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WATER ATM SYSTEM

Amit Kumar Mishra[1], Sagar L. Faragade[2], Sayali P. Rane[3], Snehankita D. Deore[4]

[1]E & TC department, SITRC, Nashik , Maharastra, India

amit.mishra@sitrc.org

[2]E & TC department, SITRC, Nashik , Maharastra, India

sagarfaragade@gmail.com

[3]E & TC department, SITRC, Nashik , Maharastra, India

Sayaliprane93@gmail.com

[4]E & TC department, SITRC, Nashik , Maharastra, India

shivam0943@gmail.com

ABSTRACT

In our project we are providing safe drinking water to all at very affordable cost. These units or ”WATER ATM” can be placed anywhere in cities, villages, colleges, hospitals, railway
Station, public places to provide purified drinking water. The water ATM allows for anyone to purchase as much or as little water as they want at anytime. Water ATM allows customers
to buy the quantity of water they desire, which a great advantage for low income villagers who don’t need or can’t afford large quantities of water in one buy. In this system just like an ATM card everyone will be provided by a Smart Card containing an amount which can be recharged at recharge booths. When a person enters the smart card the person can draw water from the ATM and corresponding amount will be decremented from the smart card. LCD is used to indicate the card balance and if the water level in the ATM is low or not. The aim of this project is to provide high quality drinking water to every denizen.

Keywords: Real-Time Location System; Super Heterodyne Receiver; Visual Basic.NET; MsSQL; XC2S50-5TQ144; Pentium4 processor; unique ID.

INTRODUCTION:

Water is water safe enough to be consumed by humans or used with low risk of immediate or long term harm. In most developed countries, the water supplied to households, commerce and industry meets drinking water standards, even though only a very small proportion is actually consumed or used in food preparation. Although covering some 70% of the Earth’s surface, most water is saline. Freshwater is available in almost all populated areas of the Earth, although it may be expensive and the supply may not always be sustainable. In low income communities, every second visit made to the doctor is related to a water borne disease. An average family might end up spending upto 10-15% of monthly income on medical and associated expenses. The key initiative to ensure water availability and to help people to come out of the vicious circle of poverty led by frequent sickness is through a sustainable provision of low-cost safe drinking water on apay-per-use basis.

2.1 Bottled Water Dispenser system

There is a system ”bottled water dispensing system” (www.floject.com). The FLOJET Bottled Water Dispensing System was designed to pump purified water from a commercially available 5-gallon purified water bottle. The system will deliver the water under pressure to an individual drinking water faucet, the water inlet of a refrigerator for the icemaker and chilled drinking water tap, and to certain commercial coffee / tea brewers. When the suction
wand is inserted into the standard 5-gallon bottle, it will activate the float switch on the end of the wand and turn on the pump. This same float switch shuts off the system when the bottle is empty. The wand has a built in back-flow preventer valve that prevents water in the system from flowing back into the bottle, or spilling while changing bottles.

2.2 Remote water dispensing device

Remote water dispensing device this system includes a dispensing gun, a support structure for the dispensing

*Corresponding author: Sagar L. Faragade

gun, and a manifold hydraulically coupling the water purification unit with the dispensing gun for supplying a stream of water from the water purification unit to the dispensing gun. Equipping the remote this system permits the flow of water to be regulated at water dispensing device. (http://www. google.com/patents/US7442297) (US7699993), (US7824543)

2.3 Smartcard selection

There are two general categories of smart card. 1) contact smart card 2) contactless smart card. A contact smart card must be inserted into a smart card reader with a direct connection to a conductive contact plate of surface of card (typically gold plated). A contactless card requires only close proximity to a reader. Both the reader and card have a antennae, and the two communicate radio frequencies (RF) over this contactless link. But RFID smart card can only read the data while contact smart card can read as well as write the data. So contact smart card is more efficient for this project.

2.4 Indoor Water Dispensing Robot with Two Stages Localization

This IEEE paper was published on Nov31, 2011 in which a new integrated system architecture is introduced, and two stage localization, a novel method of indoor robot localization, is described to solve the localization problem of the robot. They have designed indoor water dispensing robot not only dispense the water but also serves people intelligently with two stage localization.

2.5 Data Driven Water Supply Systems Modeling

This IEEE paper was published on june26, 2013 in which a data driven subspace identification method is presented. Firstly, a brief introduction for water supply systems is presented; after that, we get the I/O data through the Info Works WS software; at last, a data driven subspace identification method is applied to get the model.

III. SOFTWARE SPECIFICATION DETAILS

1. Proteous
2. Protel /Eagle
3. Keil
4. High level Language
5. Assembly language

IV. HARDWARE SPECIFICATION DETAILS

The following are the hardware specifications used for this project:

_LCD Liquid Crystal Display

It also called as LCD is very helpful in providing user interfaces well as for debugging purpose. The most common type of LCD controller is

HITACHI 44780 which provides a simple interface between the controller & an LCD.

