

RASPBERRY PI BASED SMART CAMPUS

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Abstract : *The key thought is to insert physical sensors specifically into the fabric of the grounds. These might incorporate temperature sensors in labs, pir sensors in limited regions, and light sensors in rooms. By and large, such little scale sensors ought to be generally appropriated and subtle. They ought to be low power electronic gadgets, with negligible expenses for acquisition, establishment, operation and support. To relieve worries over security, no individual information ought to be gathered specifically by the sensors. Rather, information gathering and detailing should concentrate on natural components, instead of individual ones.*

Keywords : raspberry pi3 ,PIR sensor ,light sensor, temperature sensor ,ADC etc.,

1.Introduction

What does a 21st century college grounds resemble? One feature objective is to make a "savvy" grounds. This paper investigates possible establishment What's more use instances for a model smart fact proving ground. As a beginning stage, we accept that all grounds clients have cell phones (advanced mobile phones or tablets) and that there is broad Wi-Fi scope over the college premises, inside and outside. We depict an approach for building up a grounds wide sensor organize utilizing item single board PCs.

We outline different utilize cases for natural sensor information, for various college partners. Our key introduce is that super sensors — sensors with critical figure capacity—empower more adaptable information accumulation, handling and response. These web for things (IoT) built sensors Also conclusion customer particular circumstances are will an incredible

degree standard.. There are many utilize cases for this style of ecological detecting information framework. In a college authoritative setting, a conceivable utilize case would be 'gather room usage insights' crosswise over concentrated instructing spaces. For understudies, the utilization case may be 'find a calm report zone'.

A. Raspberry Pi

The raspberry phytotoxin 3 model b will be out and its astonishing! for An overhauled ARMv7 multi focus processor, Furthermore An full Gigabyte from claiming RAM, this pocket pc need moved from constantly a 'toy PC' should An real desktop pc. The enormous redesign is a move from the BCM2836 (single center ARMv6) to BCM2837 (quad center ARMv7). The overhaul in processor sorts implies you will see ~2x execution increment just on processor-redesign as it were. For programming that can exploit numerous center processors, you can expect 4x execution by and large and for truly multi-string cordial code, up to 7.5x increment in speed.

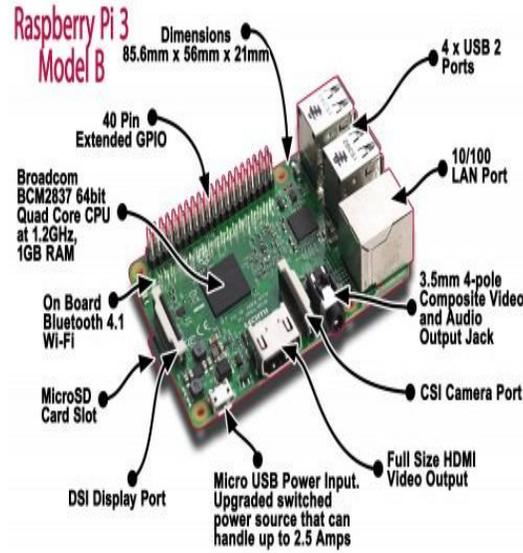


Fig. 1. Raspberry Pi 3 model B Board

2. Methodology

In this section we present a theory on Raspberry pi based smart campus in section 2.1 the overall block diagram of the proposed system is explained. In section 2.2 each and every block of the system is explained in detail.

2.1 Overall Block Diagram

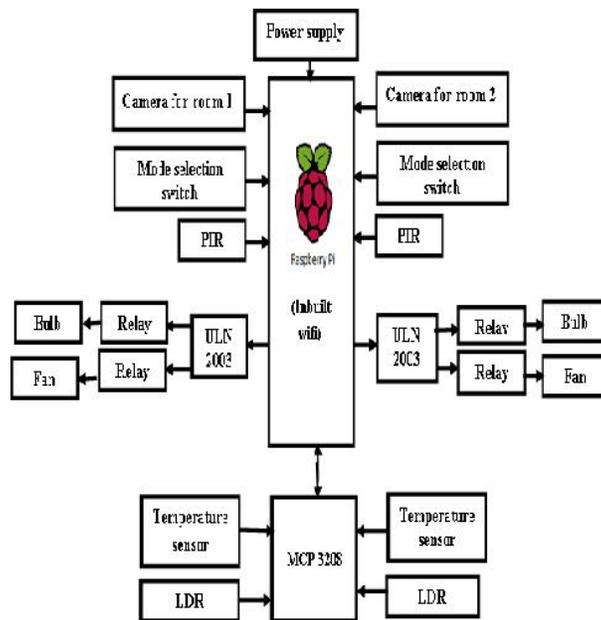


Figure 2 . overall proposed block diagram

In this proposed block diagram consists of several sensors (Temperature sensor,LDR,PIR sensor) are connected to core controller. The core controller are accessing the sensor values and processing them to transfer the data through the internet.the raspberry pi is used as a core controller. The sensor data can be viewed on the internet using cloud computing with a separate IP address.

