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Real Time Barcode Based Student Attendance System Using Internet of Things (IOT)

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Abstract:

Most instructive establishments' chairmen are worried about understudy sporadic participation. Truancies can influence understudy general scholastic execution. The ordinary technique for taking participation by calling names or marking on paper is exceptionally tedious and uncertain, thus wasteful. Standardized identification based participation framework is one of the answers for address this issue. This framework can be utilized to take participation for understudy in school, school, and college. It additionally can be utilized to take participation for specialists in working spots. Its capacity to interestingly distinguish every individual in light of their Barcode information kind of ID card make the way toward taking the participation simpler, speedier and secure when contrasted with regular technique. Understudies or specialists just need to put their ID card on the peruser and they need to demonstrate their frontal face then their participation will be taken quickly. With constant clock capacity of the framework, participation taken will be more exact since the ideal opportunity for the

participation taken will be recorded. The framework can be associated with the PC through RS232 or Universal Serial Bus (USB) port and store the participation taken inside database. An elective method for survey the recorded participation is by utilizing HyperTerminal programming. A model of the framework has been effectively created.

Keywords: Raspberry-pi, Pi-Camera, Barcode Reader, Barcode based ID Cards, IR-Sensors.

Introduction:

Standardized identification Reader alludes to the utilization of radio recurrence wave to recognize and track the label embedded into a product or a living thing. It is a remote mean of correspondence that utilizes electromagnetic and electrostatic coupling in radio recurrence band of the range to impart amongst peruser and tag through an assortment of adjustment and encoding plan. Tag alludes to the variety in the abundance, recurrence or period of a high recurrence bearer flag to pass on data. Encoding is a procedure of changing over data starting with one configuration then onto the next. Scanner tag framework ordinarily comprises of BARCODE peruser and tag. It is extremely helpful in light of the fact that it can remarkably distinguish a man or an item in view of the label joined. It should be possible rapidly and this as a rule takes not as much as a second.

A model of the framework has been outlined and manufactured. The BARCODE peruser utilized as a part of the framework is inactive write which has greatest scope of discovery of around 5cm over the peruser. It works at recurrence of 125 kHz and 12V power supply. The framework has capacity to remarkably distinguish and take participation for people. The client's just need to put their BARCODE tag on the peruser to take participation. They don't have to experience the considerable rundown to search for their name. Consequently, it is extremely time effective. Participation will be taken if the encoded label ID examined matches the label ID put away in the memory. Something else, a blunder message will be shown.

Participation taken will be more exact with the ongoing check incorporated into the framework. RS232 and Universal Serial Bus (USB) port enable the framework to show the data and participation of a specific individual on Personal Computer (PC). The In-Circuit Serial Programming (ICSP™) pins and serial software engineer incorporated in the framework permit refresh of microcontroller firmware every once in a while. The power supply framework composed will consequently change to batteries control if the air conditioner control was expelled. The measure of the gadget is thought to be little. These two highlights make the system portable to be carried to class or other places.

Our framework utilizes the face acknowledgment approach for the programmed participation of workers in the workplace room condition without representatives' intercession (2). Face

acknowledgment comprises of two stages, in initial step faces are distinguished in the picture and after that these identified appearances are contrasted and the database for check. Various strategies have been proposed for confront recognition i.e. Ada Boost calculation, the Float Boost calculation, the S-Ada Boost calculation Support Vector Machines (SVM), and the Bayes classifier. The productivity of face acknowledgment calculation can be expanded with the quick face location calculation. In all the above strategies SURF is generally productive. Our framework used this calculation for the recognition of countenances in the workplace room picture.

Face acknowledgment procedures can be Divided into two kinds Appearance based which utilize surface highlights that is connected to entire face or some particular Regions, other is Feature based which utilizes geometric highlights like mouth, nose, eyes, eye foreheads, cheeks and Relation between them. Factual instruments, for example, Linear Discriminant Analysis (LDA), Principal Component Analysis (PCA), Kernel Methods, and Neural Networks, Eigen-faces have been utilized for development of face formats. Brightening invariant calculation is used for expelling the lighting impact inside the workplace room.

Proposed Architecture:

The architecture of the project contains the raspberry-pi, picamera, barcode scanner for interfacing in the embedded chip as shown below.

