The Insider Facts of Finding the Interesting Points of A Coin based Smart Piggy Bank

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Abstract

Guardians discover that it is a challenge to instruct their child almost the esteem of cash, as they don't used to utilize cash and coins for regular purchases. This clarifies that it's not like paying in bills and coins. A study commissioned by ASB backs uncovered that about all guardians studied (96%) accept instructing their child around cash is a critical life expertise, but 2/3 say they battle to educate children fundamental cash abilities in progressively advanced world. Property administration ability has become one of the foremost pungent skills for each youthful individual. The great propensity of riches management would be a bigger scale in riches development and in the quality of life. To educate individuals as early as during the period when they are still growing up is a wise decision indeed. In this case, Piggy bank can lead as a role model of this youth learning process when they are entering in to the real world. this paper speaks to the thought of making a piggy bank with lock system which is able be secured by secret word. For making it client neighborly, LED lights were used so that the client gets a signal when the bank gets full of coins.

Keywords

Piggy Bank,Sonar Sensor,Urdiuno,LED Display, client Experience, Stipend, Serve Fund, Wise-Fun, Interactive Framework, Children, Guardians.

I. Introduction

In arrange to identify sparing behavioral designs, a basic switch can be utilized by exchanging the control to have a savvy piggy bank interfaces. The application makes a difference the guardians to make a choice to exchange stash cash in to the bank account connected to the savvy piggy bank.

Dealing with cash is one of the foremost profitable abilities to everybody through the whole life. It is critical to instruct children how to utilize cash intellectuals during their youth, so the time when they grow up, they as of now have the abilities to get success. Grown-ups of youthful children can offer assistance to shape a solid concept of cash by performing nonexistent contests with them, as like an imagination to shop [1].

With the overview [2], almost 78% percent of the children included evaluated their information of cash administration as normal or indeed destitute. We anticipate the proposed framework to be able to gather monetary enormous information related to supply modern monetary administrations.

II. Literature Review

The article speaks to the current circumstance of kids and cash administration the issue articulation. It moreover tells the per user about the way to educate children sparing and contributing to assist them to construct a future with steady financial condition [3]. To educate child approximately money related abilities is to require them since it enhances the significance of managing liquid cash. This article bolsters the thought of the proposal that children ought to ace like sparing and contributing by empowering in the handling of real savings [4].

The article based on an individual encounter including teaching the child of author approximately sparing cash by employing a piggy bank. Within the involvement of authors, there are 4 sections: spend, invest spare, endow [5].

Fundamental centers are on the method of how to do the client investigate of child. It has proposed a few strategies and It is supportive for the plan inquire about and decides the target age extend [6].

A game which is based on computer called the awesome Challenge for ages between 8 to 11. The diversion makes a difference kids learn cash administration aptitudes and raises their explanatory abilities. It appears the entire process of handling children experimenting the

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amusement. Making and planning client testing for the match is the main motive of the statements [7].

III. METHODOLOGY

The project aims to design a Piggy Bank with an amount of compelling features that makes it to be called a Smart Piggy Bank. The features are discussed below-

A. Arduino Uno:

The microcontroller that has been used for the project is Arduino Uno which based on the ATmega328P and has 20 input/output pins among them 14 are digital and the rest 6 pins are analog. Different external connection can be made between the Arduino and essential sensors and devices. After completing the necessary connections, the imperative codes are uploaded into the microcontroller using a usb cable wired with a computer. The data in the Arduino disappears when the power is switched off. But in this project the past data is needed to keep track on the total amount of money of the inserted coins. For that the Arduino EEPROM is used by adding the library

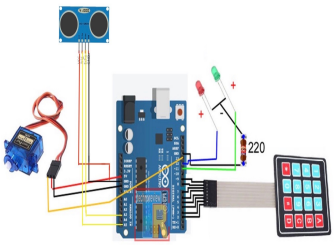

Fig 1: Design for Inspecting Capacity and Smart Lock.

<EEPROM.h>. Moreover, EEPROM.write() function is used to write data into EEPROM and in the same way to read any data EEPROM.read() function is used.

B.Smart Lock Design:

For procuring the smart lock feature a 4*4 keypad and a servo motor has been embedded in this project. Keypad pins are separated into two category: row and column. Each pin of the keypad is wired with the pins of the Arduino. For operating successfully <keypad.h> library must be added in the coding section. A software named Arduino is basically used to compute the required coding.

A Servo Motor is a tiny tool with a shaft at the output. By sending an encrypted signal to the servo this shaft can be moved to different angular positions. As long as there is a coded signal on the input line the servo can retain the shaft's angular location. The servo's output shaft will move anywhere about 180 degrees. It is typically in the 210-degree range anywhere but it varies depending on the producer. A conventional servo is often used to regulate 0 to 180-degree angular motion. Library needed for the servo is <Servo.h>. Among the three wires that a servo has one is the ground, other is for the power supply and the third one is for attaching it to the Arduino board by mention a simple line of code-
Giver_Servo_Name.attach(Pin Number).

C. Design for Inspecting Capacity:

Ultrasonic sensors operate by transmitting sound waves at frequencies that are too loud to detect by humans. We then wait to see the sound reflected back, measuring distance dependent on the appropriate time. There are four pins for interfacing with the Arduino board: VCC(power), GND(ground), TRIG for signal output, ECHO for signal input. For estimating the specific distance from the sensor, this can be calculated based on this formula where D is the Distance, T corresponds Time and C represents the speed of sound :

$$D=1/2\ T * C$$

In this project two LED lights were used to give the user an indication of the capability within the bank. The green LED is used for giving the user a positive signal that there are enough space for inserting more coins but the red LED is used for giving a signal that the bank is fully occupied.