2.2 Proposed system

In our proposed system raspberry pi 3 is used as a core controller. The raspberry pi is run on LINUX kernel by the use of keyboard and monitor the linux os is boot on the raspberry pi 3. The temperature sensor, light sensor and PIR sensor can be read directly from the command line. However, this requires us to input a command every time we want to know the sensors reading. In ordered to access all the terminals of the sensors, python program is used, which will read the sensors value automatically at set time intervals.

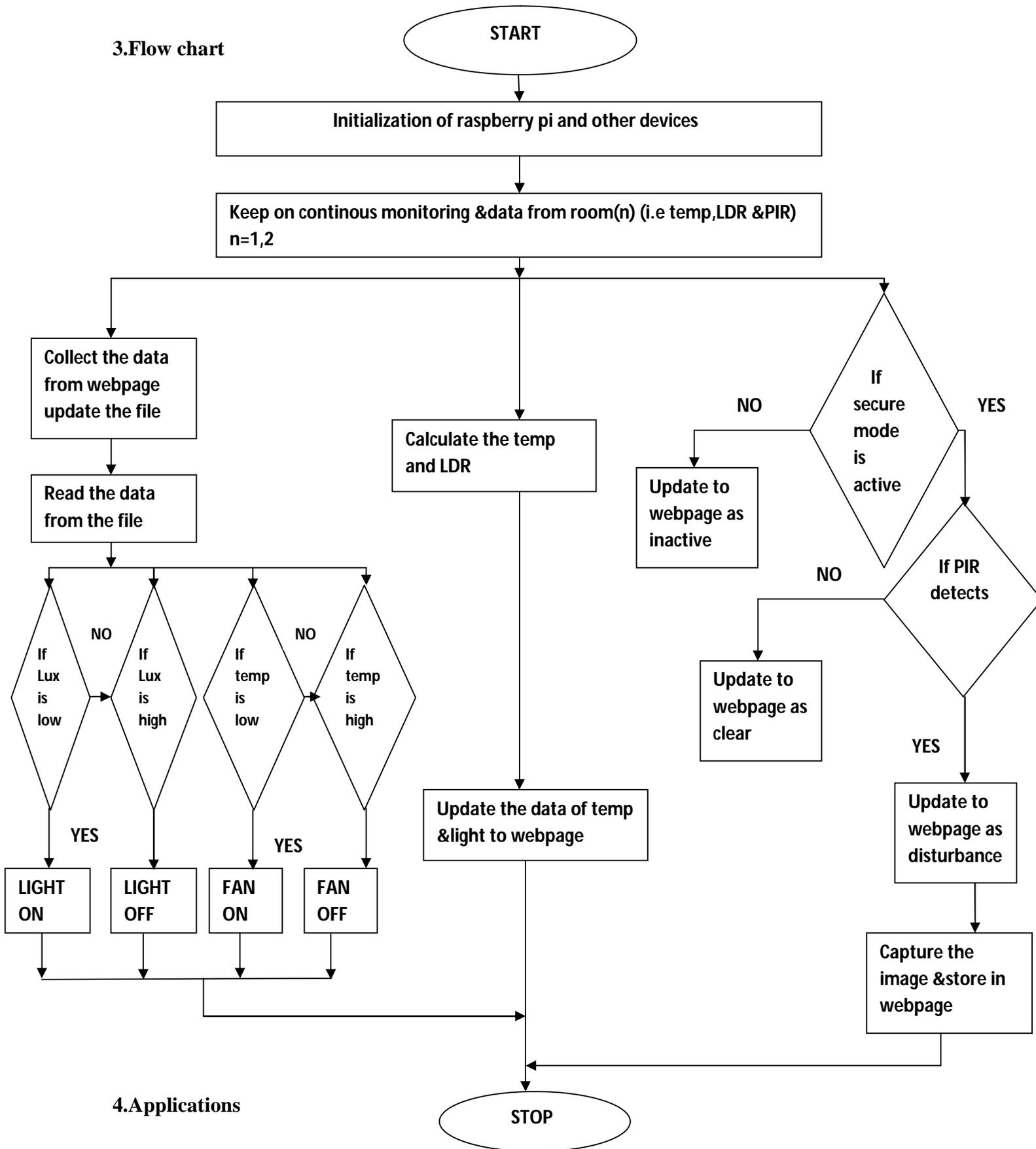


Figure 3 proposed system hardware setup

2.3 Working principle

In this project we are using three different sensors they are temperature sensor, light sensor and motion sensor. these sensors are placed in the class rooms, laboratories,exam hall etc., in the campus. Sensors are connected to the raspberry pi 3 then the sensors data can be received by the raspberry pi 3 and we will receive the data through the mobile by using separate ip address ,by monitoring the values of the sensors we can control the objects. For example if the temperature is showing high then we can switch on the fan from the respective place.

