

Ώρα του Κώδικα

Προγραμματίζοντας Physical Computing Διεπαφές

Φλώρος Ανδρέας

Επίκουρος Καθηγητής Ιονίου Πανεπιστημίου

Φυσικός

Physical Computing

Υπολογιστής



Διεπαφή

Αισθητήρας

Hardware

Ενεργοποιητής

Περιβάλλον

Κώδικας



†
technology

... στην πράξη ...

Physical Computing Interfaces



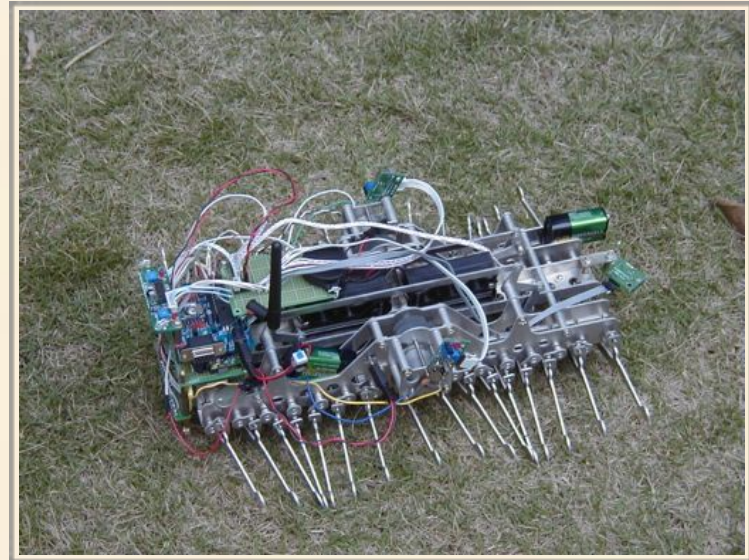
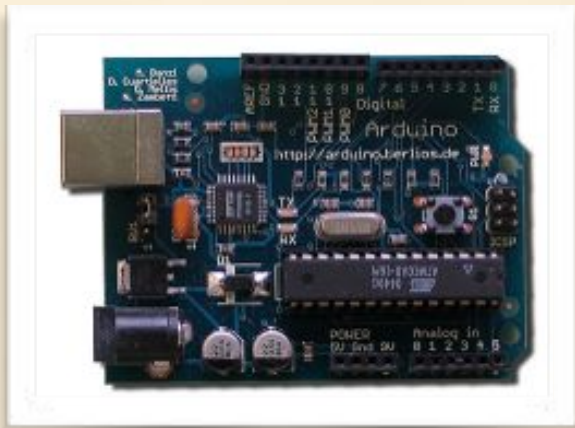
Controller