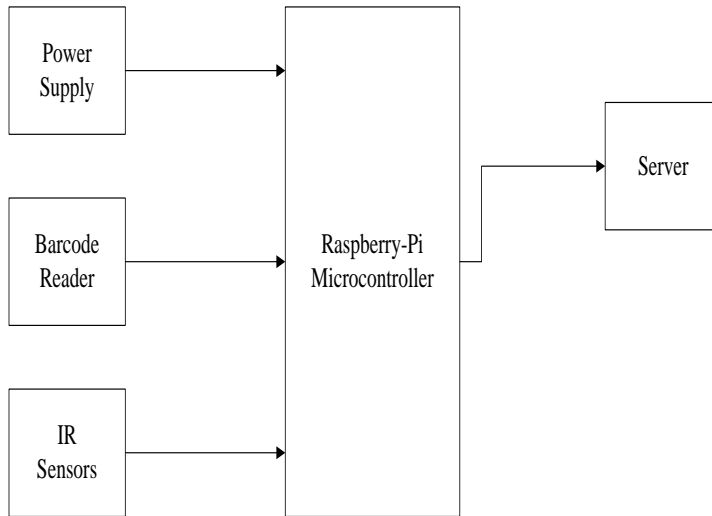


Fig: Block Diagram

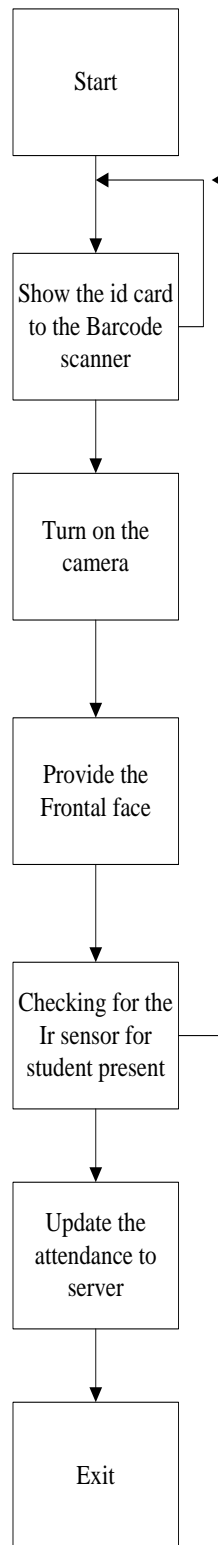
The equipment of the framework comprises of Microchip Raspberry-pi microcontroller, BARCODE peruser and tag, and DS13070continuous clock incorporated circuit (IC), MAX232 serial correspondence IC, and 16x2 Liquid Crystal Display (SERVER), and power supply framework. A basic all-inclusive serial JDM Programmer has additionally been incorporated to the framework which permits refresh of microcontroller's firmware every now and then. The reason of picking Peripheral Interface Controller (PIC) microcontroller for the task is on the grounds that PIC microcontrollers are shabby and contain interior Electrical Erasable Programmable Read Only Memory (EEPROM), and other on-chip peripherals are promptly accessible.

Standardized identification has been picked as the microcontroller for the framework. It underpins Serial Peripheral Interface (SPI), Universal Serial Bus (USB) correspondence and has vast program memory for the improvement of the program code for the framework.

The continuous clock (RTC) capacity of the framework is acknowledged by utilizing DS1307 IC. DS1307 speaks with PI microcontroller serially through between incorporated circuits (I2C) interfaces (stick RB0/SDA and RB1/SCL). This IC utilizes a 32.768 kHz precious stone to create exact clock. It is associated with a 3V catch kind of reinforcement battery which keeps the oscillator running notwithstanding when the fundamental power has been cut off. The serial correspondence is expert by utilizing MAX232 IC. The power supply of the framework incorporates a transfer used to switch between control connector and battery control. The square outline of the BARCODE based participation framework is appeared in the general schematic graph for BARCODE Based Attendance System.

