

Note To Coin Converter

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Abstract: In contemporary times, there is an adequate requirement of coins in temples, buses, railway stations and various other obscure and remote places. Carrying bulk of coins is very laborious and gruelling and hence this is the pivotal thing to recognize and built a system which subsides human effort. This project is a prototype project which has solid future scope and based on this model one can build a huge system using this idea. Note will be placed on RFID scanner and then through all the internal process coin will turf out as per the need of user.

Keywords: Remote places, subsides human effort, prototype project, RFID scanner.

1. Introduction

Currently, there is a paucity of exchange system of various kinds in India. This apparatus which we have built basically gives coin when note is scanned. This system availability is very low in India. There emerges exchange problems every now and then in various dimensions and angles of human life. So, in order to make the facilitation process smoother and flexible this particular dispensation is built. This note to coin convertor is a concoction of hardware and software. The convertor helps to get the required change so that there is no need for anyone to scout for change in various places. There are various methods to convert note to coin. Text based, watermark based, pattern based, etc. are few of them. In this, we took an artificial plastic note with chip embedded in it. THE chip will inscribed in the note will be scanned by RFID scanner and that will determine the value of note by displaying on the LED screen. AND then the process of throwing coin will be going and Arduino atmega328, servo motor, programming (C/C++) will come into picture. Coins will be kept on acrylic fabricator which will be segmented in parts as according to the value of coin.

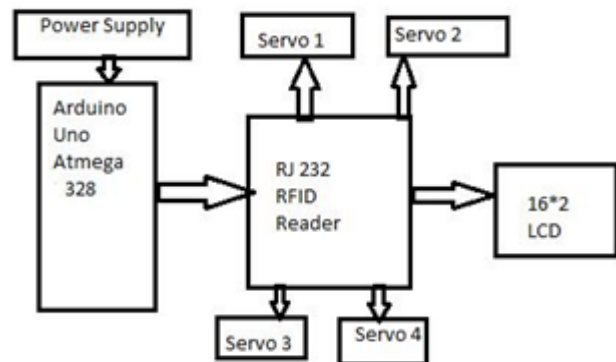


Fig. 1. Block Diagram

2. Architecture

2.1 Arduino

An Arduino is actually a microcontroller based kit which can be either used directly by purchasing from the vendor or can be made at home using the components, owing to its open source hardware feature. It is basically used in communications and in controlling or operating many devices. It was founded by Massimo Banzi and David Cuartielles in 2005. Arduino is an open-source platform used for building electronics projects. Arduino consists of

both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.



Fig. 2. Arduino

2.2. LCD

This is the example for the Parallel Port. This example doesn't use the Bi-directional feature found on newer ports, thus it should work with most, if not all Parallel Ports. It however doesn't show the use of the Status Port as an input for a 16 Character x 2 Line LCD Module to the Parallel Port. These LCD Modules are very common these days, and are quite simple to work with, as all the logic required running them is on board.



Fig. 3.Lcd

2.3 RFID

Radio Frequency Identification, or RFID, is a rapidly-emerging identification and logging technology. Whether or not you have come across RFID systems in your work, you have probably encountered RFID in your daily life, perhaps without even being aware of it. At their simplest, RFID systems use tiny chips, called "tags," to contain and transmit some piece of identifying information to an RFID reader, a device that in turn can interface with computers.



Fig. 4. RFID

2.4 Servo Motor SG90

Servo Motor equips Carbon Fiber Gears which makes the servo motor much lighter than same metal gear motor. For small load applications using the metal gear servo motor adds on unnecessary weight, so we suggest using this lightweight plastic gear servo motors. The TowerPro SG90 9g Mini Servo is 180° rotation servo. It is a Digital Servo Motor which receives and processes PWM signal faster and better. It equips sophisticated internal circuitry that provides good torque, holding power, and faster updates in response to external forces. They are packed within a tight sturdy plastic case which makes them water and dust resistant which is a very useful feature in RC planes, Boats, and RC Monster Trucks etc. It equips 3-wire JR servo plug which is compatible with Futaba connectors too.



Fig. 5 SG90

3. Proposed system

Our system design comprises of two parts: hardware design and software design. As the system block diagram shows, we can see the entire system interfaced with each other. The integral part of the system must be Arduino, LCD, RFID and Servo Motor SG90.



3.1 Hardware design

In this system, the hardware components usage is more when compared with software counterpart. The hardware has arduino, switches, acrylic fabrications (bifurcated into 4 parts), 4 servo motors, LCD 16x2 screen, rfid reader which is note. All parts of hardware are inextricably intertwined with each other to produce the desired output. The note will be scanned at first sight and then in a trice, value of note will be showcased. Through user's commands and through program embedded in desktop, servo motors will play its role of whirling its flap by 180° which will result in belching of single coin. Likewise the flap rotation will be proportional to the requirements of user given how many coins he wants.

3.2 Software design

The programming is basically being scribed in C Embedded Language inside arduino Software. From Scanning of note and then getting displayed on screen to asking the user of how many coins (1, 2,5,10) he wants and then giving the instructions to servo motor as of how many times it's flap should rotate and of which servo motor's flap should rotate out of the four all are mentioned explicitly in programming. This is just the adumbration of how the software will play a huge part in this project.

