Digital Water System

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\textbf{Abstract:} A vending machine is used to give a product to users once a certain amount of money is deposited into it. Basically, vending machines were used to sell food, cold drinks, and other small items, but nowadays they also sell products like cameras, mobiles, etc. Vending machines are easily found in tourist spots, airports, railway stations, etc., and vending machines are very popular in developed countries like Japan, US, UK. Conventionally, people used cash as the standard payment mode for vending machines. But nowadays, people prefer modern payment models, implement a payment system that accepts digital payment via UPI, online wallets, etc. Here, we are solving a common issue faced by customers that sometimes don't have the proper change or signal reception.

\textbf{Keywords:} Vending Machine, Raspberry Pi 3 B+, Digital Payment

\textbf{I. INTRODUCTION}

The primary very first coin-operated vending machines were introduced in London, England. Invented in 1883 by Percival Everitt, the machines were found at railway stations and post offices, as they were a convenient thanks to purchase envelopes, postcards, and notepaper means automatic vending machines are not only for our country. The advantages of the machine are that it does not require human supervision, making it useful to reduce manpower, highly efficient, more compactable, easy to maintain, and portable. Most of the vending machines available on coin but coin-based vending machines have some drawbacks like money fraud, damage of sensor. So there should be a system for vending machines to accept digital payment facilities like UPI and other digital wallets like Paytm, PayPal, PhonePe, MobiKwik, etc. This allows people to pay for things without having to actually carry cash and go cashless.

\textbf{II. MOTIVATION}

One of the best advantages of digital payment is the reliable experience they provide to end users. Reduce dependency on cash, fast transfer speed, and the ease of transacting make online payments a preferred option. Traditional payment methods like cash and cheques add to factors like risk, steps, and physical presence. With digital payments, you can send and receive fast from anywhere in the world at the click of a button.

\textbf{III. BLOCK DIAGRAM}
IV. BLOCK DIAGRAM DESCRIPTION

4.1 Raspberry Pi 3B+
Raspberry Pi 3B+ is a SoC device. It has BCM2837 ARM cortex processor from ARM v8 family. Raspberry Pi has its own operating system which is named as raspbian jessie. Raspberry Pi has 40 GPIO pins. These pins make Raspberry Pi family makes very special system on chip device, to control peripheral.

4.2 IR Sensor
IR Sensor stands for Infrared Radiation. It is an electronic device, that emits the light in order to sense some object of the surrounding. In digital water system the IR sensor is used to detect water bottle with limited distance.

4.3 Ultrasonic Sensor
An Ultrasonic sensor emits sound wave towards an object and determine its distance by detecting reflected wave. In this project we are using ultrasonic sensor to detect level of water in water tank.

4.4 Relay
A relay is an electrically operated switch. They commonly use an electromagnetic coil to operate their internal mechanical switching mechanism. When a relay is Normally open this will switch ON for a circuit when the coil is activated.

4.5 LCD Display
LCD stands for liquid crystal display. It is kind of electronic display module used in Digital Water System. This display are mainly preferred for multi-segment light emitting diodes and seven segment. Main benefit of this display is its inexpensive and it has no limitation for displaying character.

4.6 Power Supply
In Digital Water system we use SMPS (Switch Mode Power Supply) as Power supply it is a type of power supply. We use this power supply because its having some advantages its having higher efficiency compare to other linear regulator.

4.7 Water Pump
Water pump mainly used for push the water its depend upon displacement and kinetic energy. These pumps use AC power also DC power for giving energy to the motor. water pump energized by using other kinds of things like gasoline engines otherwise diesel.

V. OUTPUT
VI. FLOWCHART

Start

Initialise All Sensor

Read Water Level

Check Amount

If amount>0

Check IR Status

IF IR Detect

Yes

Start Water Filling As Per Payment

No

Stop Water Filling

Display thank you message

End

VII. USED SOFTWARE/PROGRAMMING LANGUAGE

7.1 Python Programming Language

Python is an interpreted high level general purpose programming language. Python’s design philosophy emphasizes code reliability with its notable use of significant whitespace. Its language constructs and object oriented approach aim to help programmers write clear logical code for small and large scale projects. Python is dynamically typed and supports multiple programming paradigms including procedural object oriented and functional programming.

VIII. CONCLUSION

Implementation of digital water system is the step toward future technology and it is step to enter in eco-friendly world. This digital water vending machine is easy to use and it can easily accessed by any person. This system can be implemented anywhere in the world.

REFERENCES