***different comparisons micro-controllers to micro-processors***

There are various similarities between the microprocessor and microcontroller as they perform relatively the same tasks. There exist differences between microprocessor and microcontroller which are elaborated in the table provided below on various factors:

|  |  |
| --- | --- |
| **Microprocessor** | **Microcontroller** |
| Heart of the system. | Heart of the embedded system. |
| Externally connected with input-output components. | input-output components are embedded. |
| The circuit may be large depending upon usage. | The circuit is very small. |
| Not cost-effective. | Cost-effective. |
| The total consumption of power is high. | Total consumption of power is less. |
| Power saving mode is not generally available. | Power saving mode is generally offered. |
| Used in PC. | Used in MP3 players, washing machines, etc. |
| Memories like RAM and ROM are absent. | Carries RAM, ROM, etc. |
| Runs at a very high speed. | Runs at a relatively lower speed. |
| It is complex and costly. | Simple and cheap. |
| Example: DEC Alpha 21164, IBM RS6000, etc | Example:  Intel 8031/8051, PIC1x, etc. |

**Is ESP32 a Microprocessor?**

The answer is yes, the ESP32 is a microprocessor. ESP32 microprocessor is a chip-based system that offers a full range of functions, such as a microcontroller, as well as built-in capabilities for Wi-Fi and Bluetooth connectivity. The ESP32 can be programmed using the Arduino IDE or other development environments, making it easy to use for hobbyists and professionals alike.

The ESP32 is a type of microcontroller that is cost-effective along with low energy requirements. It has built-in Wi-Fi and can use both Bluetooth modes. It uses either a dual-core or single-core Tensilica Xtensa LX6 microprocessor or a single-core RISC-V microprocessor.

References:

<https://byjusexamprep.com/difference-between-microprocessor-and-microcontroller-i>

<https://linuxhint.com/is-esp32-a-microprocessor/>