

TEMPERATURE CONTROL USING RASPBERRY PI BASED ON IOT

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Abstract:

Web of things is a thought of making gadgets and articles more quick witted by connecting them to web. Utilizing Raspberry Pi PC, DHT sensor and an electronic gadget that transmit or get data about temperature and mugginess information over the web is utilized. Program the framework such that at whatever point the temperature surpasses a specific cutoff the gadget will consequently sends a warning to the versatile through SMS. A promptly accessible IOT application from play store is introduced in a portable for performing switch on/off activities to the electronic gadgets show in a similar room. Henceforth the temperature of the room can be controlled. Raspberry Pi is a scaled down PC which plays out numerous undertakings at once than Microcontroller which is an application particular i.e., one program can be keep running at once. Web availability isn't simple in microcontroller however it is genuinely simple to interface Raspberry Pi to web.

Keywords: Raspberry Pi, DHT11 Sensor, IOT

1. INTRODUCTION:

Principle point of the venture is to gauge temperature and relative stickiness by utilizing fitting sensors which is

exceptionally helpful for mechanical reason and furthermore for house hold reason. Recording the data is likewise essential

which should be possible by consolidating gadgets. Raspberry PI is the most recent and productive remote temperature control procedure.

2. EXISTING METHODS:

Arduino functions as a microcontroller for controlling the temperature yet its impediments are:

- Power prerequisite
- Network availability
- Sensor availability
- Development dialects

These are overwhelmed by utilizing Raspberry PI.

Raspberry PI is a scaled down PC which plays out different errands at once than Microcontroller which is an application particular i.e., one program can be keep running at once. Web network isn't simple in microcontroller however it is genuinely simple to associate Raspberry Pi to web.

3. MODIFIED METHOD:

Raspberry pi is the most recent innovation. Proposed framework picture and

store temperature parameters with the assistance of sensors interfaced to Raspberry Pi will get all information and put away in a memory card. Python is the suggested dialect. A versatile application is utilized for temperature recording.

4.COMPONENTS REQUIREMENT:

Equipment prerequisite:

- Raspberry Pi
- DHT11 Sensor
- Devices (Fan and Electrical knob)
- Micro SD card
- Mobile
- VGN to HDMI link
- Power bank

Programming prerequisite:

- Install OS
- Python programming
- Internet association
- Mobile application

4.1.Raspberry Pi:

The Raspberry Pi is an awesome small scale PC that overflows with potential. With a Raspberry Pi can construct robots, figure out how to code, and make a wide range of odd and awesome ventures. Raspberry Pi with a little green leading body of chips and attachments. Before building the rudiments arranged: console, mouse, show, and working framework[1].



Fig 4.1: Raspberry Pi

4.2.DHT11 Sensor:

DHT11 advanced temperature and dampness sensor is a composite Sensor

contains an adjusted computerized flag yield of the temperature and stickiness.

Highlights:

Ease, long haul steadiness, relative stickiness and temperature estimation, magnificent quality, quick reaction, long separation flag transmission, computerized flag yield, and exact alignment.

Applications:

HVAC, dehumidifier, testing and review gear, purchaser merchandise, car, programmed control, information lumberjacks, climate stations, home apparatuses, stickiness controller, restorative and other mugginess estimation and control as shown in Fig 4.2 .

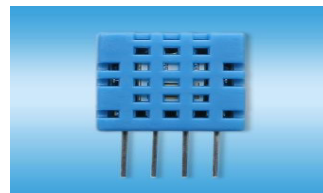


Fig 4.2:DHT11 sensor

4.3.Micro SD Card:

The miniaturized scale SD card goes about as the hard drive for Raspberry Pi. Install the Raspbian working framework onto the card, at that point all archives, documents, and activities are spared to it. Samsung Evo+ and SanDisk Extreme are two famous brands worth paying special mind to, and both are genuinely modest[1].



