Advanced Online Examination by Using Raspberry Pi Based On Iot

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Abstract — *Education is one of the main need for man to develop socially and intellectually. Today need of exams in universities, schools, colleges and even companies for recruitment process .The general paper-pen tests/exams are now being slowly replaced by the online internet based exam system .But on this manual system of writing examination has introducing many demerits. The manual process of writing examinations is not only time-consuming and tedious too, but cumbersome, hence the need for a better, faster and more reliable means of examining students is by Online examinations, sometimes referred as e-examinations, which are the examinations conducted through the internet or in an intranet (if within the Organization) for a remote candidate/candidates. In this online exam system location of the proctor varies from the location of the examinees. When the distance Increases slightly, chances of doing malpractices are get increase. To avoid such problems, the examinee has to be Monitored constantly.lot of techniques were proposed for providing security while conducting online exams .In this paper we propose a system which providesmore security to improve online Examination using IOT technology. To develop modern education, and considering the shortcoming of current online exam system, a new projection of online exam system based on Raspberry pi IOT is proposed, and the key implementation techniques and methods are also described. Internet of Things (IoT) has provided a promising opportunity to build powerful Examination systems and applications by leveraging the growing ubiquity of RFID, wireless, mobile and sensor devices.*

Keywords —*Automatic online examination, HDMI, internet of things, PIR sensor, Python, Raspberry pi.*

I. INTRODUCTION

Nowadays on line exams are not conducted in a efficient way.Online examinations are now been very useful to determine the student's knowledge using modern computer technology without any effects on the old system of university course exam which uses Pens, Papers and invigilators. Online exam can bring the betterment of student's examination whereas the old examination system using the pen and paper requires more effort on the part of students and invigilators. Each and every online examination system requiring computer for all students within a batch. But small schools, institutes and companies may not able to afford computers, an embedded device using Raspberry Pi 2 model B with 7 inches LCD screen and Wi-Fi has been designed which is small in size and low cost. In this only all slave units are controlled by one master computer. In this Questions are having multiple options, multiple answers or can be text answers including images, mathematical equations and diagrams.

Nowadays Online examination system is more and more popular in many colleges and training organization in which students have an exam via internet. In this system we used a IOT technology and the process, here we initially stored all the examine details in the server. Then if someone wants to start online examination, first they should apply face recognition (in Open CV based) technique. Because some time unwanted person also enter to write the exam, so this is the best way to identify any culprits are found or not. Then examine enter to exam, here also we apply some security. Nowadays already questions are stored in the online or any paper printed copy. But here not like that, if you entered to write the exam that time only teachers are start to write questions on server. This will be printed automatically to the examine browser window. So we can easily avoid the question paper leakage before the exam

II. RELATED WORKS

All In paper [1] the methods commonly used for these type of examinations are follows this method first authenticates the candidate and gives the interface to him. Then an interface is given to him. So that he can answer the questions .after the stipulated time it automatically submits the data.

This method uses a secured communication based cryptography and group communications, so that It won't affect the performance of the student[2].

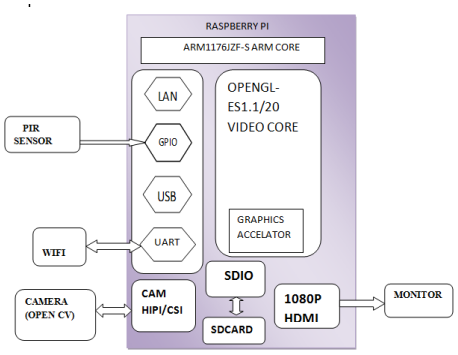
This method deals with the framework that gives the enhanced line of examination by using DMZ concept in firewall. This method enhances the security framework to satisfy the online exam framework [3].

This method proposes secure computer based exams to facilitate the exam process and support Multilanguage question and solutions to cheating problems[4].This method proposes keypad based

embedded device which reduces the usage number of computers used by students and this method is based on browser[5].
This method proposes a system of implementation of a web based examination system .this method uses unified modelling language and html and SQL server as database [6].
this method concludes the improvement of security that incorporates the proposed system to fulfil the need of online examination and it needs username and password[7].
This method integrates the web technology to online exams and the ability to detect cheating behaviours and this method improves the examinees participation in online examination [8].
This method uses an IP camera which makes reliable online examinations which has strict security and true candidate authentication. Here an control room is placed to authorize the candidates and govern them keenly [9].
In paper[10] Biometric authentication is used for enhanced secured online exam. It support formulas and graph input in non-choice based examination.
Enhanced security using data visualization for conducting online exam. The combination of face authentication and password will give multi model technique [11].
In paper [12] the model quiz tool as used to design the online exam. The results were compared with similar design paper based exam.

