Abstract

Our system works on the principle of coin detection. When we insert the coin in the slot, it wills camera catch the image and compare by using mat lab hear used the image processing by coin detection. With an image processing catch the coin image using camera and compare using mat lab. When coin is passed through the slot camera catch image and compare using mat lab, pulses are generated at the output of image processing. It will pass output signal to the controller ARM7 and according to the output signal controller start for working. First it will check coin and detect, if there are compare the coin image means accurate coin is inserted. Controller display “put glass “message on LCD. When we are put the glass under valve Then it will IR sensor activate it will be passed signal to controller again controller to pump, it will be switched on water pump. And water will fall in glass. Time is set for water pump. When set time is over pump is switched of automatically. After that it will display message on LCD. Then counter will increment for another coin. When counter is overflow and water level is low it will show coin box is full and level is low on display and, reset counter. Message goes to authorized number by using GSM.
1. Introduction

With the improvement in the technology there are many advanced devices and machines that are useful to the mankind. One of them is coin operated telephone. As we know the function of it and how it works. With the same technology used we are going to design a project which is based on liquid (water, cold rinks). Coin Operated Water Dispensing System as the name indicates it is based on COIN operation. It has been specially designed for use on Railway station, Bus deposes, public places etc. This system is based on microcontroller. The inputs to the microcontroller are coin and output in the form of water. Looking at the specifications required for Water Dispensing System and for simplicity of our application, microcontroller was found to be best suited. The use of microcontroller in any electronic equipment makes it compact and user friendly. We wanted our equipment very handy and cheap. Processor requires less access time for built -in memory and I/O Devices.

When we put the coin in coin box camera catch the coin image camper to database using mat lab and give signal to ARM7. Microcontroller switched on relay and motor is on, when put the glass under the valve IR sensor is activate gives output in the form of water.

2. Challenges To System

A. Problem Definition

There has been increased problem of buying water with more cost and every time there is no surety of getting pure water in shop. Now all the people use polythene, bottle for water buying, the thrown of polythene bottle in environment caused the environmental pollution. When we consider the coin box telephone there is a problem of actual coin detection means people use the fake coin for that coin box telephone

B. Need of System

- To develop a system that would manage the surety of pure water with low cost
- To develop a system in such a way so that we can manage the environmental pollution by maintaining the consumption of bottle in environment. Means this system is totally pollution free
- Here we are planning to create image processing based coin detection for avoid the fake coin problem
- Here this system also provide the total information about the water level and coin information to authorise number

C. Scope of the System

- The system uses high pixel camera for proper coin detection by image processing technique
- Here this system also use the water level sensor for provide the information about the level of water in tank
- The GSM module used to send the information of water level to authorised number
- We can also use DC water pump for water pumping from the tank
3. Block Diagram

- The Systems consist of ARM controller which is LPC2148 from Philips Company.
- In this project we are going to developed the water dispensing systems
- The whole setup consists of Micro controller, Level sensor, Camera, PC.
- The camera will capture the coin image. The Image will be process in Mat lab.
- The number will be extracted through image processing and data will be sending to microcontroller through serial communication.
- Depending on the number the pump will be on for respective calculated time.
- Also the level sensor will be connected to microcontroller. When the level will be below the limited the SMS will be go the mobile..
- The LCD 16 X2 will be used for display
- The peripherals interface is LCD which is graphics LCD 16X2. The reset circuit is designed using resistance and capacitor. The clock is generated using quartz crystal which is given to microcontroller. The controller would be interface to PC using serial communication.
- The GSM modem would be interface to the ARM using Serial communication. A LCD display is used at the output section To display the status of the GSM and GPS. The maximum power supply required to operate the hardware circuitry is +5V DC voltage.
- Our system works on the principle of coin detection. When we insert the coin in the slot, it wills camera catch the image and compare by using mat lab hear used the image processing by coin detection.
- With an image processing catch the coin image using camera and compare using mat lab. When coin is passed through the slot camera catch image and compare using mat lab, pulses are generated at the output of image processing. It will pass output signal to the controller ARM7 and according to the output signal controller start for working.
- First it will check coin and detect, if there are compare the coin image means accurate coin is inserted. Controller display “put glass “message on LCD. When we are put the glass under
valve. Then IR sensor will activate it will be passed signal to controller again controller to pump, it will be switched on water pump. And water will fall in glass. Time is set for water pump when set time is over pump is switched of automatically. After that it will display “thanks” message on LCD. Then counter will increment for another coin. When counter is overflow and water level is low it will show coin box is full and level is low on display and, reset counter. Message goes to authorized number by using GSM.

4 Working Principal Based Algorithm & Flowchart

1. Start
2. Initialize Controller
3. Initialize controller pins for LCD
4. Initialize ADC
5. Set ADC Value Limit for Monitoring
6. Start Keypad Scanning
7. Initialize GSM Modem
8. Send at-commands for network registration
9. Send At-Commands for Network Registration
10. Check the data on the serial port
11. Calculate the timing according to the number received on serial port
12. Take ADC value process and check level sensor
13. Start monitoring and displaying value on LCD Motor speed full
14. Send SMS to the mobile
15. Stop

![Flow chart of Project](image-url)
5. Advantages, Disadvantages & Applications

Advantages

• **Pollution free:** Use of Plastic Bottles for water will be restricted.
• **Save Water:** waste of water will be less
• **Low cost system:** we can easily implement any where
• **Reliable**
• **Power supply:** Required less power supply
• **User friendly**

Disadvantages

• **Signal Interference:** Sometimes the signals bounce off things before they hit the receivers
• **Distribution:** When the satellites are all in the same part of the sky, readings will be less accurate

Application

• Railway station
• Bus stand
• Hospitals
• Public places
• Malls and Parks
• This system is used to provide water with purity and low cost to traveller in case of bus stand and railway stop
• And it can be used to provide quality of water at hospital level and at malls

6. Result

1. Initially LCD shows “Water Dispensing” when power supply start

![Image of LCD showing Water Dispensing](image1)

2. When IR detects then LCD shows “Glass Below Tap “message

![Image of LCD showing Glass Below Tap](image2)
3. And when the water level goes down below the normal level, controller will send message “Water Level Down” to authorized number.

Software Result

- When camera captured the image of coin of value ‘1’ then LCD shows “PUMP ON FOR 1 MIN” and DC pump start pumping the water from tank for 1 minute.
7. Conclusion & Future Scope

The ARM7 controls all the hardware components of the system. We will try to utilize the sufficient amount of water due to which no wastage of water and also everyone will get the pure water in chip cost. Our project helps to pollution free environment. It also give the information about the water level and coin to S authorized number. In future we are use not box and coin box also we can also use FPGA controller Auto mobile routine we can also use Filter for purification of water. We can interface system with keyboard. That enables people to interact with it when buying water. This system is also usable to provide the cold drinks and other types of drinks.

References