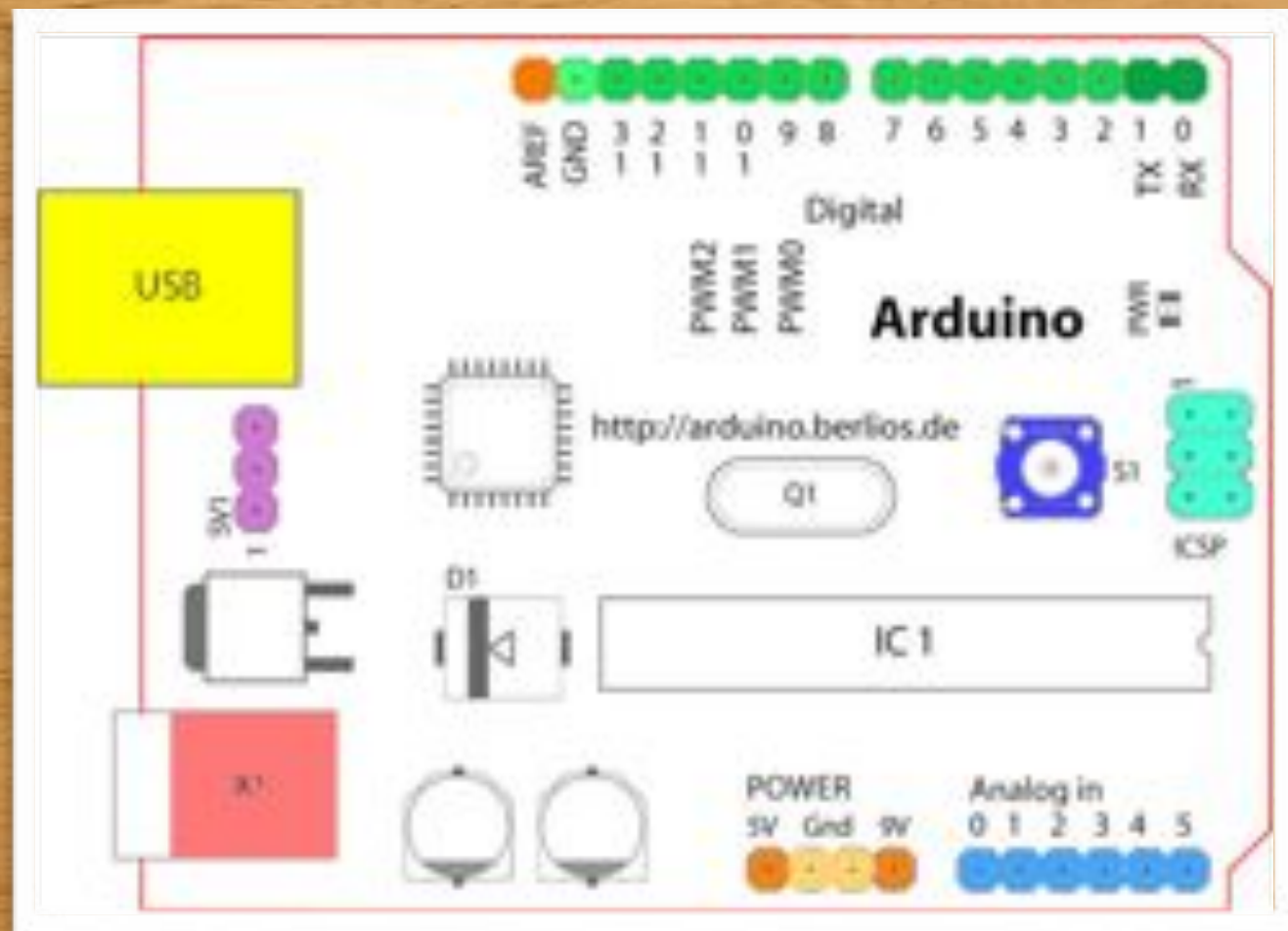


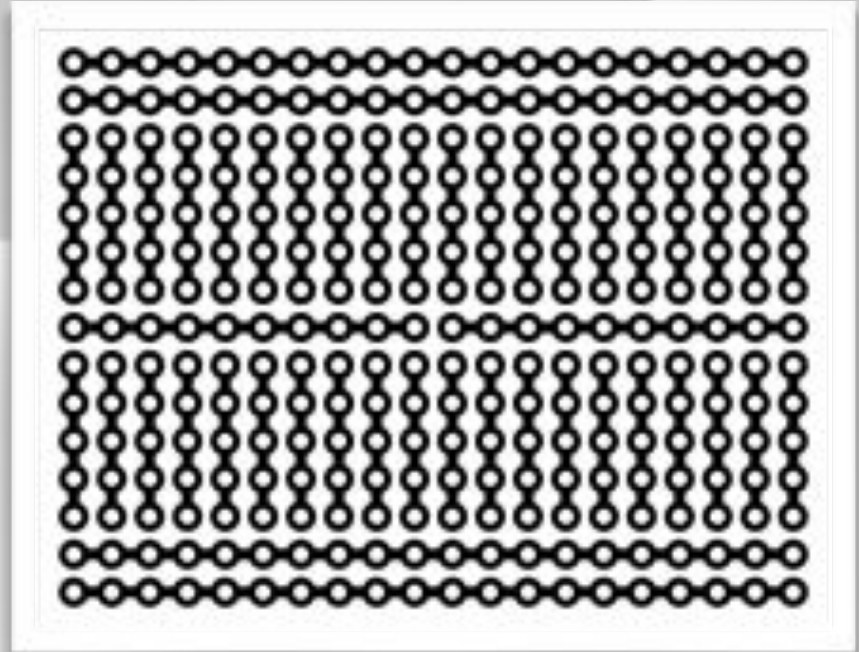
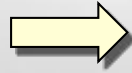
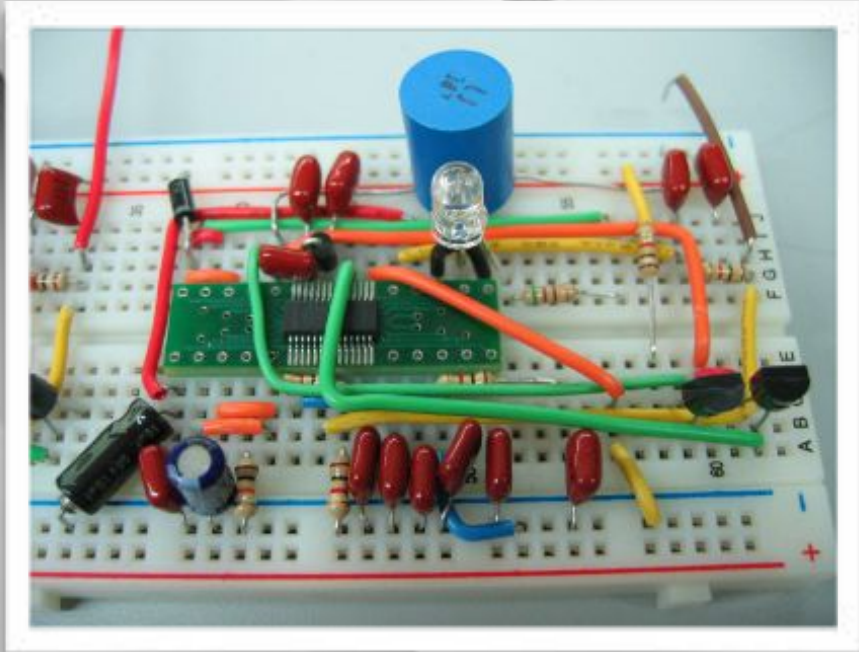
Actuator



Sensor



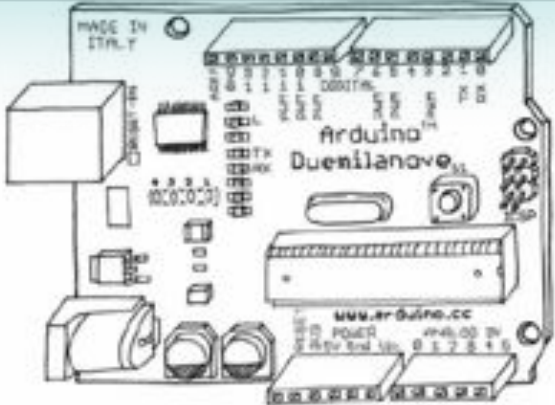







Arduino Platform

=



+



```
Arduino - 0013 Blink
File Edit Sketch Tools Help
Sketch
*
* Blink
*
* The basic Arduino example. Turns on an LED on for one second,
* then off for one second, and so on... We use pin 13 because,
* depending on your Arduino board, it has either a built-in LED
* or a built-in resistor so that you need only an LED.
*
* http://www.arduino.cc/en/Tutorial/Blink
*/

int ledPin = 13;           // LED connected to digital pin 13

void setup()              // run once, when the sketch starts
{
  pinMode(ledPin, OUTPUT); // sets the digital pin as output
}

void loop()               // run over and over again
{
  digitalWrite(ledPin, HIGH); // sets the LED on
  delay(1000);              // waits for a second
  digitalWrite(ledPin, LOW); // sets the LED off
  delay(1000);             // waits for a second
}

Done compiling
Binary sketch size: 1008 bytes (of a 14336 byte maximum)
22
```

