

## Bank Locker Security System Using Iot

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**Abstract:** Personal Security is one of the main concern when it comes to office, personal workplace in home, bank etc. So to overcome this problem, this project suggests the use of Internet of Things (IoT) to provide secure access only to authorized person via SMS and also sending image to the user's WhatsApp account. The Raspberry Pi captures the image when a person tries to access the bank locker and then processes it and sends it to the user's WhatsApp account as a picture message. The user can then provide authorization to the Raspberry Pi from his/her WhatsApp account whether to open or remain it shut. So in order to have highly secured locker we are using this proposed method.

**Keywords:** Raspberry pi-2 model B, Signal conditioning unit, Ethernet, SD card, GSM, Smart phone

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### I. Introduction

The main aim of this project is to develop a device for the bank locker security purpose. Many people who may or may not know us, are accessing the personal workplace because of this there are many issues such as losing of documents and valuable possession. Even the latest technology such as fingerprint sensor lock can be unlocked with ease. So to overcome this problem, this project suggests the use of Internet of Things (IoT) to provide secure access only to authorized person. For this we shall be using Raspberry Pi for capturing image, processing it and then sending it via message and Internet to the user's WhatsApp account.

The Raspberry Pi captures the image when a person tries to access the bank locker and then processes it and sends it to the user's WhatsApp account as a picture message. The user can then provide authorization to the Raspberry Pi from his/her WhatsApp account whether to open or remain it shut. This can also be used in places such as personal workplace, office location such as records, server, document storage places and other places where security is of major concern. So in order to have highly secured locker we are using this proposed method.

### II. Existing Method

In this RFID technology someone tries to open the locker it will be sensed and sends the indication message to the user via GSM. In this fingerprint method, the locker in the bank will be opened only when the unique graphical security is drawn on the screen and also the pattern can be easily identified by unknown person and that person can easily open the locker without any exception from the user.

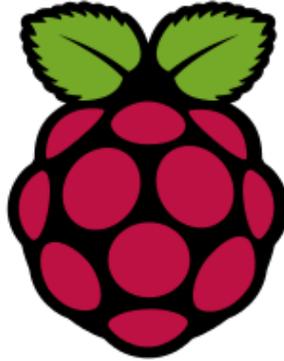
The main drawback is that it will not be identifying who is opening the locker. In this paper the technique implemented is that the bank locker can be opened only by the authenticated user with the help of his/her fingerprint. It is easy to trace the authenticated user fingerprint without his/her knowledge. With the help of fingerprint unknown person can easily crack the fingerprint security system.

### III. Proposed Method

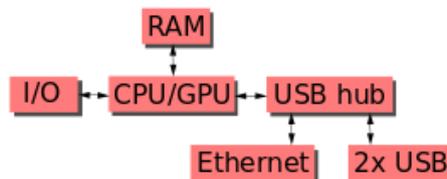
The main goal of this project is to overcome the major drawbacks of different locker security systems such as GSM and RFID, Pattern Analyzer and Fingerprint methods are overcome by using Bank Locker Security System using IoT. In this proposal, if a person tries to access the locker the signal conditioning unit will be activating the complete circuit and it will be sending the SMS to the authenticated user via GSM. In addition, the camera is kept near to the locker. The person who is trying to access the locker will be captured by the camera and then it will be processed in Raspberry Pi and sends it to the user's WhatsApp account as a picture message. If the person in the image is known to the user, he/she can permit the locker to open. Else if the person in the image is of unknown to the user, he/she can make the locker to be in a closed state. Thus the bank locker will be of highly secured from unknown person.

#### IV. Hardware Description

##### Raspberry Pi 2 model B+:



The Raspberry Pi is based on the Broadcom BCM2835 system on a chip (SoC), which includes an 700 MHz ARM1176JZF-S processor, VideoCore IV GPU, and RAM. It has a Level 2 cache of 128 KB, used primarily by the GPU, not the CPU. The SoC is stacked underneath the RAM chip, so only its edge is visible. The model B+ with 512 MB RAM initially there were new standard memory split files released (arm256\_start.elf, arm384\_start.elf, arm496\_start.elf) for 256 MB, 384 MB and 496 MB CPU RAM (and 256 MB, 128 MB and 16 MB video RAM).



The model B+ with 512 MB RAM initially there were new standard memory split files released (arm256\_start.elf, arm384\_start.elf, arm496\_start.elf) for 256 MB, 384 MB and 496 MB CPU RAM (and 256 MB, 128 MB and 16 MB video RAM). But a week or so later the RPF released a new version of start. Though the model B+ has an 8P8C ("RJ45") Ethernet port, they can be connected to a network using an external user-supplied USB Ethernet or Wi-Fi adapter. On the model B+ the Ethernet port is provided by a built-in USB Ethernet adapter.

