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Automatic Vending Machine

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Abstract:- The proposed paper is the design of automatic vending machine. The main objective of our project is to launch a new technology application in society which is more efficient than previous launched technologies. A vending machine is an automatic device that dispenses consumer products to customers, after the customer inserts currency or credit into the machine. It's a very easy and reliable method of purchasing than the conventional one. This is a microcontroller based vending machine that produces different types of chocolates from machine. This paper is attempted to solve the problems which is present in the coin based vending machine which contains the problems for changes difference between varieties of coins etc. In this technology we are including different techniques which contain microcontroller. Programming, coin insertion & detection, returning of coin, display of information and delivery of product. It is portable & can be move from one location to other location. The model of vending machine is implemented using Microcontroller 89S52.

Keywords:- *Microcotroller, DC motor, coin sensor, Relay, Vending machine.*

I. INTRODUCTION

The main motive of this project is to design a low cost, effective vending machine. The vending machine can produce different small products like a chocolates, candy, snacks, and cold drinks like soda water, juices, hot drink such as coffee, tea newspapers & stationary. It operates automatically and dispenses different small product so it is called as automatic dispense machine. This machine can implement by using microprocessor, microcontroller, FPGA etc. It has many benefits. Previous microprocessor based vending machines were inefficient as compared to Microcontroller based vending machine. So it is necessary to make it more reliable with efficient algorithm that will be fully commanded .microcontroller based solution. The main purpose of writing this paper was to create a vending machine which could provide Cadbury chocolate to the people using extremely simple steps. We have made an attempt to vend chocolates i.e. Cadbury. The machine will also provide the change to the customer depending on the amount of money he/she has inserted. It is also possible to give alerts on the wrong entry of demand for the coin inserted. It occupies very less space and it is small in size also it is low cost driven machine in terms of setup.

II. DESIGN OBJECTIVES

To Design a powerful vending machine containing The following features:

- Sell different types of chocolates and accept Two types of coins (Rs.5/-, Rs.10/).
- Give change after successful trade.
- Return money when trade fails.
- Small size and acceptable power consumption.
- If cancel button is enter, amount will return.

III. PROPOSED DESIGN

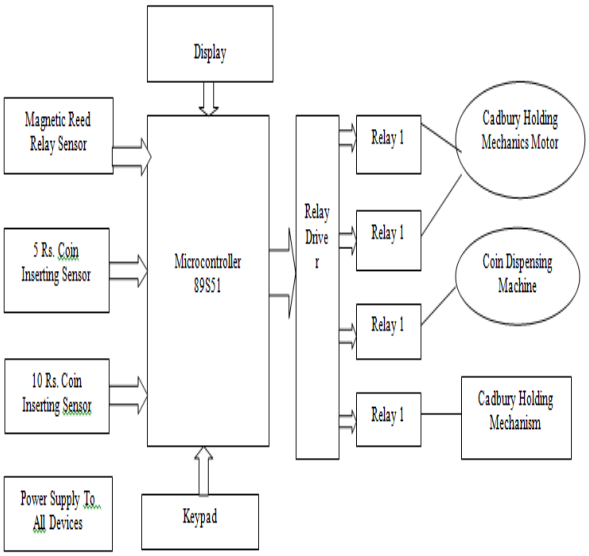

Fig. 1:- Block diagram of Automatic Vending Machine

The central part of this system is developed with the help of microcontroller 89s51. In this one of the main section is coin inserting and sensing for both Rs.5/- and Rs.10/- coin. And based on the coin insertion the user will be able to enter the required quantity and program verifies whether the input quantity is valid or not.

16*2 display is interfaced to the microcontroller 89s51. All the instructions during the process are displayed on the display. In case extra amount is produced the coin dispensing mechanism are returned to the user. This mechanism involved

a DC motor and magnetic reed relay sensor is used to set the particular position of coin dispenser.

IV. LITERATURE SURVEY

- Kamal Nathan proposed microcontroller based automatic paper vending machine. It accepts coins as an input and dispenses sheets as an output. The software used is "embedded". Thus it can be helpful for college and school students.

- Qureshi proposed FPGA based vending machine which supports four products and two coins. It accepts coins as input in any sequence and dispenses products when required amount is deposited and returns the change if entered amount is greater than the price of product. It also supports cancel feature through which a user can withdraw the request any time and entered money will be returned back. The algorithm is implemented in Verilog HDL and design is implemented on Xilinx Sparten-3 XC3S400FPGA.

- Preetilatha proposed microcontroller based vending machine. It supports cashless payment as the input by scanning of RFID card and dispenses produces like A4 sheets, pencil, pen, etc. Thus it can be helpful to sale stationary items automatic.

- Suhail proposed an FSM based automatic dispense machine which has an expiry date feature using VHDL, in this paper the author described Finite State Machine based automatic dispense machine using Xilinx ISE 14.2. This machine accepts money as an input to dispense the products and returns back the money without dispensing the product to the customer if the product is out of date. Thus it can be useful to ensure the good quality of the product along with quantity and cost.