<http://arduino.cc>

VERIFY/COMPILE

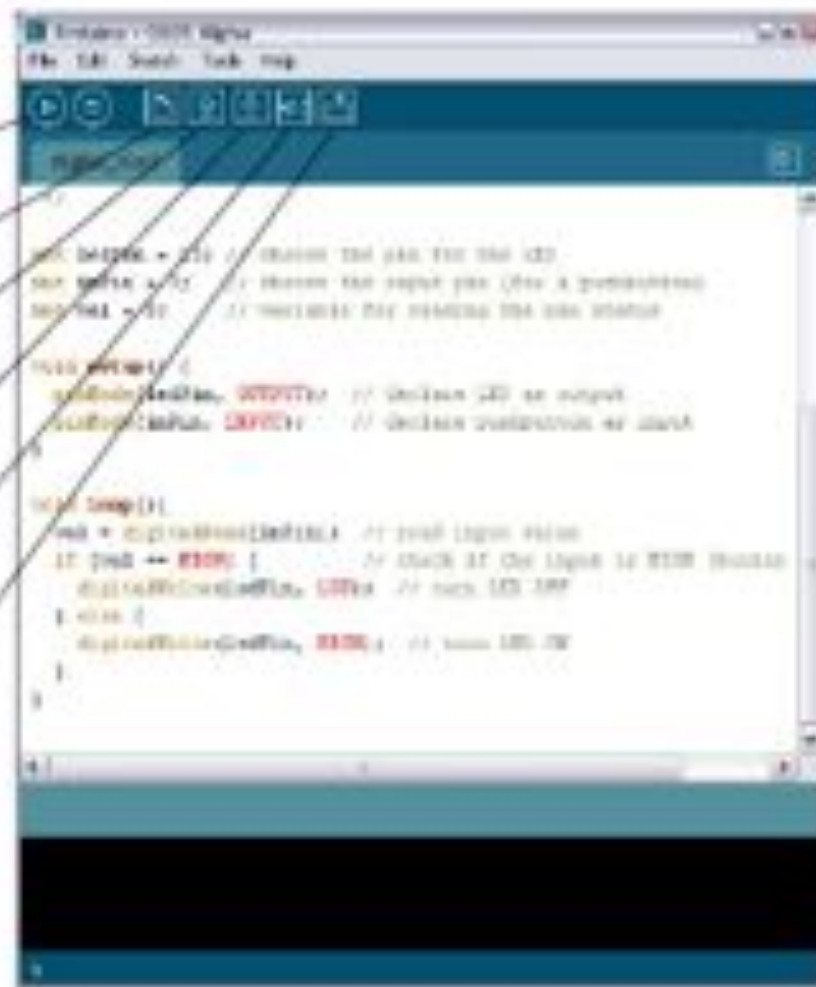
NEW SKETCH

OPEN SKETCH

SAVE SKETCH

UPLOAD

MONITOR



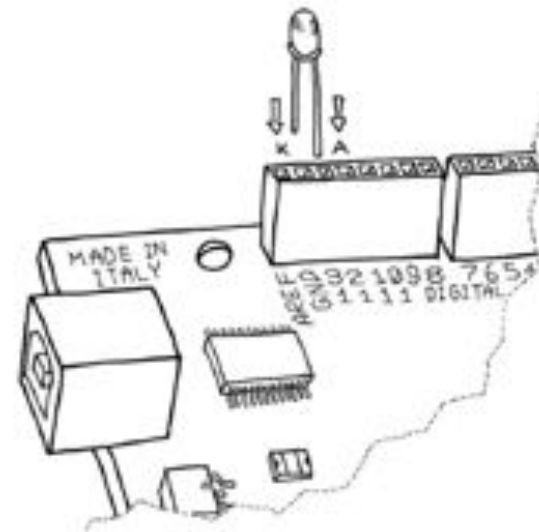
```
int LEDPIN = 13; // declare the pin for the LED
int INPUTPIN = 12; // declare the input pin (for a pushbutton)
int VAL = 0; // declares the variable for pin status

void setup() {
  pinMode(LEDPIN, OUTPUT); // declare LED as output
  pinMode(INPUTPIN, INPUT); // declare pushbutton as input
}

void loop() {
  val = digitalRead(INPUTPIN); // read input value
  if (val == HIGH) { // check if the input is HIGH (button
    digitalWrite(LEDPIN, LOW); // turn LED OFF
  } else {
    digitalWrite(LEDPIN, HIGH); // turn LED ON
  }
}
```


