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WATER LEVEL METER FOR ALERTING POPULATION ABOUT FLOODS

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Abstract :The main aim of the venture is to layout a machine a good way to reveal and manipulate the water degree within the dams and also intimates the involved authority whilst the water level exceeds the restrict. The maximum critical thing right away before, throughout and after a disaster happens is the dissemination of facts, a deployment of devices enabled by way of internet of things (IOT) (net of factors) ought to bring blessings in phrases of giving to human's statistics opportunely for making decisions in face of this disaster. on this challenge, we present a sensor to degree water stage in rivers, lakes, lagoons and streams. for such cause and to prove our concept, we designed a pilot challenge thru a micro-model that is constructed with a water degree dimension sensor primarily based on a easy open circuit that closes while in contact with water and experimentally tested right into a water box below a managed surroundings.

Keywords: *Microcontroller, GSM,GPRS, water level indicator.*

INTRODUCTION:

There exist several types of natural disasters, it is known that flood is one of the most dangerous since they have enough destructive power to change the course of rivers, sweep away and destroy whatever is in their path. Our motivation for this work is based on all damages caused in our region due to floods, this natural disaster has caused many people to suffer damage to their homes and losing their belongings. Heavy rain caused flooding and damage to homes, inhabits from Tabasco have been warned against taking to the water without proper preparation following record heavy rainfall across the state. Tragic floods happened in Tabasco, Mexico in 1999 and 2007. In 2007, the homes of as many as half million people were destroyed and damaged by massive floods. Torrential rain pounded the region giving rise to widespread flooding by several rivers burst their banks. There exist encouragement for researching preliminary solutions in this kind of disaster to mitigate and help in rescue operations. A variety of options there is for creating systems capable of warning vulnerable populations about an imminent threat of floods. It is important to understand deficiencies in methods and processes for measuring water level in rivers. currently monitors river levels in an automated fashion on their website, hence visible for everyone at any region, but especially for those living near riverbanks. However,

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it is known that monitoring is not automatic since a gauge performs this task by measuring river stages with a limnimetric rule, then, the data collected are captured manually and are is displayed on the website. However, the above brings deficiency in the measurement process because the data may not have been accurately captured and brought to where this information could be too late for help or planning a rescue strategy.The fact that the data collection of levels of water bodies is executed by a person and it carries dangers and delays in the dissemination of information. One of these risks is endangering the person who comes to take action, as torrential rains access to the measuring points are extremely complicated,and in cases of possible flooding these delays are crucial to salvaging belongings and especially the lives of people living in areas at risk. Because of the expensive cost of gauges to measure water level and the importance of developing warning systems for measuring levels in rivers that contribute to safeguard lives of citizens who inhabit regions in danger of flooding, we present a water level sensor based on water conductivity. [6] discussed about Intelligent Sensor Network for Vehicle Maintenance System. Modern automobiles are no longer mere mechanical devices; they are pervasively monitored through various sensor networks & using integrated circuits and microprocessor based design and control techniques while this transformation has driven major advancements in efficiency and safety. In the existing system the stress was given on the safety of the vehicle, modification in the physical structure of the vehicle but the proposed system introduces essential concept in the field of automobile industry. It is an interfacing of the advanced technologies like Embedded Systems and the Automobile world. This "Intelligent Sensor Network for Vehicle Maintenance System" is best suitable for vehicle security as well as for vehicle's maintenance. Further it also supports advanced feature of GSM module interfacing. Through this concept in case of any emergency or accident the system will automatically sense and records the different parameters like LPG gas level, Engine Temperature, present speed and etc. so that at the time of investigation this parameters may play important role to find out the possible reasons of the accident. Further, in case of accident & in case of stealing of vehicle GSM module will send SMS to the Police, insurance company as well as to the family members.

PROPOSED HARDWARE SYSTEM:

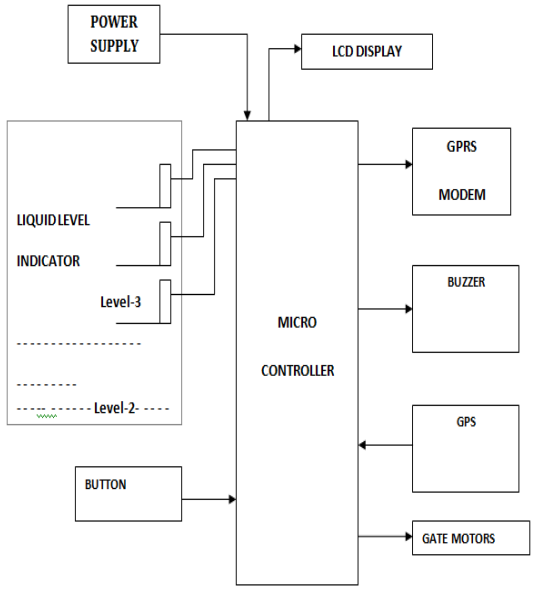

Fig:1: Block diagram

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METHEDOLOGY:

Micro controller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARM7TDMI:

ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.