- Sharma proposed a Reverse Vending machine based on FPGA and in this paper the author describes FPGA based vending machine. This machine accepts items such as empty containers, coins, snacks, chocolate, colddrink, etc., According to the number of products the algorithm is implemented in VHDL and simulated using Xilinx FPGA Spartan3 development board. Thus it can attract and motivate the consumer through refund and prevent the environment from pollution of waste material.

V. FLOW CHART

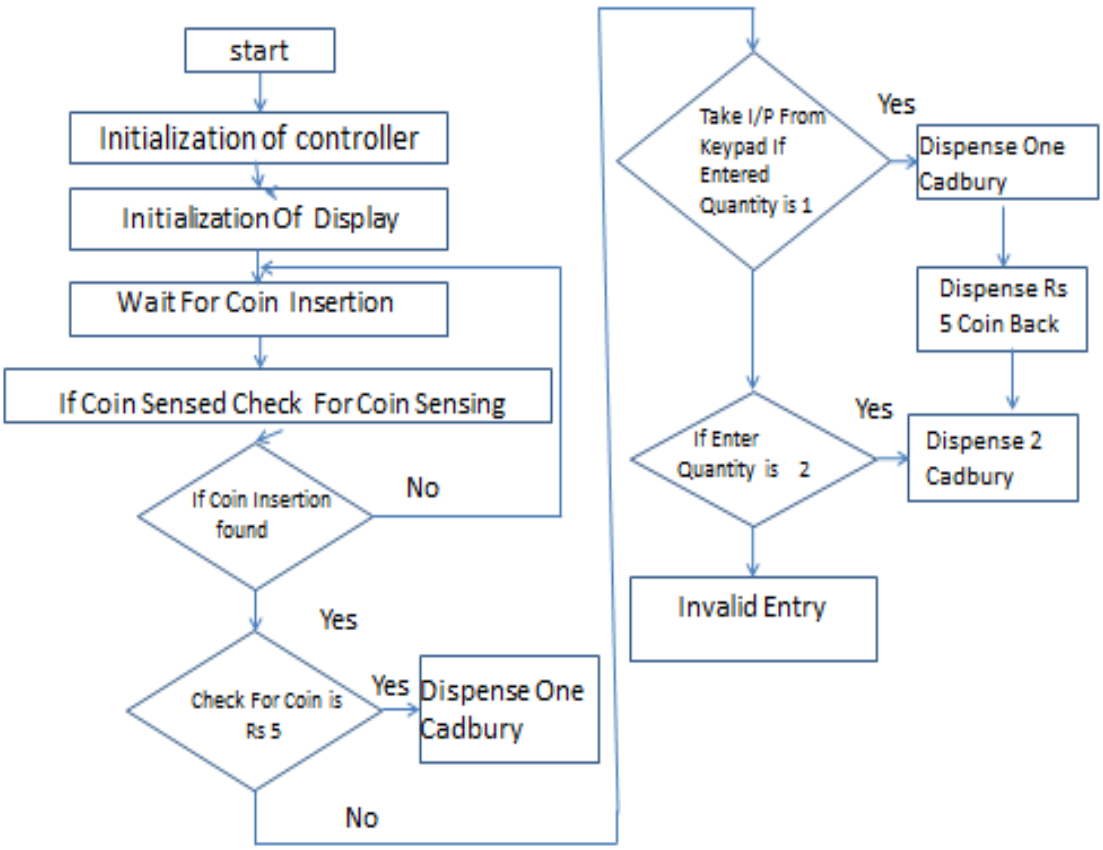

Fig. 1:- Flow chart of Automatic Vending Machine

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The flow chart explains the control flow of operation. At first the machine is initialize the controller and wait for the coin insertion .89S51 microcontroller is used to track different coins of Rs.10/- & Rs.5/- which will used for dispense of Cadbury. When coin is inserted it has two options of taking either Rs.5/- or Rs.10/- coin. The machine will take input from the keypad which will be used by the user to select the number of Cadbury's he want to take. After selection of the number of quantity the microcontroller will dispense the number of Cadbury's at the output given by the user as input.

If the inserted money is more than the actual price based on the cost of the selected product the money will returned as change.

VI. MECHANISM

- A microcontroller based vending machine is designed.
- The microcontroller can be programmed with Kiel micro version software.
- Making mechanical assembly in a manner which dispensed Cadbury and remaining extra coin.
- The LCD display information and product available at output of vending machine.

VII. FUTURE SCOPE

- Technological improvement in a wireless machine monitoring system.
- Cashless system we also reduced theft and vandalism in machines by reducing the amount of cash stored in a vending machine at any given time.

VIII. CONCLUSION

In this system the customer will be able to get the Cadbury from the vending machine .Service will be available for 24 hours. The system intelligently accepts the coins and dispenses the Cadbury and in case the change to return it smartly retunes the coins.

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