Παράδειγμα 1: Blinking LED

```
*  
* turns on and off an LED connected to pin 13  
*  
*/  
int ledPin = 13; // LED connected to  
// digital pin 13  
void setup()  
{  
  pinMode(ledPin, OUTPUT); // sets the digital  
  // pin as output  
}  
void loop()  
{  
  digitalWrite(ledPin, HIGH); // turns the LED on  
  delay(1000); // waits for a second  
  digitalWrite(ledPin, LOW); // turns the LED off  
  delay(1000); // waits for a second  
}
```



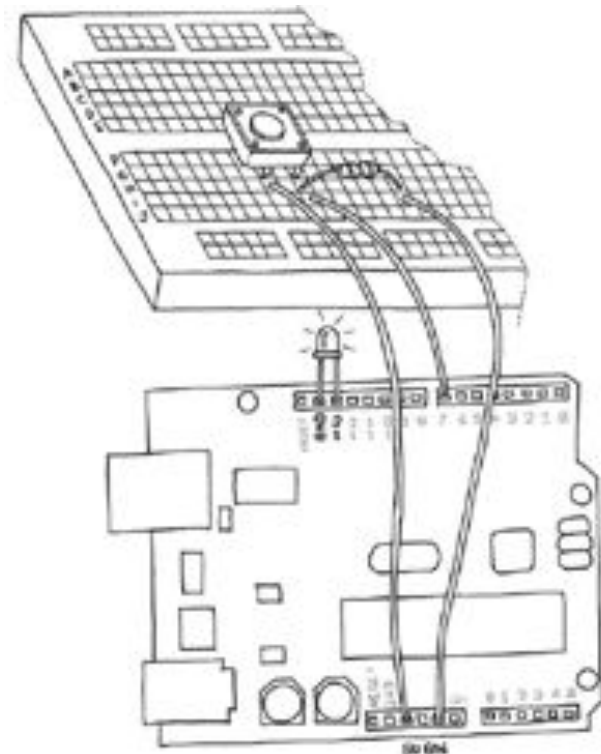
Παράδειγμα 2: Button-controlled LED

```
#define LED 13 // the pin for the LED
#define BUTTON 7 // the input pin where the
                // pushbutton is connected
int val = 0; // val will be used to store the state
