**Raspberry Pi –**

It is a single board computer based on ARM architecture. It consists of a fully functional computer with its dedicated memory, processor and usually runs Linux (Raspbian distro which is made for the RasPi).

**V/s Arduino :**

The Raspberry Pi is significantly more powerful than an Arduino board.

The latest RasPi 4 runs on a Broadcom BCM2711B0 quad-core 64Bit CPU, hence true 4 core multithreading is possible. It also has built in dual band Wi-Fi, Bluetooth 5 and upto 4GB of RAM. Hence, for tasks requiring heavy processing and multithreading as well as out of the box internet connectivity Raspberry Pi is an obvious choice. E.g IOT devices which require on site processing.

Arduino on the other hand runs on ATmega328P which is a 8Bit microcontroller running @ 16Mhz. It is best used in simple tasks that require little to no processing. E.g motor control or analyzing sensor output.

In the ease of use factor the Arduino wins over the Raspberry Pi as the Arduino IDE is intuitive and the programming simple. To utilize Ras Pi to its full potential you need basic Linux+Python knowledge.

**Arduino Alternatives:**

* ESP8266
* Teensy 3
* STM32

**Raspberry Pi alternatives:**

* Banana Pi
* Pocket Beagle
* Asus Tinker Board
* Qualcomm Dragonboard

**ARM Cortex M based uC:**

STM32, ESP8266/ESP32

The ARM Cortex-M is a group of 32-bit RISC ARM processor cores licensed by Arm Holdings.

These offer much higher clock speeds and also true multithreading at a similar cost to Arduino.

In situations where a Raspberry Pi will be big/expensive, these Cortex M based uCs fill the gap.

Also, these boards are be easily programmed using the Arduino IDE or using their own development tools/IDEs.