These LCD's are very simple to interface with the controller as well as are cost effective.

The most commonly used ALPHANUMERIC displays are 1x16 (Single Line & 16characters), 2x16 (Double Line & 16 character per line) & 4x20 (four lines & Twenty characters per line).

_ max232

MAX232 is a very common IC basically required for interfacing your controller to PC.MAX 232 IC basically converts RS232 voltage level into TTL voltage level i.e. 10V to 5V. MAX 232 is used not just used for PC interfacing it is also used to interface modules.

_ Relay Interfacing

Relays are components which allow a low-power circuit to switch a relatively high current on and off, or to control signals that must be electrically isolated from the controlling circuit itself.

Figure 4.1: Relay

To make a relay operate, you have to pass a suitable pull-in and holding current (DC) through its energizing coil. In each case the coil has a resistance which will draw the right pull-in and holding currents when it is connected to that supply voltage. So the basic idea is to choose a relay with a coil designed to operate from the supply voltage you.re using for your control circuit (and with contacts capable of switching the currents you want to control), and then provide a suitable relay driver circuit so that your low-power circuitry can control the current through the relays coil. Typically this will be around 70ma.

_ Buzzer Driver Circuit

Lots of buzzers are available in the market depending upon the size and voltage range. We mostly use piezo buzzer working on 5v or 12v having a resonant frequency around 2000Hz. These buzzers are easily available in the local market and low costing. These buzzers require about 25ma - 45ma current for proper sound generation if they do not get the desired current and voltage the output volume of the buzzer decreases

or else we do not get any output at all. The controller cannot directly turn ON/OFF the buzzer as the output source as well as sink current of the current is below 20ma.So we have used an NPN transistor BC547 to ON/OFF the buzzer and provide the necessary current and voltage required for the buzzer.

_ TSOP Sensor Module

The disadvantages with IR sensors are that even the sunlight contains IR so the sensor will not work properly during the day. So we have used modulated IR.

_ EEPROM Interfacing

If you have a project that needs a modest amount of nonvolatile, read/write memory, serial EEPROM may be

the answer. These tiny and inexpensive devices are especially useful when you need to minimize the number of I/O lines, cost, or physical size. EEPROM stands for electrically erasable programmable read only memory. It is a secondary storage device that once written (programmed) can hold data even when the power is removed.

It is a type of non-volatile memory used in computers and other electronic devices to store small amounts of data that must be saved when power is removed, e.g., calibration tables or device configuration. Various EEPROMS are available in market EEPROMS with I2C interface, with SPI interface, Micro wire & parallel interface. EEPROMS with serial interface are most widely used Serial EEPROMs use a synchronous interface - both the EEPROM and the chip that controls it use a common clock, and clock transitions signal when to send and read each bit. For example, a sending device may write each bit on the rising edge of the clock, and the receiving device reads the bit when it detects the clock's falling edge.

Although some other synchronous serial chips require minimum clock frequencies, the clock for serial EEPROMs can be as slow as needed, and the clock signal doesn't have to be symmetrical. The controlling device can toggle the clock at its convenience, up to the maximum speed. There's no need for a fixed time base. The EEPROMs use CMOS technology, so they consume very little power, with currents as low as a few micro amps in standby mode and a milliamp when active.

The maximum clock speed for accessing serial EEPROMs can be over 2 Megahertz. But because it takes eight clock cycles to transfer a byte, and the master also has to send instructions and addresses, the maximum rate of data transfer is no more than around 4 microseconds per byte. Write operations actually take much longer, because the EEPROM needs several milliseconds to program a byte into its memory array.

During this time, the master can't read or write to the chip, but it can go on to other tasks that don't involve the EEPROM. With use, EEPROMs eventually lose their ability to store data, so they're not suited for applications where the data changes constantly.