             // of the input pin

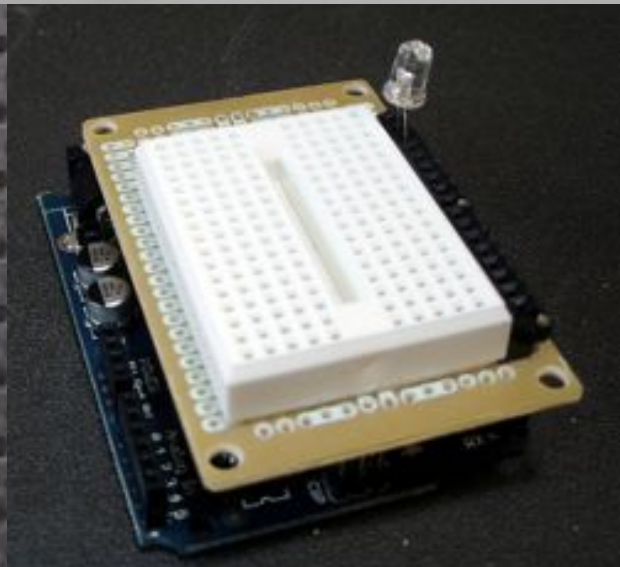
void setup() {
  pinMode(LED, OUTPUT); // tell Arduino LED is an output
  pinMode(BUTTON, INPUT); // and BUTTON is an input
}

void loop(){
  val = digitalRead(BUTTON); // read input value and store it

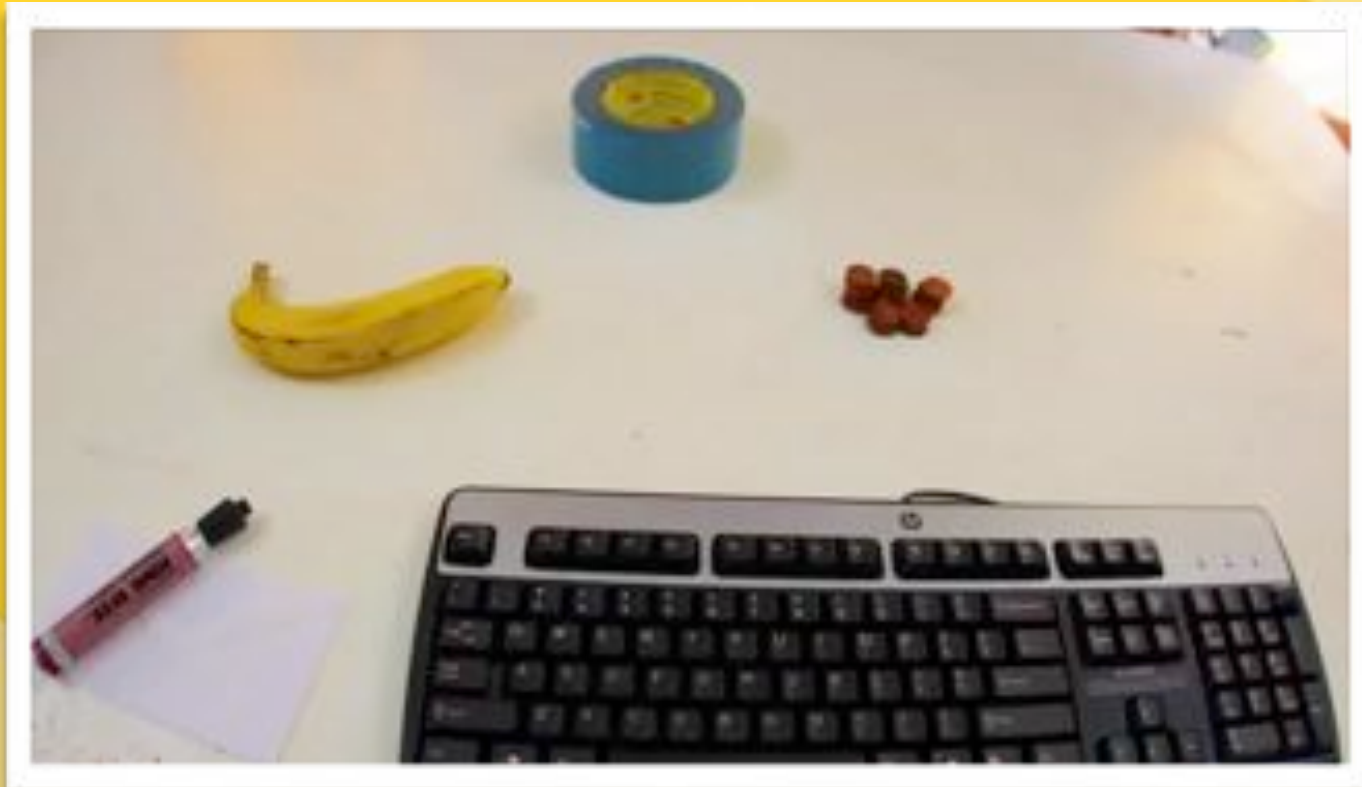
  // check whether the input is HIGH (button pressed)
  if (val == HIGH) {
    digitalWrite(LED, HIGH); // turn LED ON
  } else {
    digitalWrite(LED, LOW);
  }
}
```



Arduino shields



Εναλλακτικές Physical Computing Διεπαφές







ΤΕΛΟΣ

A young woman with blonde hair, smiling and touching her hair, with the Greek word 'Ερωτήσεις;' overlaid.

Ερωτήσεις;



Ανδρέας Φλώρος

floros@ionio.gr

<http://www.ionio.gr/~floros>