

An Online Examination Checking System Using Embedded Linux

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Abstract

The assignment objectives at designing an sensible authentication machine based totally on fingerprint technological know-how in the examination centers. The proposed system makes use of finger print module for authentication system and motors are used for opening or closing of the gate. The system also helps digital camera primarily based image capturing approach when any wrong finger print used to be detected, the photos are sent to the predefined e mail using Wi-Fi and the buzzer beeps.

Keywords: Micro processor (ARM-11), finger print scanner, USB Camera, LCD, Buzzer and Servomotor.

1. Introduction

Biometrics refers to the automated identification of a dwelling man or woman primarily based on physiological or behavioral characteristics for authentication purpose. Among the present biometric technologies are the face recognition, fingerprint recognition, finger-geometry, had geometry, iris recognition, vein recognition, voice

awareness and signature recognition, Biometric technique requires the physical presence of the character to be identified. This emphasizes its desire over the standard method of identifying what you have such as, the use of password, a smartcard etc. Also, it probably prevents unauthorized admittance to get right of entry to manipulate systems or fraudulent use of ATMs, Time Attendance Systems, mobile phones, smart cards, computer PCs, Workstations, vehicles and pc networks. Biometric attention structures offer greater safety and convenience than usual strategies of non-public recognition.

Automation is the most regularly spelled term in the area of electronics. The hunger for automation delivered many revolutions in the existing technologies. This assignment makes use of an onboard computer, which is commonly termed as Raspberry Pi processor. It acts as heart of the project. This onboard computer can effectively talk with the output and input modules which are being used. The Raspberry Pi is a credit-card-sized single-board computer developed in the UK through the Raspberry Pi Foundation. The Raspberry Pi has a Broadcom BCM2837 machine on a chip (SoC), which consists

of an ARM CORTEX A5 1.2 GHZ processor, Video Core IV GPU and 1GB RAM. It does not consist of a built-in tough disk or solid-state drive, but uses an SD card for booting and long-term storage.

2. LITERATURE SURVEY

[1] Presents get right of entry to to the door based totally on the finger print authentication. Human identification discipline is very big and has undergone speedy adjustments with time. An necessary and very dependable human identification technique is fingerprint identification. Fingerprint of each character is unique. So this helps in identifying a person or in enhancing security of a system. Finger print of a individual is read by a exceptional kind of sensor that is finger print sensor. Microcontroller is to allow the door opening or closing based totally on the end result acquired from the finger print scanner. Finger print comparison is executed inner the finger print module itself and its output is given to microcontroller. Result is displayed in a LCD display whether or not the user is licensed or not.

[2] Presents sensible Security System. These security structures enable to lock/unlock the door the usage of three one-of-a-kind modes i.e. Keypad, Bluetooth and Global System for Mobile (GSM) modules. These three modules function on a 4-digit password. We can open or close the door by the use of

keypad, Bluetooth software from smart cellphone and additionally by way of the use of 4-digit message from GSM. If any unknown person does the three consecutive unsuccessful tries to enter the password, then Arduino controller will send a warning message to owner mobile variety and additionally provoke the buzzer alarm as a warning of unauthorized intrusion.

3. Implementation:

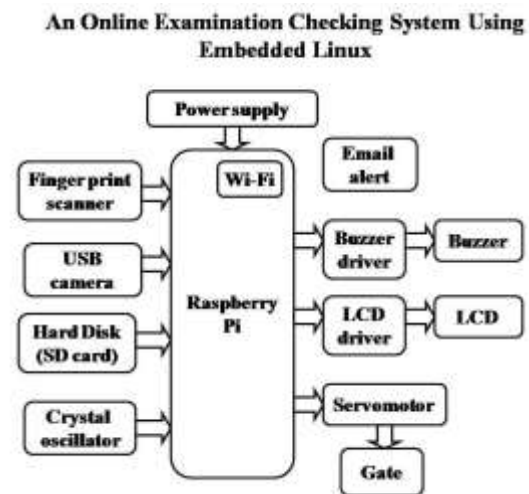


Fig1: Blockdiagram

The proposed device affords authentication to the college students in the examination centers primarily based on fingerprint technology. If fingerprint is matched, then only gate gets opened and the pupil is allowed to write the exam. If incorrect fingerprint is detected, camera takes snap and the photo is sent to the predefined email. Buzzer additionally beeps. LCD is used to display the authentication important points and repute of the gate.

4. Related Work:

The short introduction of distinct modules used in this undertaking is mentioned below:

Raspberry Pi (ARM-11) PROCESSOR:



Fig2: Raspberry Pi

The Raspberry Pi three Model B is the modern-day single-board pc from the Raspberry Pi Foundation. In this version, they've upgraded to a 1.2 GHz 64-bit quad-core ARM processor and added 802.11n Wireless LAN, Bluetooth 4.1 and Bluetooth Low Energy.

Like the preceding version (the Pi 2) it has 1 GB of RAM, four USB ports, and full HDMI support. The Raspberry Pi three additionally has the identical structure thing as the Pi 2 (and Pi 1 Model B+).

