

## Embedded Web server using TCP/IP protocol

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**Abstract-** This paper presents for comfort and security low purpose having low cost Industrial Control & Monitoring system using Raspberry Pi programming based Website. This system requires Microcontroller based web server. This proposed system easy to handle industrial appliances such as fan, sprinkler etc. Industrial control and monitoring system we using the sensors, temperature, humidity and current. Industrial automation allow to increasing work efficiency, comfort and security To control real time parameters using internet we used a Raspberry Pi to configure and set up a web server with an IP address and port forwarding, which would allow access from another source connected to a network .Here we are using TCP/IP a very famous protocol to transmit data through internet.

**Keywords:** *Web server, Raspberry pi*

### I. INTRODUCTION

Raspberry Pi is almost a micro-computer. It was invented by Eben Upton. This tiny computer is just \$35 and is sparking a revolution. There is a large user community of Raspberry Pi, although, it was launched just recently on February, 29th 2012. To control real time parameters from a distance using internet We planned to use a Raspberry Pi to configure and set up a web server with an IP address and port forwarding, which would allow access from

another source connected to a network. The web server will have minimal features; We planned to build such a network system that can be used by small scale industries to control real time parameters such as temperature, humidity, etc. We are going to use HTML programming to develop a web page and python programming language to program raspberry pi.

A website developed using HTML language going to be burnt in Raspberry Pi. For programming the Raspberry Pi and controlling parameter We have used Python programming Language. Hence embedded web server is a cost efficient solution for the Real web server and is very useful for small scale industries.

### II. PROBLEM DEFINATION

An embedded web server should use the HTTP protocol to transmit Web pages from the embedded system to the web browser and to transmit form data back to the embedded system attached to the appliance. The embedded system requires a network interface, such as Ethernet, a TCP/IP protocol stack, embedded web server software and static and dynamic web pages that form the user interface for that specific device. Because the embedded systems have limited CPU and memory resources and these resources are mostly used by real-time applications, end-

users may have to wait up to few seconds for an HTTP response. Multi-threading should be employed in the embedded systems to avoid slow response. Moreover

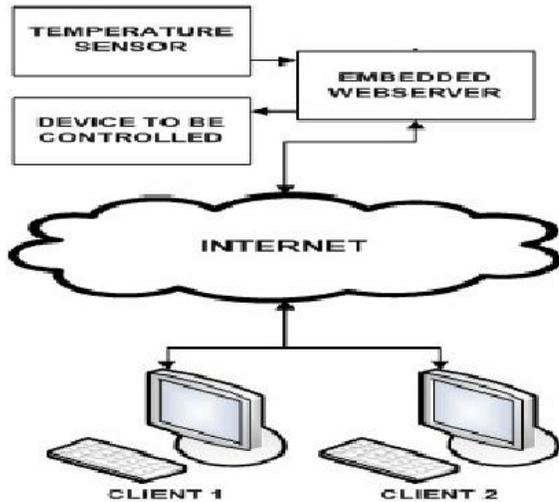


Fig1- System architecture of the proposed embedded web server.

### III. CONCEPTUAL ARCHITECTURE

This proposed architecture is divided into 3 parts: Remote environment; Raspberry pi gateway & home internet connectivity shown in figure.

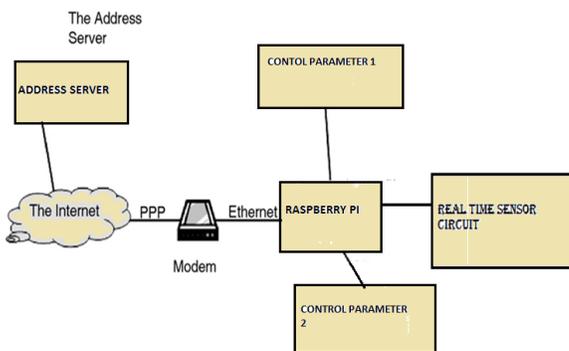
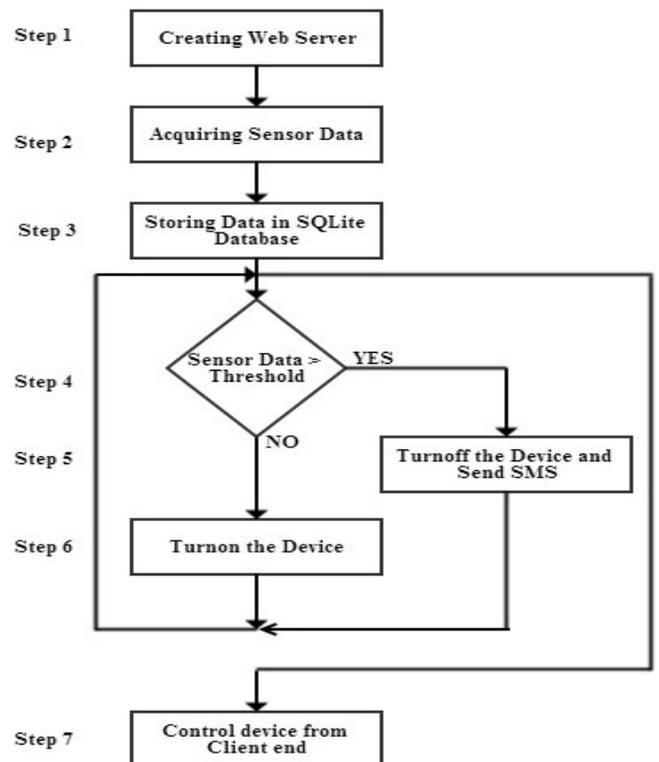


fig2. Conceptual Architecture

We collected real time sensor information using sensors. Temperature sensor (MCP9700), Humidity sensor(SY-HS-220), PIR sensor(GH-718-human INDI) senses real tome information of temperature, humidity and motion of human being These signals are sent to raspberry Pi using analog to digital converter ADC. Raspberry Pi manipulates this information and according to given program and conditions it switches relays using ULN2803. These relays are connected to output parameters respectively sprinkler, artificial cooler and door Lock driver. The website is burnt into Raspberry Pi, information collected by the sensors is sent on website. Also from website we can control the output parameters by switching relays off and on.

### IV. DESIGN IMPLEMENTATION

#### FLOW CHART FOR WEBSERVER





Linux fundamental commands, and some HTML language basics

International Conference on Process Automation, Control and Computing (PACC); 2011.

## VII.FUTURE SCOPE

This System can be used as a cloud storage. A download and upload link can be provided to the website and this server can also be used as a cloud storage. We can interface more sensors and control processes. We have use to two sensors. Also to make it very simple it can be used just as just a monitoring system

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