III.PROPOSED SYSTEM

The previous all examination system is depend on browser server structure or client server structure. Also the online examination system used the different authentication for identification of every student. The identification can be done with different authentication. But all this required
Computer system. So that design a system with only one master computer and other is a slave unit. System consists of two units one is a master unit and second is slave unit. The master unit consist of master computer which is control the all slave units. The slave units consist of Raspberry Pi 3f module, PIR sensor, camera, 7 inches touch screen LCD, Wi-Fi dongle, HDMI cable. Following block diagram shows hardware used in system.



Master unit consists of a Master computer is used to sending and receiving of the questions and answers through internet. It is used for sending the data (Question Paper) to Slave Unit and also receiving the final data from the Slave Units. The Slave unit consist of raspberry pi, & inches LCD screen, Wi-Fi Dongle, PIR sensor, camera, HDMI cable. Raspberry pi is a low in price and compartable size of computer board it has powerful processor and high processor. its main core language is raspbian OS can also develop script or program using python language. Raspberry pi 3f has CPU 900 MHz ARM1176JZF-S ARM core ,Memory 1GB RAM, It has a 40 pin GPIO connector ,micro SD. Purpose of using raspberry pi module . It provides 1 GB RAM and it is compatible with Wi-Fi connection and 7 inches touch screen LCD. All the data of master unit is connected with a raspberry pi and then display on LCD. The ARM1176JZF-S ARM core is the secret of how the Raspberry Pi is operates only 5V onboard micro-USB port only 1A power supply is used. It's also the reason why you won't find any heat-sinks on the device: the low power of the chip can be wasted in very little amount. The raspberry pi module B running idle 200mA current. With Wi-Fi running, that adds another 170mA. If you have Ethernet instead, that adds about 40mA.The built in HDMI (High Definition Multimedia Interface) interface enables the display to work as computer monitor just like any other HDMI screen. It has 800 × 480high resolutions; Supports Raspberry Pi comes with Raspbian driver. LCD screen provide backlight switch used to turn on and off backlight. Totally 600mA Current is drawn in LCD. 400mA current can reduce by running the backlight. Backlight off the decoder and display itself draws 250mAcurrent. Connect the LCD to the HDMI on the Raspberry Pi board with a HDMI cable for displaying control. The HDMI uses TMDS (Transition Minimized Differential Signalling) to move information from one place to another. Wi-Fi Dongle is connected to raspberry pi. Wi-Fi is used to establish wireless connection between two unit (i.e.) master unit and slave unit. 50 to 100 meter Wi-Fi range. Operating Frequency of Wi-Fi is 2.4GHz. Though the Wi-Fi data can be send from master unit to slave unit and back to master unit also.

A. PIR SENSOR

In this method Passive Infrareds sensors (IRs) are used to detect the motion of examiner. PIR sensors are electronic devices .this sensor that measures infrared light radiating from objects, usually a human body. Which can detect levels of infrared radiation everything emits some level of radiation. This sensor split in two halves. For reason we are used to detect motion not average IR levels. The two halves are wired up so that they can cancel each other out. One halves sees more (or) lesser radiation than other, the output will swing high or low.

B. INTERNET OF THINGS (IOT)

IOT (internet of things) was simple but powerful. If all objects in daily life were equipped with identifiers and wireless connectivity these objects could be communicate with each other. Sensors can also have wide area connectivity such as GSM, GPRS, 3G, and LTE. The data can be small in size and frequent in transmission. The numbers of devices or nodes that are connecting to the network are also greater in IoT than in traditional PC computing.

C. OPEN CV

Open CV (Open Source Computer Vision Library) is mainly used in the project for face recognition technique a library of programming functions mainly aimed at real time computer vision, developed by Intel and now. It is free for use under the open source BSD license. The library is cross-platform. It focuses mainly on real-time image processing. If the library finds Intel's Integrated Performance Primitives on the system the library was originally written in C and this C interface makes Open CV portable to some specific platforms such as digital signal processors. Wrappers for languages such as C#, Python, Ruby and Java (using Java CV) have been developed. In this project python language was used. Python is an easiest language to learn when compared c and c++, powerful programming language. It has efficient in both high-level data structures and object-oriented programming. Python fine syntax and most powerful typing, together with its detailed nature.

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