Methodology:

The working of proposed method is described in detailed manner in a flow chart given below

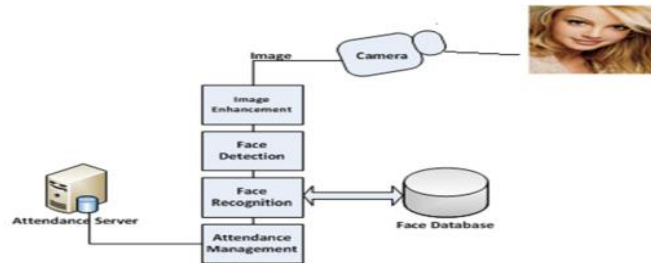


The Real Time Clock circuit communicates with PIC Microcontroller through I²C interface. I²C is a two-wire communication protocol developed by Philips. Most PIC support hardware-based I²C. Functions have been written to read and write the calendar information in DS1307 IC. Functions for setting the time and date also has been written to allow changing of date and time by the user.

PERFORMANCE EVALUATIONS AND RESULTS

The principle capacity of the BARCODE Based Attendance System outlined in this undertaking is to examine and check a BARCODE tag. At that point, participation will be taken in view of the ID examined.

The aloof BARCODE peruser create radio recurrence field and transmit to encompassing utilizing receiving wire of the peruser. On the off chance that there is any aloof BARCODE approach the peruser, a little power will be initiated from the radio wave to the tag and enable tweaked electromagnetic wave to be sent back to the peruser. The peruser gets the adjusted flag from the tag and creates a yield in Wiegand 26-bit organize. The yield is sent to microcontroller through DATA0 and DATA1 lines for additionally handling. The utilization of outside intrude on stick for DATA0 will permit the filtering and check capacity to be activated when there is a change on yield of DATA0 line.



The microcontroller gets the information from the peruser and remakes the flag in Wiegand26-bit arrange. At that point, the outcome will be utilized to contrast and the ID put away in the memory of microcontroller. On the off chance that the ID exists, the individual name, understudy ID, and participation will be shown on the SERVER. Each one of those data are exchanged to PC through RS232 port. It can be seen utilizing Hyper Terminal programming. On the off chance that the ID can't be found on the memory, at that point a blunder message will be shown on SERVER and additionally on PC.

The framework has constant clock circuit included. The reinforcement control supply of continuous clock circuit will set aside a few minutes is as yet running not withstanding when the framework has been fueled off. There is no compelling reason to set the time each time the framework has been turned on. The participation taken is put away inside interior EEPROM of the microcontroller together with the time it has been taken. The participation put away can be recovered from EEPROM and used to refresh the participation in database.

The USB port in the framework enables access to the participation put away inside inward EEPROM of PIC microcontroller. The information can be seen utilizing hyper terminal. Participation at specific area in the EEPROM likewise can be adjusted.

The execution of the BARCODE based participation framework has been assessed on various label positions and separation. A basic discovery extend test has been directed to assess the most extreme discernible separation from the peruser for various label introduction. The principle reason for the test is to assess the execution of the framework as far as the identification go. The test demonstrated that the peruser has around 5cm discovery extend if filter from top position. Table 1 demonstrate the scope of discovery for aloof BARCODE peruser utilized as a part of this framework.

Barcode Reader Orientation	Parall el	Perpendicu lar with	45 ⁰ with
Top	5cm	0c	4cm
Side	1cm	2c	2cm
Corne	0cm	0c	0cm
Botto	4cm	0c	3cm

