Arduino!
Arduino Philosophy...

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
Block Diagram!

Arduino

Computer

Network

Components
Block Diagram!

Arduino

Components

Computer

Network
Enough
Already?
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
*/

// Pin 13 has an LED connected on most Arduino boards.
// give it a name:
int led = 13;

// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}

// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH);  // turn the LED on (HIGH is the voltage level)
  delay(1000);              // wait for a second
  digitalWrite(led, LOW);   // turn the LED off by making the voltage LOW
  delay(1000);              // wait for a second
}
Added Challenge

Add a second LED and program the Arduino to have the two alternate (on/off) every second...
// constants won't change. They're used here to
// set pin numbers:
const int buttonPin = 2;     // the number of the pushbutton pin
const int ledPin = 13;      // the number of the LED pin

// variables will change:
int buttonState = 0;         // variable for reading the pushbutton status

void setup() {
    // initialize the LED pin as an output:
    pinMode(ledPin, OUTPUT);
    // initialize the pushbutton pin as an input:
    pinMode(buttonPin, INPUT);
}

void loop(){
    // read the state of the pushbutton value:
    buttonState = digitalRead(buttonPin);

    // check if the pushbutton is pressed.
    // if it is, the buttonState is HIGH:
    if (buttonState == HIGH) {
        // turn LED on:
        digitalWrite(ledPin, HIGH);
    }
    else {
        // turn LED off:
        digitalWrite(ledPin, LOW);
    }
}
Analog vs. Digital

Digital:
- Yes / No (Binary)
- Good for: Lights, switches, motor, buttons...

Analog:
- Ehhh...Maybe...
- Good for: Inputs with a range of values, some outputs
More analog sensors

Potentiometer

“Soft” Potentiometer

Flex Sensor

Temperature Sensor
That's it!*