Fig 4.3:Micro SD Card

4.4.HDMI link:

A HDMI link is the most straightforward approach to associate Raspberry Pi to a PC screen or TV. Needn't bother with a costly one, and the vast

majority reuse one from an old amusements comfort or DVD player as shown in Fig 4.4.



Fig 4.4: HDMI Cable

4.5.USB power:

A decent 2A or 2.5A power supply furnish with enough energy to run a Raspberry Pi with a wide range of peripherals associated.



Fig 4.5: USB Power Cable

5.INSTALLING OS:

5.1.Start with NOOBS :

There are two ways to deal with introducing Raspbian and other working frameworks. Fledglings should begin with NOOBS .More propelled clients may duplicate a picture record containing an entire working framework straightforwardly to the SD card. Associate your small scale SD card to a Mac or Windows PC, normally utilizing a smaller scale SD-to-SD card connector or a USB card peruser, and utilize SD Card Formatter to eradicate the card. Next, download the NOOBS ZIP document. Concentrate the substance of the document and open the NOOBS organizer. Duplicate the substance crosswise over to the base of the SD card[2].

6.AVAILABLE OS:

6.1.Raspbian :

The authority working framework is the most effortless to utilize, and the one

fledglings should begin with. It works a considerable measure like other famous working frameworks.

6.2.Windows 10 IOT Core :

Not the full form of Windows, but rather Windows 10 IOT Core empowers software engineers to run Internet of Things and inserted ventures

6.3.Ubuntu MATE:

Ubuntu is one of the world's most prevalent Linux working frameworks, lightweight form that runs fine and dandy on the Raspberry Pi.

7.SETTING UP THE INTERNET:

Get online remotely and rapidly, setting up remote LAN on Raspberry Pi

7.1.Check for Systems:

Tap on the Wireless Networks symbol in the Panel. Raspbian will show a rundown of all the remote systems accessible in neighborhood. Tap on the one that is our own.

7.2.Enter Your Secret Key:

Enter your Wi-Fi secret key in the Pre Shared Key field and tap on OK. The system image will change to a remote image and associated.

7.3.Test Association:

Test web association by opening a page. Tap on Web Browser in the Launch Bar and enter www.raspberrypi.org in the URL field. Press RETURN to stack the page.

8.BLOCK DIAGRAM:

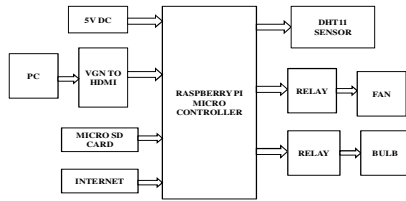


Fig 8: Block Diagram



Fig 8.1: Proposal Method

9. BLOCK DIAGRAM

DESCRIPTION:

The raspberry pi, first checks the web association, if there is no industriousness of web network, at that point the execution of the raspberry pi will be ended. On the off chance that the Raspberry pi, is associated the web, the execution of the program will be done consequently. The temperature and the dampness parameters as shown in Fig 10.1, are estimated and sent to the web cloud for like clockwork and the parameters are detected and sent to the cloud[3].

When the temperature increases greater than the room temperature we will get SMS from the Raspberry Pi to our mobile through internet at that point we can switch on/off the devices by giving the reply to Raspberry Pi and we can observe the temeparature in graph from by using think speak website[2].

10. RESULTS:

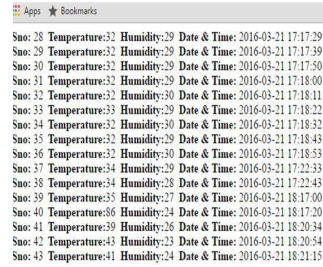


Fig 10.1: Web application, showing the deliberate parameters



Fig10.2: versatile application, demonstrating the deliberate parameters

11. CONCLUSION:

In light of current circumstance of the improvement, another plan of house hold temperature and mugginess checking framework made out of Raspberry Pi, DHT11 sensor and android cell phone is utilized. Proposed strategy has great adaptability. Less expensive in cost contrasted with the current methods.

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Bibliography:



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