Embedded System Design Using Raspberry-Pi SBC

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Abstract: **The Raspberry Pi is a credit-card-sized single-board computer developed by the Raspberry Pi Foundation. It has a Broadcom BCM2835 system on a chip (soc), which includes an ARM1176JZF-S 700 MHz, Video Core IV GPU, and having 256 or 512 megabytes of RAM. It does not include a built-in hard disk or solid-state drive but uses an SD card for booting and long-term storage. Raspberry-pi hosts web server in local network. So, when user get connected with web server, user can control devices interfaced with R-Pi. R-Pi based web server can be used in various application areas for exp automation, monitoring and control system etc.**

Model A has one USB port and no Ethernet controller, and costs less than the Model B+ with four USB ports and a 10/100 Ethernet controller. Though the Model A does not have an 8P8C (RJ45) Ethernet port, it can connect to a network by using an external user-supplied USB Ethernet or Wi-Fi adapter. On the model B+ the Ethernet port is provided by a built-in USB Ethernet adapter.

Keywords: **Embedded System, Raspberry Pi, Home automation, Single board computer, Without GSM module.**

1. INTRODUCTION

- *What is Embedded System?*

An embedded system is a system that has software embedded into computer-hardware, which makes a system dedicated for an application(s) or specific part of an application or product or part of a larger system.

- *How Interfacing is done between PI model & embedded system?*

Raspberry PI is a reference model so we can connect that model with embedded system such as laptop, pc, mobile (any OS). System would be connected to monitor via HDMI cable. In another case we would consider R-PI as web browser and interfaced embedded system would commanded by user wireless and that command give output at that load which is connected with R-PI model. Here we have to also connect some equipment with R-PI which would commanded by user wirelessly.

2. BLOCK DIAGRAM
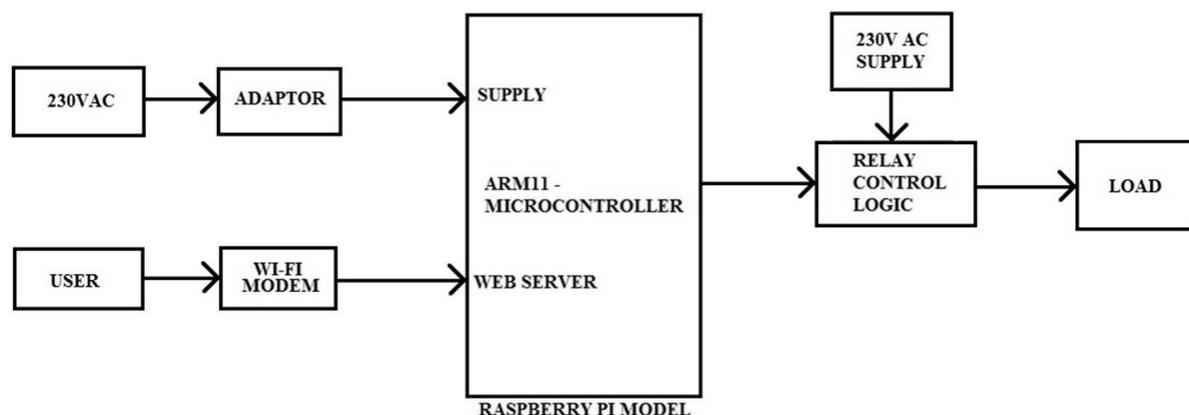
3.   PROCESS

Step 1: Enter IP address in web browser in laptop or mobile or tablet.

Step 2: Switch on or off of the embedded system.

Step 3: Program executed in the raspberry pi.

Step 4: Relay operate the appliances.

Step 5: The switch is blink in the web browser when it is turned on or off.

4.   CONCLUSION

Thus we have conclude that we can operate the embedded system or home appliances in safe and with full secure web server with the help of wireless connectivity and with or without GSM module.

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