***Different Types of Microcontrollers Boards and Comparison between them***

What is a **Microcontroller**?

A Microcontroller is a small computer on a single integrated and architecture circuit. It generally consists of a microprocessor unit, RAM, ROM, and some extra peripherals.

**Applications** of Microcontroller in Day to Day Life Devices:

* Light sensing & controlling devices
* Temperature sensing and controlling devices
* Fire detection & safety devices
* Industrial instrumentation devices
* Process control devices

|  | **Arduino Uno R3** | **Raspberry Pi 4** | [**Adafruit Feather nRF52840 Sense**](https://www.adafruit.com/product/4516) | **Arduino Mega 2560 Rev3** |
| --- | --- | --- | --- | --- |
| **Cost** | **$ 23** | **$55**  **(For RAM = 4GB)** | **$37.50** | **$40.30** |
| **Processor Speed** | **16 MHz** | **1,500 MHz** | **64MHz** | **16 MHz** |
| **Language can be used** | **Arduino code is written in C++**  **It can’t use Python or Java** | **By Default:**   * **C/C++** * **Python2 & 3** * **Scratch**   **However, nearly any language compiler or interpreter can be installed on Raspbian OS.** | **C/C++**  **But can be programmed using:**  **Python**  **Java** | **Original:**  **C**  **C++**  **But can be programmed using:**  **Python**  **Java** |
| **Special Features** | * **20 digital input/output pins.** * **ATmega16U2 programmed** * **It can activate a motor, turn on LEDs, or publish anything online.** | * **Dual micro HDMI ports** * **The ability to output** [**4K**](https://vanilla.tools/news/4k-definition,37642.html) **video at 60 Hz** * **Support for USB 3 and true Gigabit Ethernet** | * **Bluetooth Low Energy** * **LED** * **Reset button** |  |
| **Digital Pins** | **14 pins** | **28 GPIO (digital or analog pins)** | **12** | **54** |
| **Analog pins** | **6 pins** | **28 GPIO (digital or analog pins)** | **6** | **16** |
| **Memory** | **32 KB (ATmega328P) of which 0.5 KB used by bootloader** | **The Raspberry Pi 4 is currently available in 2GB, 4GB and 8GB variants.** | **256KB SRAM** | **256 KB of which 8 KB used by bootloader** |
| **Weight** | **25 g** | **46g** | **6 grams** | **37 g** |
| **Length** | **68.6 mm** | **30 mm** | **51mm** | **101.52 mm** |
| **Width** | **53.4 mm** | **85 mm** | **23mm** | **53.3 mm** |
| **Processor** | **Tmega328PA** | **Integrated with broadcom 2711, 64-bit quad-core Cortex-A72 processor.** | **ARM Cortex M4F** |  |
| **Link Page** |  | <https://www.raspberrypi.com/products/raspberry-pi-4-model-b/> | https://learn.adafruit.com/adafruit-feather-sense/overview |  |

**Sources:**

* <https://store-usa.arduino.cc/products/arduino-uno-rev3/>
* <https://www.pololu.com/product/2191>
* <https://www.tomshardware.com/reviews/raspberry-pi-4>
* <https://socialcompare.com/en/comparison/raspberrypi-models-comparison>
* <https://learn.adafruit.com/adafruit-feather-sense/overview>