Real Time Early Warning Data Backup Technique in Disaster

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***Abstract*: Data backup in large organizations like school, college, corporate office is critical to minimize data loss under disaster. In companies and corporate offices, data backups are done on a regular basis but there are some data which should be backed up every minute such data should be saved in the situation of the emergency. Consider the cost-efficient data backup for many organizations against the disaster with the use of the smoke sensor (MQ-2) for smoke detection.**

***Keywords*: Backup system, Real Time, Servo Motor.**

I. Introduction

Data is important for each & every organization. When it comes to protecting data and documents there is no room to compromise. It has been found in a survey that 80% of losses caused due to fire would have been avoided if the fire was detected immediately. In any modern structure or building of the world, safety has the highest priority and therefore fire detection system is one of the basic components of the structure. Every organization deals with a lot of documented data and regular backups are also scheduled for those data but those backups are stored in premises only but in case of calamities like fire those backups will also get damaged. In such a situation there is a need to store the data backup at a location which is remotely placed so that data can be recovered easily and normal operations of the organizations can be resumed. This system works like client-server architecture where the server is the pace we dump data in case of an emergency like a fire. Microcontroller based fire detector is the solution to this problem. Timely information about fire not only helps save lives but also makes it easier to put out a fire. We are going to built fire alarm using ATMega328 microcontroller which is interfaced with a temperature sensor, a smoke sensor, and buzzer. The temperature sensor senses the heat and smoke sensor senses any smoke generated due to burning or fire. And when a fire is detected system will trigger one of the computer systems over the wifi (as wifi environment is already set up in the offices) and that computer will take backup of data upload it to some secure server which is not on premises. And that can be recovered to resume daily operations.

A. Purpose

Backups have two distinct purposes. The primary purpose is to recover data after its loss, be it by data deletion or corruption. Data loss can be a common experience of computer users a 2008 survey found that 66% of respondents had lost files on their home PC. The secondary purpose of backups is to recover data from an earlier time, according to a user-defined data retention policy, typically configured within a backup application for how long copies of data are required. Though backups represent a simple form of disaster recovery and should be part of any disaster recovery plan, backups by themselves should not be considered a complete disaster recovery plan.

B. Objectives

Understand what impacts backup, stand by and emergency power. Consider the power needs of high-performance buildings. Illustrate how generators can be used as a backup power source.

II Related Work & Problem Description

There are some implementations of this system but they are on the commercial basis high-cost systems hence our motor is to design low cost and efficient system to solve this problem. Automation was established in December 2008, this organization designed A Fire alarm system is designed to detect the early signs of fire by processing the inputs from the field devices, to notify the occupants to evacuate the premises using audio-visual triggers & to call for help from emergency services when it has determined that an alarm condition is warranted. Eaton and Cooper united -UK, Eaton's fire business is a leading manufacturer and global supplier of high-quality fire systems. With our ability to provide complete systems, not just components, you can be confident in the knowledge that all of our products have been specifically designed and tested to ensure that they are all fully compatible to form a reliable and compliant fire detection and alarm system Previous research and development in this area: Till now most of the research done in this area is focused on fire detection and alarming system. Which will alert the human beings but in case of emergency no one will wait and try to protect the data so we are proposing an extension to the fire detection with data backup on a cloud.

III. Implement System

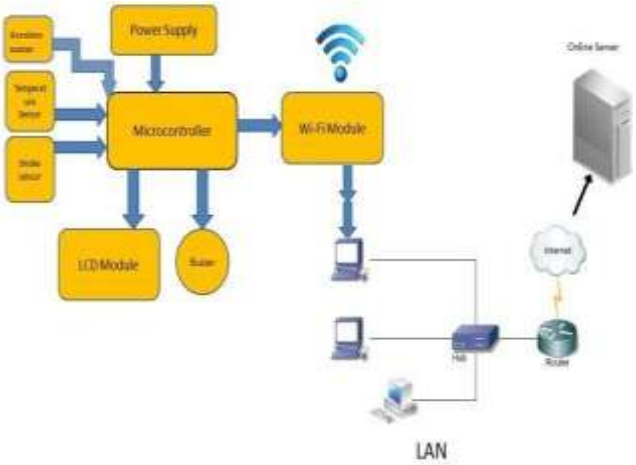

Figure 1: Working of System

In this System, We will decide the threshold values for all the sensors and reading below the threshold value are considered as good. ATMEGA 328 will continuously Monitor the values of all the above sensors, if any of the sensors are giving readings above threshold value then we can consider the Emergency situation. We are going to pass these values of the sensors to the Node MCU which will communicate with the computer who backup needs to be taken. Node MCU can communicate with the multiple computers depends upon how programs it. We are going to take backup of one particular folder and that folder will contain the data which is very important and it will be difficult to reproduce that data. In companies and corporate offices, data backups are done on a regular basis but there are some data which should be backed up every minute such data should be saved in the situation of the emergency. We have a PHP file which is going to accept data continuously from the Node MCU and if any value is crossing the threshold the that PHP file will immediately create the zip file with the current content of the data inside the predefined folder and it will upload the data to the Web server using the FTP (file transfer protocol). ATMEGA 328 and Node MCU will keep on tracking and sending data to the PHP file inside the computer whose data needs to be back up.

