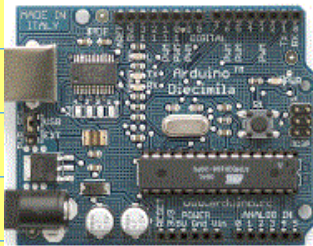


A microcontroller (sometimes abbreviated μC , μC or MCU) is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals.

What is Arduino?

The word "Arduino" can mean 3 things

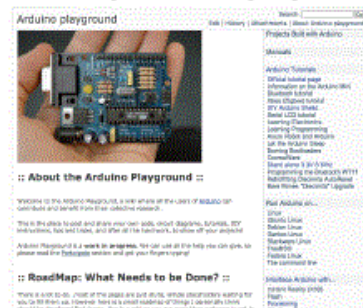
A physical piece of hardware



A programming environment



A community & philosophy



Arduino philosophy & Community

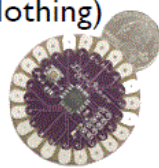
- Open Source physical Computing platform
 - Open Source hardware
 - free to inspect & modify
- Community built
 - Examples Wiki
 - Forums

Based on the AVR chipset - designed to be programmed in C.

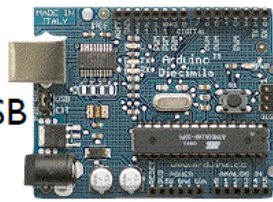
We are using the AVR ATmega328 chip

Arduino Hardware Variety

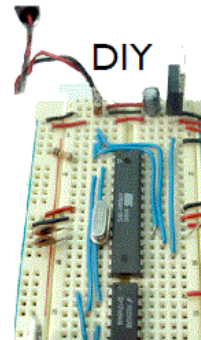
LilyPad
(for clothing)



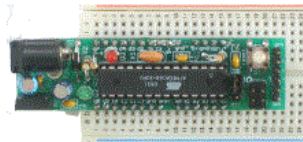
USB



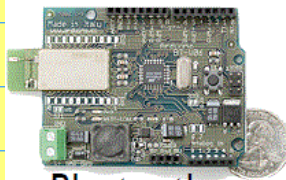
DIY



Boarduino Kit



Bluetooth



"Stamp"-sized



SUMMARY DATASHEET

Features

- High Performance, Low Power Atmel® AVR® 8-Bit Microcontroller Family
- Advanced RISC Architecture
 - 131 Powerful Instructions – Most Single Clock Cycle Execution
 - 32 x 8 General Purpose Working Registers
 - Fully Static Operation
 - Up to 20 MIPS Throughput at 20MHz
 - On-chip 2-cycle Multiplier
- High Endurance Non-volatile Memory Segments
 - 4/8/16/32KBytes of In-System Self-Programmable Flash program memory
 - 256/512/512/1KBytes EEPROM
 - 512/1K/1K/2KBytes Internal SRAM
 - Write/Erase Cycles: 10,000 Flash/100,000 EEPROM
 - Data retention: 20 years at 85°C/100 years at 25°C⁽¹⁾
 - Optional Boot Code Section with Independent Lock Bits
 - In-System Programming by On-chip Boot Program
 - True Read-While-Write Operation
 - Programming Lock for Software Security

- **Peripheral Features**

- Two 8-bit Timer/Counters with Separate Prescaler and Compare Mode
- One 16-bit Timer/Counter with Separate Prescaler, Compare Mode, and Capture Mode
- Real Time Counter with Separate Oscillator
- Six PWM Channels
- 8-channel 10-bit ADC in TQFP and QFN/MLF package
 - Temperature Measurement
- 6-channel 10-bit ADC in PDIP Package
 - Temperature Measurement
- Programmable Serial USART
- Master/Slave SPI Serial Interface
- Byte-oriented 2-wire Serial Interface (Philips I²C compatible)
- Programmable Watchdog Timer with Separate On-chip Oscillator
- On-chip Analog Comparator
- Interrupt and Wake-up on Pin Change

- **Special Microcontroller Features**

- Power-on Reset and Programmable Brown-out Detection
- Internal Calibrated Oscillator
- External and Internal Interrupt Sources
- Six Sleep Modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby, and Extended Standby

- **I/O and Packages**

- 23 Programmable I/O Lines
- 28-pin PDIP, 32-lead TQFP, 28-pad QFN/MLF and 32-pad QFN/MLF

- **Operating Voltage:**

- 1.8 - 5.5V

- **Temperature Range:**

- -40°C to 85°C

- **Speed Grade:**

- 0 - 4MHz@1.8 - 5.5V, 0 - 10MHz@2.7 - 5.5V, 0 - 20MHz @ 4.5 - 5.5V

- **Power Consumption at 1MHz, 1.8V, 25°C**

- Active Mode: 0.2mA
- Power-down Mode: 0.1µA
- Power-save Mode: 0.75µA (Including 32kHz RTC)

Arduino Diecimila Board

