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| Features | |  | | --- | | Arduino | | |  | | --- | | Raspberry Pi | | |  | | --- | | ESP32 | |
| Processor Architecture | 8-bit AVR or 32-bit ARM | ARM Cortex-A series | Dual-core Xtensa LX6 |
| Clock Frequency | 16 MHz - 180 MHz | 600 MHz - 1.8 GHz | 240 MHz |
| Cost | Low ($3 - $30) | Moderate ($35 - $100+) | Low ($5 - $10) |
| Connectivity | Limited (Serial, I2C, SPI) | Built-in Ethernet, Wi-Fi | FreeRTOS |
| Operating System | None | Linux-based OS | Arduino IDE, ESP-IDF |
| Development Environment | Arduino IDE | Various (Python, C++, etc.) | IoT projects, wearables |
| Applications | Simple projects (sensors, LEDs) | Media centers, robotics | Moderate |