Microcontrollers

Microcontrollers are small computers that can easily be interfaced to real-world sensors and effectors. They are inexpensive and easy to program, making them ideal for a variety of maker projects.

- Arduino: $25, credit-card size. Easy to plug in to. Shields plug in for capabilities such as internet.
- Arduino Pro Mini: $10 ($2 on eBay). Thumb-size, requires soldering.
- Flora: $20. Wearable Arduino, designed to be sewn into garments.
- Raspberry Pi: $35. Runs Debian Linux. Has plugs for internet, keyboard, mouse, TV for display, SD card hard drive. Desktop system costs $80 plus a TV.
- Starter Kits: $80 - $100. Includes a processor board, plugboard, wires, components, book of projects.
- Sensors: buttons, pots (potentiometers or volume controls), light, sound, temperature, tilt, motion, GPS, touch, muscle, camera, joystick, etc.
- Effectors: lights, motors, relays, sound, displays.
Arduino Programming

Arduino is programmed in C on a laptop:

/* Blink
   Turns on LED for 1 second, then off, repeat.
   LED is attached to digital pin 13.
   by Scott Fitzgerald
*/

// setup function runs once on power up
void setup() {
   // initialize digital pin 13 as an output.
   pinMode(13, OUTPUT);
}

// the loop function runs forever
void loop() {
   digitalWrite(13, HIGH);  // turn the LED on
   delay(1000);             // wait 1 second
   digitalWrite(13, LOW);   // turn the LED off
   delay(1000);             // wait 1 second
}
Resources

• www.arduino.org
• www.raspberrypi.org
• www.sparkfun.com
• www.adafruit.com
• www.seeedstudio.com fritzing.org
• www.element14.com
• www.mcmelectronics.com
• www.alliedelec.com www.mouser.com
• austinmakerfaire.com makerfaire.com makezine.com
• amazon.com, ebay.com, the usual suspects.