D.Design for Displaying Commands and Calculations:

LCDs are relatively common and frequently used to screen informations. In this project commands for reseting password, entering password and even commands like password matched/error are shown by a 16×2 Character LCD. The LCD has 16 pins. The first pin is the ground pin while the second pin is the VCC pin which is attached to the Arduino board with the 5 volt pin.The R / W pin that selects the mode we will be reading or writing to the LCD. The write mode is evident here, and is used to write or send commands and data to the LCD. The read mode is needed here when the user resets the password and that requires to get stored in the variable which is declared in the code.

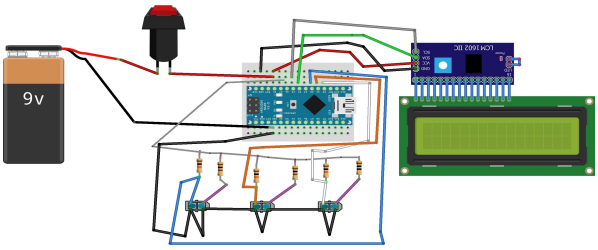

Fig 2: Displaying Commands and Calculation Design

Another compelling feature of the smart piggy bank is displaying the total amount of money from the coins that are inserted in the bank. Three IR sensors are installed in the forefront of each hole which are made for the coins to pass through. Each IR sensor increases it's count when a coin pass through the corresponding hole and for each size whole the value added for each count is different. Suppose, there are three type of coins available for a country 1 bdt, 2 bdt and 5 bdt. Each IR sensor-count adds up to the total amount of money according to the number of coins pass through that sensor. The formula that is used here for computing the total sum is:

Total =(no_of_coin1*1)+(no_of_coin2*2)+(no_of_coin5*5);

Fig 3 : Flowchart of proposed Smart Piggy Bank.

IV. RESULTS & DISCUSSION

The Arduino board will receive power from a USB cable or battery sources and then supply power to all the sensors and devices integrated with it. The sonar sensor continues to calculate the height of the coin stack and the Green LED remains turned on until the stack height exceeds the specified threshold level. The moment the coin stack reaches the maximum height the Green LED turns off and the Red LED gives an warning by turning on to empty the piggy bank. At the time the user will place the varied password for opening the piggy bank window that was previously set. If required the password can be reset.

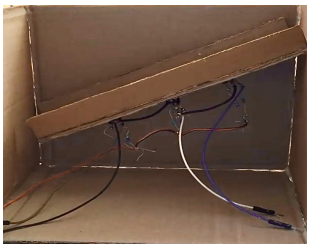

Fig 4: Design of the Cardboard Slope

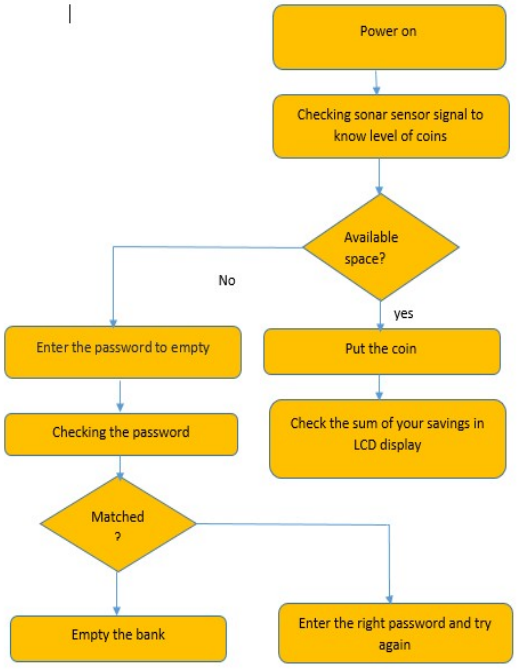

Fig 5: Installation of IR Sensor In The cupboard Slope

There is a cardboard slope installed within the piggy bank structure which has been equipped with three unique diameter holes. The holes in the slope of the cardboard are rendered according to the size of the three distinct coins we have been considering. Every hole is fitted with an IR sensor at the front of it. As a coin passes through the corresponding size hole, the IR sensor increases a count and the value of that coin gets added to the total amount of money already kept inside the bank. Lastly, the Led monitor displays the amount of money actually deposited in the piggy bank.

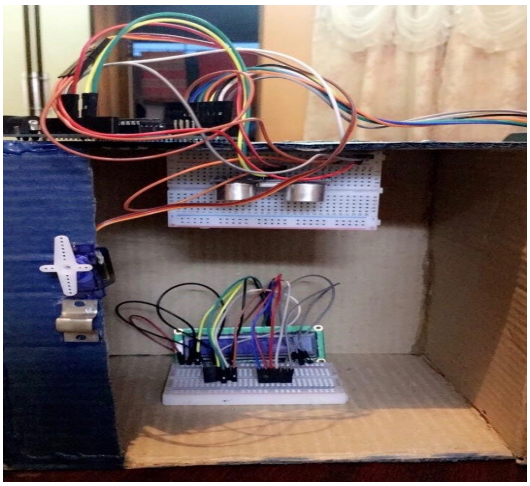

Fig 6 : Our Designed proposed system

V. CONCLUSION

In consideration of all the compelling characteristics of the smart piggy bank alongside the assembling cost of it, it can be said that in such less cost a project like this can be a great initiative to encourage people specially children to get on the route of savings. From this point forward more gripping features like Bluetooth alert system, Mobile application controlled design etc. can be added up to the proposed system.

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