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IMPLEMENTATION OF INDUSTRIAL IOT FOR DOMESTIC PURPOSE

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ABSTRACT:
The internet of things has become something of a ubiquitous term in the technology world, growing noticeably over the past year or two. It links objects, processes, and systems of the real world to the virtual world. Using internet of things allows the physical world and virtual environments and data to interact with each other.This interaction allows for easier and more precise remote monitoring and controlling of real life processes in real time. In this project, we are developing a system, which will monitor the industrial applications and take intelligent decisions using the concept of IoT. We use the concept of IoT to make an efficient industrial automation system that allows the user to efficiently control machines over the internet in real time, thus, automating modern industries.IoT based smart industrial systems are very resourceful and are used worldwide in all kinds of industrial environments allowing for more efficient and well-organized systems.

KEYWORDS:

wi-fi, raspberry pi 3, ultra sonic sensors, NI lab VIEW tool, dynamic ip.

I. INTRODUCTION

The key source for the development of IoT is the rapidly developing Wireless Sensor Networks. The expression internet of things was created by Kevin Ashton and signifies the enabling of sending and receiving data via the interconnection of the Internet of computing devices embedded in everyday objects. The internet of things refers to the network or networks encompassing the use of standard internet protocol (IP) technologies to connect people, processes, and things to enable new cyber-physical systems. This project presents the remote monitoring and control of an industrial process in domestic sector using dynamic IP. For example, the simple process like when the user wants to fill the water tank, he can access and control by using wifi/modem connected with the control system, Raspberry Pi 3, to transfer the information to the client system or user. With the help of NI Lab VIEW tool, a visual program can be written to set the stipulations. When the user wants to control the process, the host or server system should permit to access the user.

There are many benefits to using remote viewing and control in an industrial environment. One important aspect is that a living being does not need to be physically present when the operation is running to

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monitor or control it. The person can control andviewthe operation from any place like his home or office. Another benefit includes automatic decision taking with the data collected from the sensors. The sensors will allow the system to detect the water levels and increase or decrease the levels accordingly. This allows for less error if the person is not able to monitor the operation all the time. Additional benefits include warnings and alarms from the sensors if the water levels are dangerously high or low.

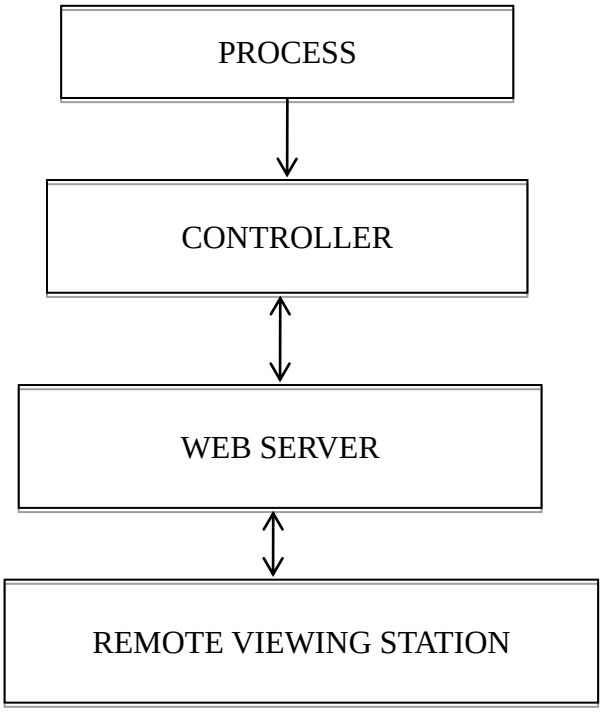

Fig 1. Block schematic diagram of the proposed system

II. Proposed System

The proposed system consists of a Raspberry Pi that is used as a mini computer interface to execute and deploy the program. Data is collected from the sensors and send to the Raspberry Pi. This system aims to solve the problems of water deficit and overflow while continuously monitoring the levels from a central server. The following block diagram depicts the components of the proposed system.