3.Flow chart



4.Applications

- i) Industries
- ii) Home appliances
- iii) Security systems

5. Results

As discussed the below figure shows the web page of room1 and room2



Fig 4 : Web page of Room 1, Room 2

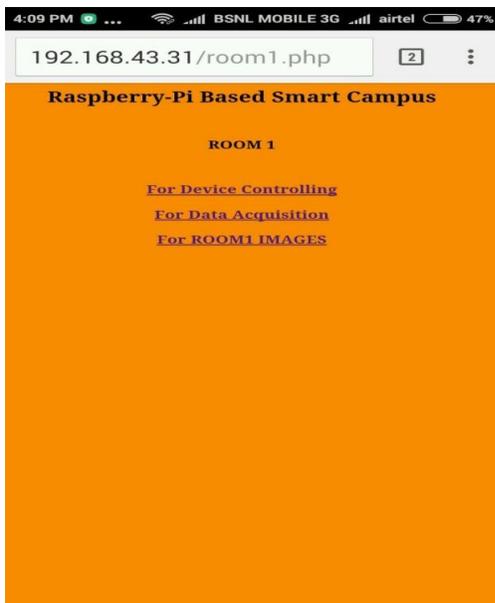


Fig 5: Data in room 1



Fig 6: Devices control unit in room1

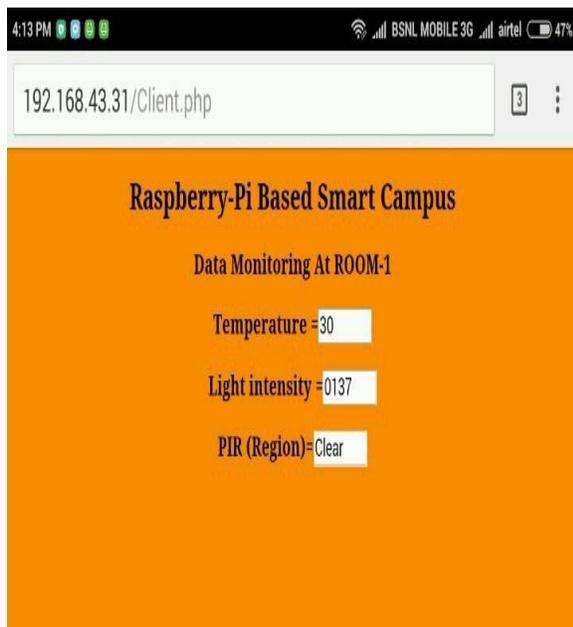


Fig 7: Data monitoring at room 1

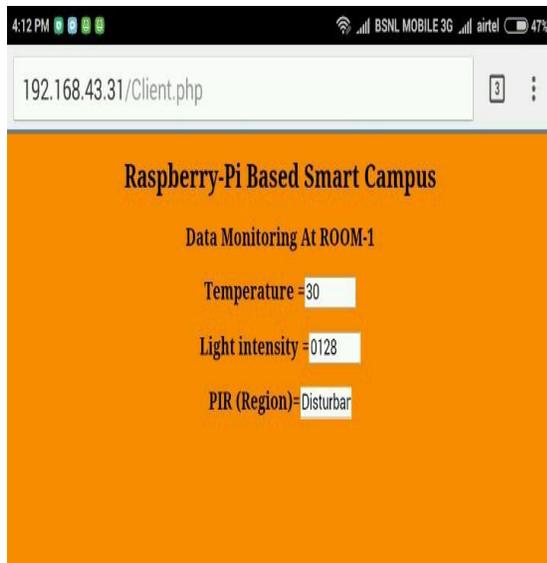


Fig 8 : Data monitoring at room 1 when PIR region is in active mode



Fig 9: Images in the room1

In figure 4 the image shows the web page of the room1 and room2. when we click on the room1 the figure 5 will appear it shows the data in the room1. if we click on the device control then the figure 6 will appear it shows the web page of the device control (i.e Fan & Light). if we want to see the data acquisition then the figure 7 will appear in this we will see the values of the sensors. the figure 8 shows the PIR region is in active mode when the PIR region is in active mode it detects the

person who is entering in to the room and takes the capture . if we want to see that images then click on the images in the fig 5 then the fig 9 will appear.

6. Conclusion

The project “Raspberry pi based smart campus” has been successfully designed and tested. The proposed system consists of different types of sensors,Raspberry pi computer and MCP 3208 (A/D converter). These devices are more efficient and capable of processing ,sending,analyzing and viewing the data on the web page as well as controlling the respective objects from the web page.

7. References

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