Liquid-crystal display (LCD)

It is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

The process of working of this project is explained as follows. The total equipment of this project is placed inside a vehicle. Here we have GPS (Global Positioning System) module by which we can get the location of the vehicle, the location values are displayed on the LCD (Liquid Crystal Display). In this project we have two sensors which are interfaced to the micro controller. Those are temperature sensor and CO sensor through which we can measure the temperature and amount of CO released from the vehicle. These values are also displayed on LCD. Here ADC (Analog to Digital Converter) is used to convert the analog data from the sensors to digital form. Whenever these values exceed the threshold then intimation is given to the RTA including vehicle's exact position

GSM

An embedded system is a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded systems are often mass-produced, benefiting from economies of scale.

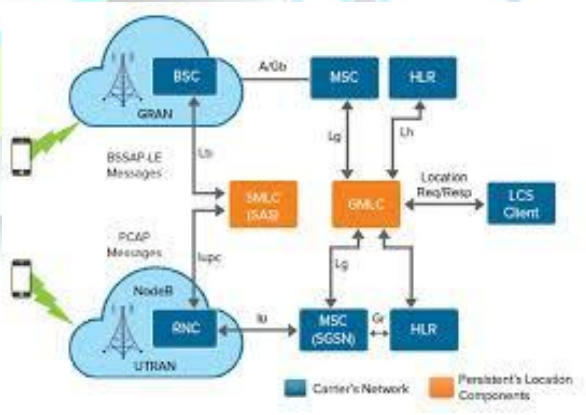

Fig: 2: Architecture of GSM network

Global System for Mobile Communication (GSM) is a set of ETSI standards specifying the

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infrastructure for a digital cellular service. The standard is used in approx. 85 countries in the world including such locations as Europe, Japan and Australia.

GPRS:

GPRS (general packet radio service) is a packet-based data bearer service for wireless communication services that is delivered as a network overlay for GSM, CDMA and TDMA (ANSI-I36) networks. GPRS applies a packet radio principle to transfer user data packets in an efficient way between GSM mobile stations and external packet data networks. Packet switching is where data is split into packets that are transmitted separately and then reassembled at the receiving end. GPRS supports the world's leading packet-based Internet communication protocols, Internet protocol (IP) and X.25, a protocol that is used mainly in Europe. GPRS enables any existing IP or X.25 application to operate over a GSM cellular connection. Cellular networks with GPRS capabilities are wireless extensions of the Internet and X.25 networks.

Fig: 3:GPRS module

Water level sensor:

The sensor used for measurement of fluid levels is called a level sensor. The sensing probe element consists of a special wire cable which is capable of accurately sensing the surface level of nearly any fluid, including water, saltwater, and oils. The sensor element is electrically insulated and isolated from the liquid into which it is inserted, and will not corrode over time. Unlike, other sensors, the measurement range is adjustable from a few centimeters to over several meters. A variety of sensors are available for point level detection of solids. These include vibrating, rotating paddle, mechanical (diaphragm), microwave (radar), capacitance, optical, pulsed-ultrasonic and ultrasonic level sensors.

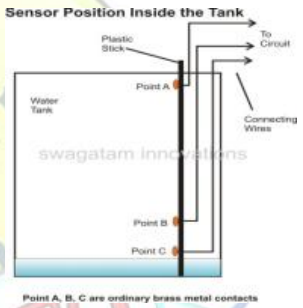

Fig 4: Water level sensor

RESULT

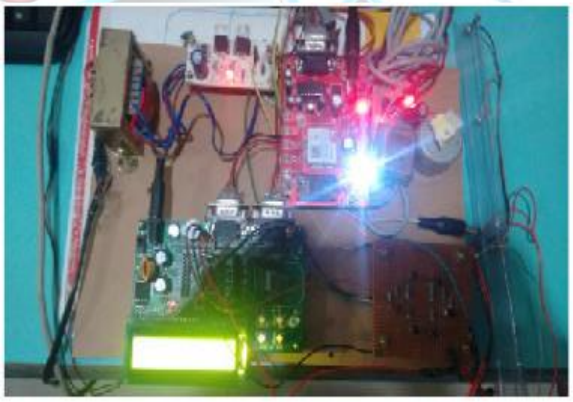

Fig 5:Hardware Kit

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Fig 6:Web page

CONCLUSION:

According to definitions of IoT, if we consider a sensor as an element of IoT which enables to communicate its current status and be published on Internet, then our proposal is very close to what we are intending to achieve within the concept of Internet of things.Nevertheless, the real intent of the proposal is to achieve a flood early warning system. So far, we have only built a micro-model through a prototype, that sends an audible signal and graphical messages towards smartphones about the water level into a container.This micro-model was developed based on a rogrammable electronic board (Netduino Plus 2), where some electrical resistors were connected to three heights into a water container,the rising water levels covering the resistance so that cause variation in the impedance, this fact indicates what is the water level, and so on for the three different heights. This information was transmitted to a web server via WiFi. After,this information can be accessed by mobile devices, users can graphically see the data, these data show the values of water levels.Subsequently, the prototype tests were conducted into a controlled environment, these tests consisted in measuring the water level in a container with water, different filling levels were tested, such testing showed the expected results.

Given these facts, if it is known the time when rising the water level up to the threshold while the water level passes each level mark, it is possible to know exactly these calculations in a real scenario like a river.Hence, people can be opportunely informed when rising river levels, so inhabitants can make a decision and start preparing to evacuate their homes if necessary. So now we can consider a really warning system to alert residents of lowlying areas about changes in rivers.

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