III. Related Work

The system consists of Raspberry Pi 3, level sensors, an input/output module, modem, host, and client. Raspberry Pi is a high performing mini computer that is low cost and compact. It has a powerful processor with a CPU speed range of 700 MHz to 1.2 GHz and a memory range of 256 MB to1 GB RAM. The following block diagram shows how all the hardware in the system is implemented together.

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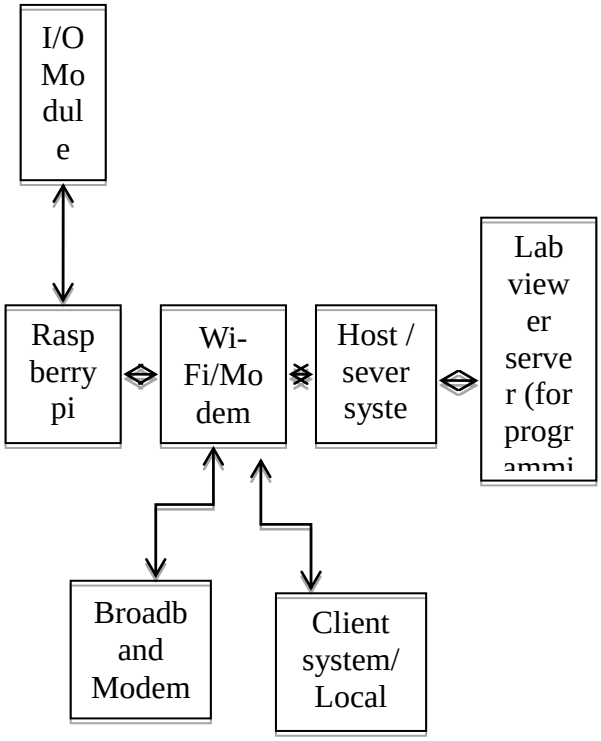

Fig. 2 Block diagram of controller system

The level sensors are designed to sense the water levels and to indicate when the level is higher or lower than it should be. With programming, the water pumping on/off is done automatically and can also be manually
controlled.Relays are used to drive the sensors and the water pump motors. The

The data is transferred from one system to another remotely through a host/client system and a modem as shown in the figure below

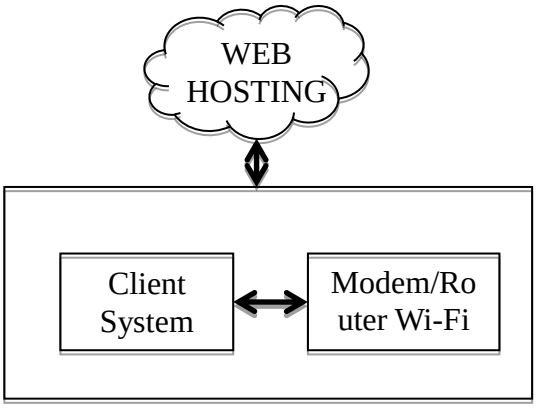

Fig. 3 Block diagram of remote viewing system

data and operation are displayed locally in any interface (laptop) used by the client.

Software: The visual programming interface, NILabVIEW is used in this project to set the necessary characters of the system. Lab VIEW is a graphical programming language that uses icons instead of normal programming text to design fully- working applications. For Raspberry Pi 3, Lab View is a compiler that takes the program, compiles it, and downloads it to the Raspberry Pi mini computer. The program will then execute and deploy embedded and separate on the single board Raspberry Pi.

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IV. Implementation Results and Discussion:

The proposed system uses a web server to view the parameters of the water level sensors using static IP address. Figure 3 shows how the data is transferred between the host and client servers. The water level in the tank can be remotely reviewed and controlled with ease and its parameters will be shown in both the client and host servers.

V. Conclusion

The system proved that remote viewing is possible and is very secure and can be continuously monitored (real time). The need for a person to be near the operation manually is diminished greatly, thus making the system more dependable, efficient, and precise while reducing manpower. It also proves to be very convenient for the person to view from anywhere he is. It is definitely possible to not only view the data from a distance, but also to control it remotely from a server.

This project also demonstrated that remote viewing and controlling is economical and can easily be implemented in any industrial environment.

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