, exceptionnellement utilisés
Del1Ms (v16); Délais de v16 ms, 1 à 32767 millisecondes (v8, v16 sont des variables de 8, 16 bits)
LedGOn; LedGOff; LedGToggle; LedDON; LedDOff; LedDToggle;
RougeOn; RougeOff; VertOn; VertOff; BleuOn; BleuOff; BlancOn; BlancOff;
LedG(v5); LedD(v5); Rouge(v5); Vert(v5); Bleu(v5); *
PousG !PousG PousD !PousD nb=GetPous(); *
v8= GetPotG(); v8= GetPotD();
HpOn; HpOff; tone (14, frequency, duration);
Leds (v8); * Seg (v8); Dig (v4);
```

Interruption

The timer 2 manages the pwm for the 5 leds. Compatibility with on / off macros has been achieved. This timer would allow to schedule events, especially time-out, but it comes out of the simple educational goal of EduC.

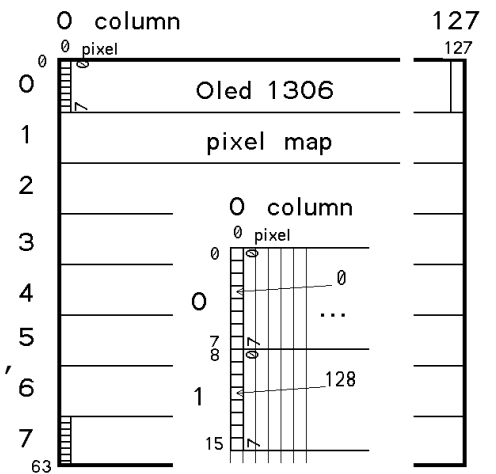
Functions of the Oled.h library - setup SetupOled();

```
v16=GetTemp16(); v8=GetTemp(); *
Car(cc); Text("xx"); Sprite(Smile); Sprite(Sad);
MySprite(nom); * byte nom[]={liste des bytes};
Bin8(v8); Hex8(v8); Hex16(v16);
Dec8(v8); Dec16(v16); Dec9999(v16<9999); *
Big(); BigBin8(); BigHex8(); BigHex16();
BigDec8(); BigDec16(); BigDec9999();
Dot(x,y); DDot(x,y); Vline(x); Hline(y);
```

x, y are global variables already declared.
We can write Dot (10,20); or x = 10; y = 20; Dot (x, y); Ball (x,

```
PosDir (x,y,dx,dy); Ball(x,y); *
Raq (x,y,h); Step(); *
Interaction: variables globales déjà déclarées:
byte x,y,dx,dy,touche,vitRaq
```

```
Sample program: the ball bounces on the edges:
PosDir (64,32,3,4); // Pos initiale et direction
while(1) { Del1Ms(10ms); Step(); // bouge d'un pas
  if (touche==1) dy=-dy;
  if (touche==2) dx=-dx;
  if (touche==4) dy=-dy;
  if (touche==8) dx=-dx;
}
```



| | | |
|-------------|-----------------------------|-----------------------------|
| LedG pin 4 | PousG pin pin 2 | Pot gauche Adc6 |
| LedD pin 5 | PousD pin pin 3 | Pot droite Adc7 |
| Rouge pin 6 | Oled SDA pin 18 | A1 pin 15 Tell - option LDR |
| Vert pin 1 | Oled SCK pin 19 | Port 8 bits et 7-segments |
| Bleu pin 7 | SDA SCK Compatible I2C Wire | Bits 0 - 5 pins 8 à 13 |
| Hp pin 14 | Oled 0x3C Tmp100 0x48 | Bits 6, 7 pins 16,17 |

Edu-C is an Arduino compatible board that can also be programmed in Arduino - just know the pin numbers of the leds and push buttons and use the usual Oled I2C library for display. Reaction rates will be greatly reduced.