V. METHODOLOGY

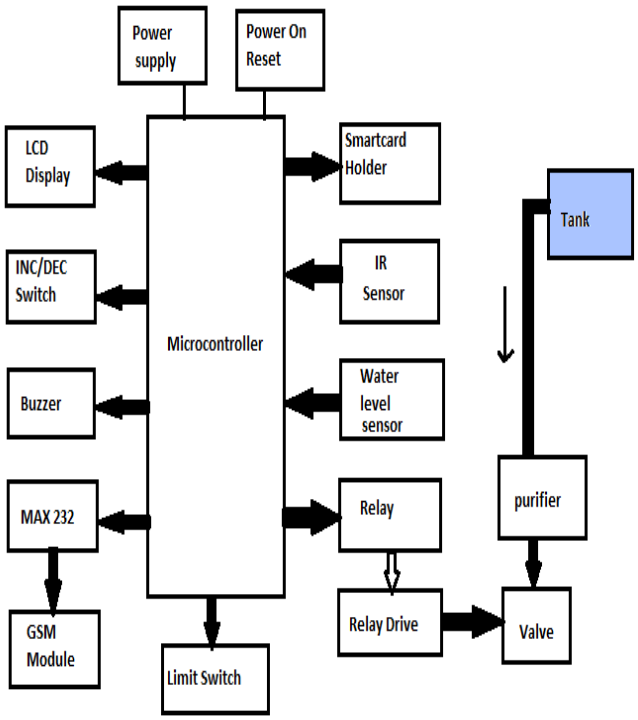

Figure 1: Water Dispensing System

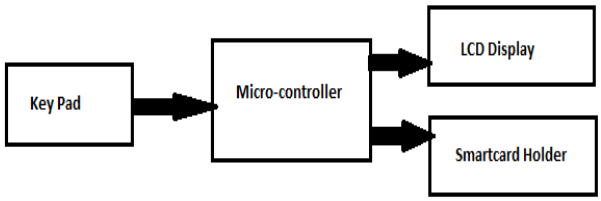

Figure 2: Recharge Station of Water ATM.

VI. FLOWCHART

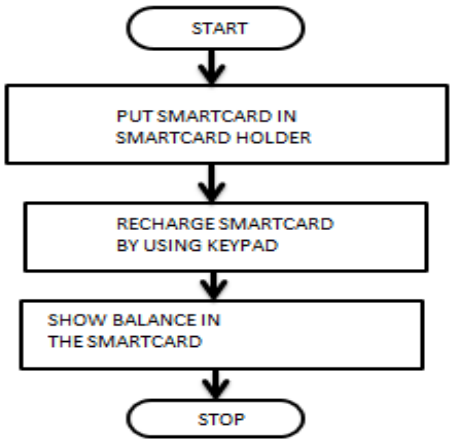

Figure 3: Working Flow of Recharge station

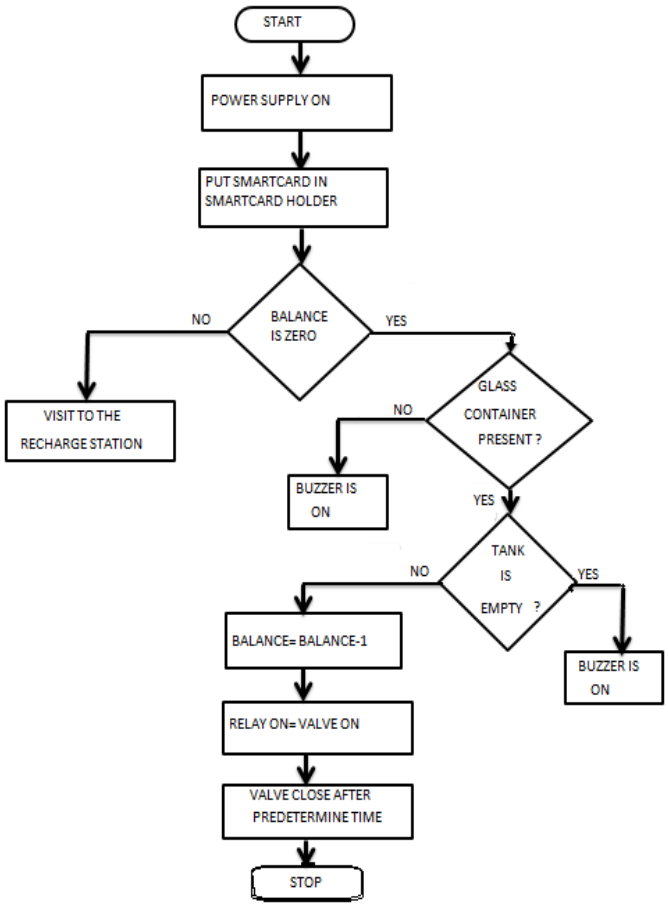

Figure 4: Working Flow of Water Dispensing System

VII. APPLICATIONS & USES

Water ATM can be placed anywhere in cities, villages, colleges, hospitals, railway Station & public places to provide purified drinking water.

This system is also very useful at spiritual places, slum areas.

To avoid pollution from plastic Water Bottles one of the problems with bottled water.

The bottle that the water comes in these bottles can cause major problems in the Environment and for the person drinking from them.

Along with water this system used to provide Tea and Coffee.

VII. CONCLUSION

We recognized that its operations were less efficient than industry standards and were faced with the challenge that industry 'best practice' approaches may not be suitable for the company's small-scale franchises. The purpose of this master's project was therefore to generate creative new approaches to improving Our system water-use efficiency. we will try expresse specific interest in strategies and applications for utilizing purifiers , which not only mitigate negative environmental impacts of their operations, but also provide economically and socially beneficial.

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