Table 1. Range of detection for passive Barcode reader used

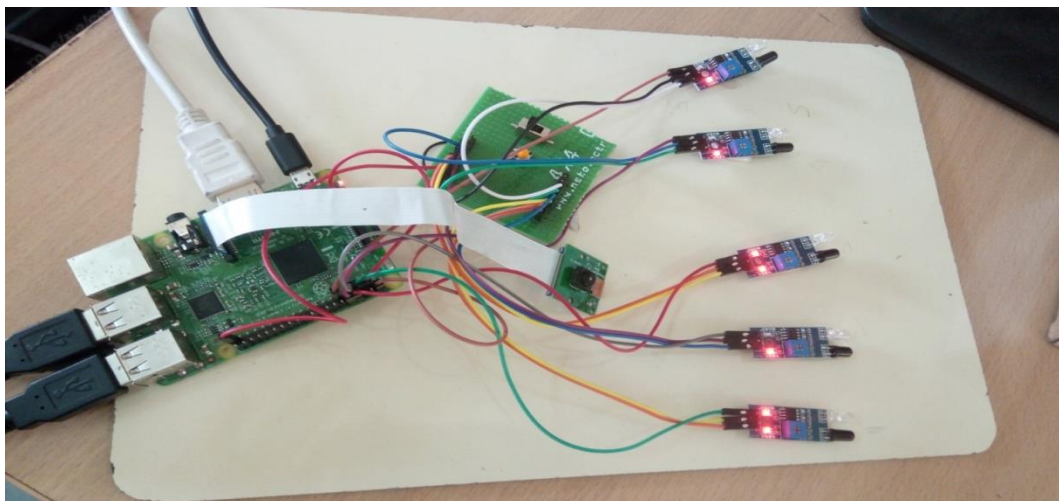


Fig: Circuit Design

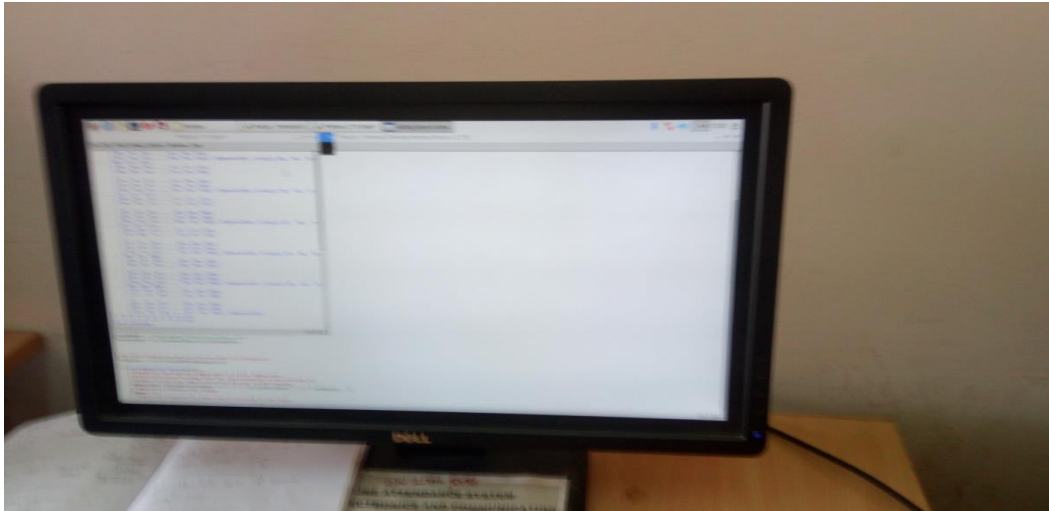


Fig: Experimental Results

CONCLUSION:

A minimal effort BARCODE Based Attendance System model has been effectively created. The model of the framework gives a few favorable circumstances over ordinary strategy for taking participation in class. The model created in this venture is minimal and light weight. In addition, it can run utilizing power connector or battery control. In this manner, it is exceptionally convenient and can be conveyed to the class for taking the participation.

The participation taken is secure and precise since the label ID encoding is finished utilizing Wiegand 26-bit design. The model is easy to use with effectively open switches and correspondence ports. Participation can be put away and recovered effectively. Another preferred standpoint of the framework is it has high distinguishing proof and confirmation speed. This framework can be connected in the classes as well as in working spots with the component add up to working hours can be recorded.

Robotized Attendance System has been imagined to reduce the mistakes that happen in the customary (manual) participation taking framework. The point is to mechanize and make a framework that is helpful to the association, for example, a foundation. The productive and exact technique for participation in the workplace condition that can supplant the old manual strategies. This strategy is sufficiently secure, dependable and accessible for utilize. No requirement for particular equipment for introducing the framework in the workplace. It can be built utilizing a camera and PC.

References:

- [1] S. Lahiri , “RFID Sourcebook”, New Jersey: IBM Press,2006.
- [2] S. Shepard , “RFID Radio Frequency Identification”, s.l.: MacGraw-Hill,2005.
- [3] Radio -frequency identification . Wikipedia (online). Wikimedia Foundation, Inc.,2009.
- [4] Sato DCS & Labeling Worldwide , “The RFID Guidebook (Revision 8)”,2004.
- [5] HID Corporation, “Understanding Card Data Formats ”, Technology Basics WhitePaper, 2009.