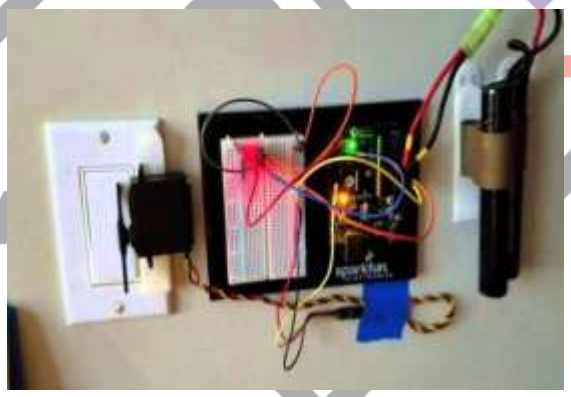

Figure 2: Working of Servo Motor

A. Flow Chart

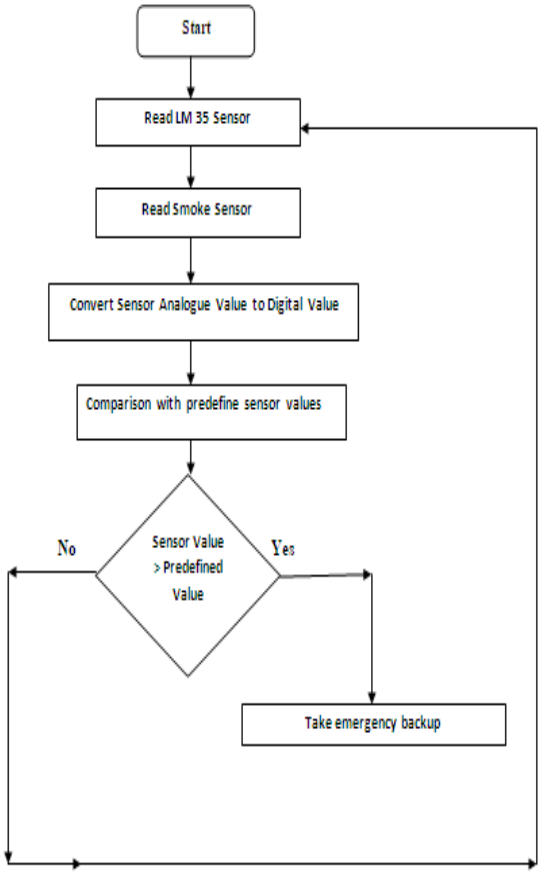

Figure 3: Flow chart

IV. Technology Used

1) PHP

PHP is a very powerful server-side scripting language for developing dynamic web applications. PHP is compatible with various web servers like Apache and Microsoft's IIS as well. All the PHP scripts are executed on the server and it supports various databases like My SQL, Oracle, Generic ODBC, etc.

V. Algorithm

Step 1. Check sensor reading for gas.
Step 2. Check for sensor reading from the temperature sensor.
Step 3. Compare reading with predefined values.
Step 4. If sensor values are greater than predefined values.
Step 5. Then change the alert flag.
Step 6. If alert flag == 1 send data to esp 12 from atmega328 microcontroller.
Step 7. Esp will check for incoming data.
Step 8. If an alert flag is 1 then it will trigger the pc whose backup needs to be taken.
Step 9. Open zip file on computer.
Step 10. Add data to zip file from the folder.
Step 11. Close zip file.
Step 12. Upload zip File.

VI. Result

We have created a situation which is similar to the emergency by raising the temperature or creating smoke and backup of data is taken on the server. We have checked files before and after emergency situation and we confirmed additional files are present on the server.

VII. Conclusion

This will avoid loss of data in an emergency situation such as Fire, Short circuit in an organization like College, Hospitals & Corporate Office, etc. Data backup will be stored on the cloud and it can retrieve any time when the user needs it. Backup of one particular folder will be created, and that folder will be converted into zip file & it will be transferred on the cloud.

VIII. Acknowledgment

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