The Raspberry Pi runs Raspbian and/or NOOBS (both Linux-based running systems) which boot from the removable SD card. A host of third-party operating systems are

additionally supported, inclusive of Ubuntu Mate, Windows 10 IoT Core, and OSMC.

The Raspberry Pi 3 is a credit-card sized pc successful of doing simply about whatever a computing device PC does. From internet browsing and phrase processing, to taking part in Mine craft or acting as a media player, the Raspberry Pi's abilities are extensive. With masses of pictures processing power, the Raspberry Pi 3 is capable of streaming BluRay-quality video. If you're searching to incorporate the Pi into your next embedded design, the 0.1" spaced 40-pin GPIO header offers you get admission to to 27 GPIO, UART, I2C, SPI as nicely as each 3.3V and 5V energy sources.

Raspberry Pi processor is programmed the use of embedded 'Linux'. Linux is the best-known and most-used open source running system. As an running system, Linux is software program that sits under all of the other software on a computer, receiving requests from those applications and relaying these requests to the computer's hardware.

Finger Print Scanner:

Finger print scanner systems are comprised of a sensor for scanning a fingerprint and a processor which stores the fingerprint database and software which compares and matches the fingerprint to the predefined database. Within the database, a fingerprint is

usually matched to a reference number, or PIN wide variety which is then matched to a person's title or account.

The comparison is carried out through the processor and the assessment is made between the valleys and ridges though your total fingerprint is recorded, the processor takes only components of the finger print to examine with different records.



Fig3: Finger print

LCD Display:

One of the most common units attached to a micro controller is an LCD display. Some of the most common LCD's connected to the many microcontrollers are 16x2 and 20x2 displays. This ability sixteen characters per line by 2 traces and 20 characters per line via 2 lines, respectively.

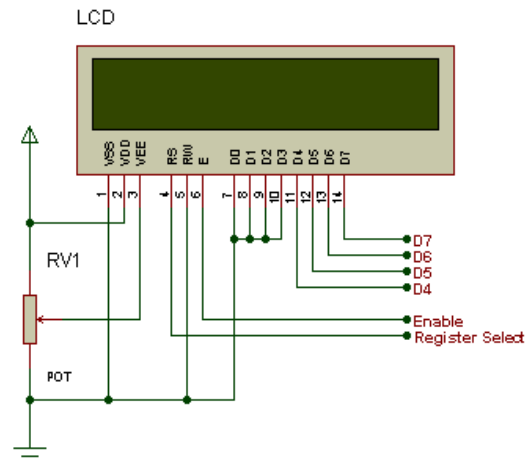


Fig4: 16*2 LCD Display

The LCD requires three manage traces as properly as both 4 or eight I/O traces for the data bus. The person may select whether or not the LCD is to operate with a 4-bit statistics bus or an 8-bit data bus. If a 4-bit information bus is used the LCD will require a complete of 7 information strains (3 control lines plus the 4 lines for the facts bus). If an 8-bit statistics bus is used the LCD will require a total of 11 data lines (3 manipulate strains plus the 8 traces for the data bus).

BUZZER:



Fig5: Buzzer

The vibrating disk in a magnetic buzzer is attracted to the pole by way of the magnetic field. When an oscillating signal is moved through the coil, it produces a fluctuating magnetic subject which vibrates the disk at a frequency equal to that of the force signal.

SERVOMOTOR:

A servomotor is additionally a dc motor with a rotary actuator or linear actuator that allows for particular manage of angular or linear position, speed and acceleration. It consists of a appropriate motor coupled to a sensor for function feedback. It also requires a pretty sophisticated controller, regularly a devoted module designed specifically for use with servomotors.

A servomotor is a closed-loop servomechanism that uses position comments to control its action and ultimate position. The input to its control is a sign (either analogue or digital) representing the role commanded for the output shaft.

The motor is paired with some kind of encoder to furnish position and speed feedback. In the easiest case, solely the position is measured. The measured role of the output is compared to the command position, the external enter to the controller. If the output role differs from that required, an error signal is generated which then

motives the motor to rotate in either direction, as needed to deliver the output shaft to the appropriate position. As the positions approach, the error signal reduces to zero and the motor stops.

The very easiest servomotors use position only sensing through a potentiometer and a bang-bang manage of their motor; the motor always rotates at full pace



Fig6: Servomotor

4. CONCLUSION:

The present model gives an Integrating characteristic of all the hardware aspects which has been used and developed in it with Arm-11 Raspberry pi processor. The Presence of every and each and every module has been reasoned out and positioned very carefully. Hence the contributing to the excellent working unit for An Online Examination System Checking System Using Embedded Linux device has been designed perfectly. Secondly, using notably superior IC's like Broadcom

BCM2387 chipset, 1.2GHz Quad-Core ARM Cortex-A53 (64Bit) processor, Linux operating device technological know-how with the assist of growing technology. Thus the assignment has been efficiently designed and tested.

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