##### USB Mouse:

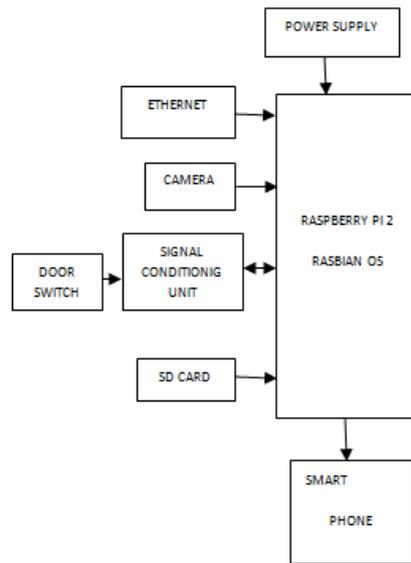
Computer mouse has had a long and steady relationship with computers so far. They have evolved themselves a great deal too. From being a hefty mouse initially, we get computer mouse in different shapes, sizes and technology these days.

##### USB Keyboard:

A computer keyboard is a typewriter-style device which uses an arrangement of buttons or keys to act as a mechanical lever or electronic switch. Following the decline of punch cards and paper tape, interaction via teleprinter-style keyboards became the main input device for computers.

A keyboard typically has characters engraved or printed on the keys and each press of a key typically corresponds to a single written symbol. However, to produce some symbols requires pressing and holding several keys simultaneously or in sequence. While most keyboard keys produce letters, numbers or signs (characters), other keys or simultaneous key presses can produce actions or execute computer commands.

## V. Block Diagram



### Power Supply:

This is a small +5v switched mode power supply circuit. The circuit has internal current limiting and thermal production capacity.

### SD Card:

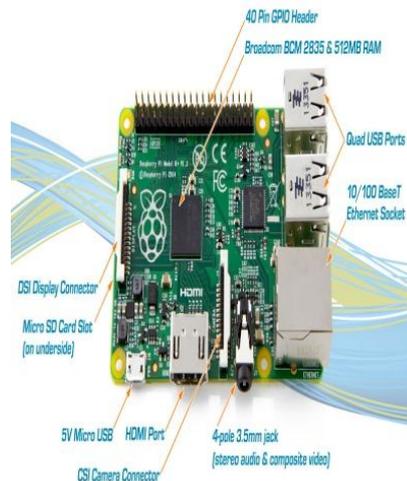
Secure Digital (SD) is a non-volatile memory card format developed by the SD Card Association (SDA) for use in portable devices. The four families are the original Standard-Capacity (SDSC), the High-Capacity (SDHC), the extended-Capacity (SDXC), and the SDIO, which combines input/output functions with data storage. The three form factors are the original size, the mini size, and the micro size. Electrically passive adapters allow a smaller card to fit and function in a device built for a larger card.

### Webcam:

A webcam is a video camera that connects to a computer, and can let people see each other over the Internet. Most people that have webcams use them with an instant messenger to see each other at the same time. Webcams can also be used for recording videos and video blogs. The webcam can be part of a computer, mobile phone or it can be an independent device.

## VI. Hardware Implementation

### Raspberry Pi 2 model B+



**USB Mouse**



**USB Keyboard**



**SD Card**



**LCD Monitor**



**Switch**



**HY-1158**

**Webcam**



## **VII. Software Implementation**

### **Software used: Python**

Python is a widely used high-level, general-purpose, interpreted, dynamic programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C++ or Java. The language provides constructs intended to enable clear programs on both a small and large scale.

Python supports multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library.

Python interpreters are available for installation on many operating systems, allowing Python code execution on a wide variety of systems. Using third-party tools, such as Py2exe or Pyinstaller, Python code can be packaged into stand-alone executable programs for some of the most popular operating systems, allowing the distribution of Python-based software for use on those environments without requiring the installation of a Python interpreter.

CPython, the reference implementation of Python, is free and open-source software and has a community-based development model, as do nearly all of its alternative implementations. CPython is managed by the non-profit Python Software Foundation.

## **VIII. Conclusion**

We have implemented a Bank locker security system using IoT. In this paper we presented a system that allows if a person tries to access the locker the signal conditioning unit will be activating the complete circuit and it will be sending the SMS to the authenticated user via GSM. In addition, the camera is kept near to the locker. The person who is trying to access the locker will be captured by the camera and then it will be processed in Raspberry Pi and sends it to the user's Whatsapp account as picture message. If the person in the image is known to the user, he/she can permit the locker to open. Else if the person in the image is of unknown to the user, he/she can make the locker to be in a closed state. Thus the bank locker will be of highly secured from unknown person.

### **Advantages**

1. Easy to use and requires no special training or equipment.
2. High accuracy in terms of security.
3. No manual errors.
4. No false intrusion.

### **Reference**

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- [2]. Motion Based Security Alarming System for Video Surveillance.