4. Methodology

Firstly this system has the hardware components which are enlisted above and using that we are going to design. The first step is that we take an artificial note (RFID) which has some chip embedded and get that note scanned in the RFID reader and all its data gets stored in that RFID reader. The chip embedded in note will determine what is the value of the note whether it is 10 Or 20. The data stored in the reader will be used by LCD 16x2 display which then displays the value of note on its screen. After displaying the value of note i.e.10 Or 20. Then the computer screen asks the user to type the desired change which the user wants. Suppose the user wants 2 coins of 5 rupee in exchange of 10 rupee note then it has to type 5 rupee coin on the desktop. If the user wants to exchange 20 rupee note then whatever value coin the user wants it has to type I. e. 1, 2, 5, 10.

The programming is done in C embedded language in the Arduino software. Arduino Atmega 328 is used which supplies the instructions to the servo motor. The

programming is done in a way that it extracts the input from the user which then user demands as per the requirement which is discussed above. Arduino and switches are placed on the PCB board and all are interconnected on the PCB plane. There are four switches because there are 4 compartments in the acrylic fabrication. The 4 segments are there because there are 4 types of coins i.e.1, 2,5 and 10. The switches are connected to the servo motor. There are 4 servo motors etched to the 4 compartments on the right side of the compartment. The servo motor has a flap which has 3mm thickness and 3.5cm length which will start rotating which is given the instructions by Arduino programming which indirectly user gives. The flap of the servo motor sg90 will start rotating on the instructions or commands given by Arduino. The 4 switches should be kept ON because it is responsible to make servo motor - work. The switches are connected to 9V power battery which generates the power which indirectly goes through switch and then directs to servo motor and then motor starts functioning. For example, the user wants 10 one rupee coins then the servo motor's flap will rotate 10 rupee coins and each rotation of flap will discharge one rupee coin. The coin will be discharged from the compartment or box which is the repository of that particular value of the coin. The same phenomena will be perpetrated when user wants 4 five rupee coins in exchange of 20 rupee note in which the flap will rotate 4 times. In this way the entire prototype dispensation will be working to eject the coins in exchange of notes.

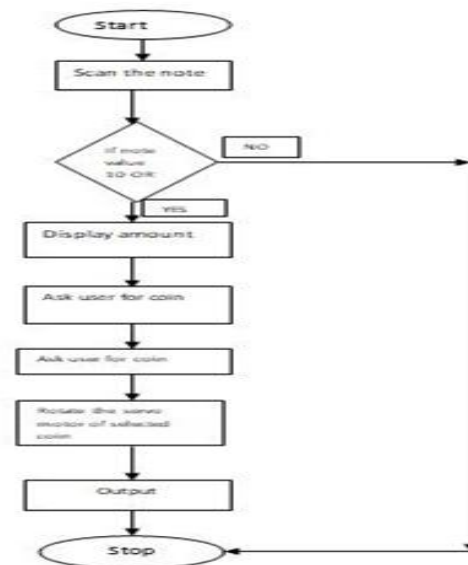
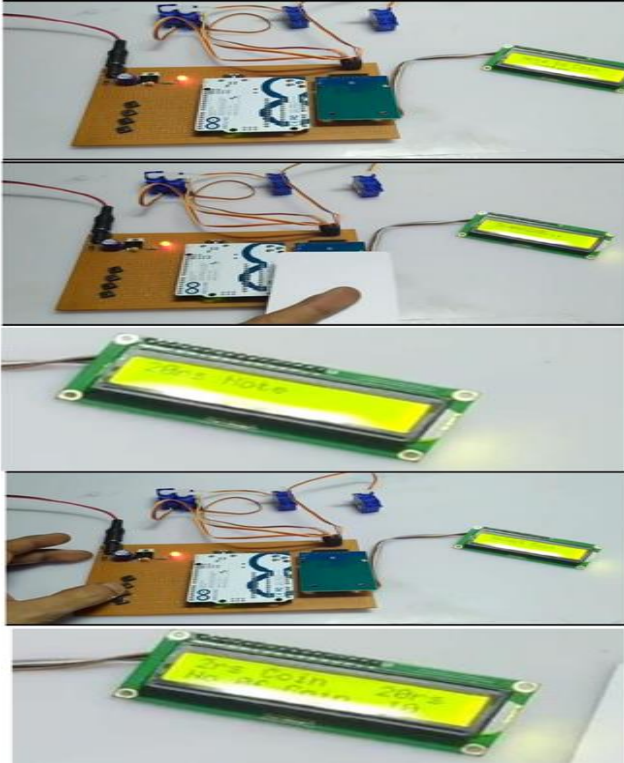


Fig. 6. System Flowchart

5. Results



6. Conclusion

This prototype system will be indispensable in day to day life of every human being where they have to endure sufferings to get the change in various public spaces. The project is reliable, less convoluted, lighter and faster along with a good degree of security. The proposed prototype system is mutable and can be furnished to be familiar with abroad currency. One does not need to carry coins as its future scope is gargantuan and can be burnished into a much decorated system.

7. Future Scope

- i) can amplify this model by stretching the note and coin magnitude up to 50 and 100 rupee notes.
- ii) SMS messages and calling to get notification to authorizer features can be augmented further so one does not need to replenish the coins perpetually
- iii) Document and record the occurrence meticulously i.e. CCTV.

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