FINGER PRINT AUTENTICATED FLASH STORAGE DEVICE

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Abstract

We often store important and confidential files in pen drives or flash storage drives for transferring/sharing data. Although convenient, there remains a concern regarding misplacing these storage devices that can go intowrong hands and create problems, so we need special storage devices, which we can securely save and shareour files.There is several software available in the market that allow us to encrypt and lock our files but they require acertain 'know-how' for installation in the laptops and PCs, which will be used with the flash drive. Alsoavailable are some flash devices that work on fingerprint or password authentication. However, these requireinstallation of special drivers in a PC and only support Windows 10 or 8 but not Linux.Therefore, we have decided to make a smart flash storage device that is based on fingerprint authentication andworks without installing any software or drivers in a PC. Using Bluetooth serial terminals, a user's fingerprintor password authentication is done via an app on a phone. This concept project can be used for developing areliable smart flash storage solution.

1. INTRODUCTION

Designed for those demanding the highest level of data protection, the drive can safeguard sensitive data againstunauthorized access attempts with fingerprint authentication. Data stored on the drive are safely protected andcan only be accessed when the scanned fingerprint or password is authenticated. The device is completely safeand convenient.This is a Concept project. the whole thing needed to be fabricated into single Chip to make such reliable solution.

2. RELATED WORK

The research work carried out here provided an insight into the development of security system. The protectionof files is most important in recent days.Biometric-based authentication technologies have rapidly developed due to the advances in hardwaretechnologies such as SoC, Sensor and MEMS, and the improvements in accuracy/recognition using Deep Learning technology. Fingerprint recognition, in particular, was applied to Apple's iPhone 5S in 2013 first time,and then has been used as a means for user authentication on mobile devices, and has been widely applied tovarious devices such as digital door locks and vaults. In particular, the fingerprint recognition based biometricwas overwhelmingly high at 48%, when looking at the application rate by each biometric technology of 121global banks in 2014.Fingerprint-based user authentication system has been used in various fields, and the research on thedevelopment of a prototype of a medical registration system using Arduino to reduce patients' waiting time in hospital was also conducted.File security is all about safeguarding your business-critical information from prying eyes by implementingstringent access control measures and flawless permission hygiene. Apart from enabling and monitoringsecurity access controls, decluttering data storage also plays an important role in securing files. Regularlyoptimize file storage by purging old, stale, and other junk files to focus on business-critical files. Tackle data security threats and storage inefficiencies with periodic reviews and enhancements to your file security strategy.

3. IMPLEMENTATION

There is several software available in the market that allow us to encrypt and lock our files but they require acertain ‘know-how’ for installation in the laptops and PCs, which will be used with the flash drive. Alsoavailable are some flash devices that work on fingerprint or password authentication. However, these requireinstallation of special drivers in a PC and only support Windows 10 or 8 but not Linux. Therefore, we havedecided to make a smart flash storage device that is based on fingerprint authentication and works withoutinstalling any software or drivers in a PC.

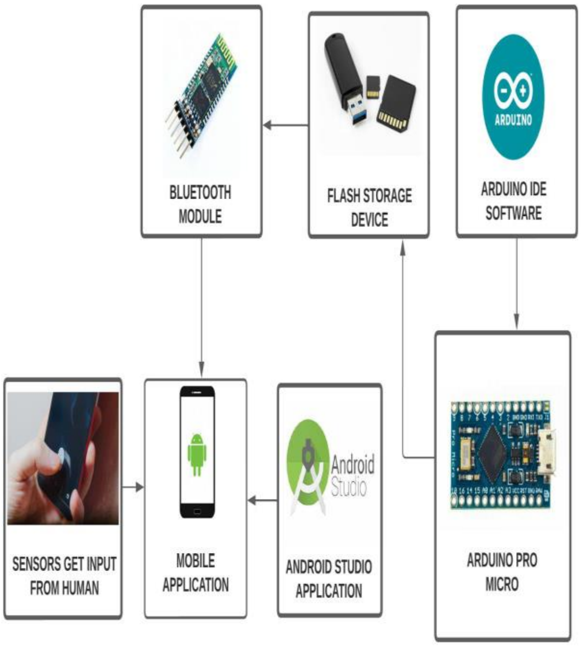
The project seeks to follow the following steps:

1.To provide security.
2.No need to install any drives into system.
3.Provides wireless authentication.

To allow only authenticated users access the flash storage device, we will create a code for controlling the VCC and GND pins of a flash drive. We will also use a Bluetooth HC 05 so that the app can wirelessly perform userauthentication. This will enable safe usage of the flash device with any OS including Linux, Windows, Android,or with any other system that supports USB flash storage.First, create a string variable, which will store the password for device authentication and another variable tostore the password coming from Bluetooth for authentication. Then, define the pin number to control the VCCpin of the USB flash storage device.Next, create a setup function where the serial Baud Rate for Bluetooth HC 05 is 9600.

Now create a loop function that will check the incoming password and compare it with the already savedpassword. If there is a successful match between the two, then it gives the VCC pin of the USB to power andthe USB device will be recognized by the PC, allowing access to the files inside it.Create an app that connects with a pendrive through fingerprint authentication, use Modular. You can also useMIT App Inventor or Android Studio to create the app.Press the fingerprint icon as seen in the app. After successful authentication, you will be able to see therecognized device in the PCWe have decided to make a smart flash storage device that is based on fingerprint authentication and works without installing any software or drivers in a PC. Using Bluetooth serial terminals, a user’s fingerprint orpassword authentication is done via an app on a phone. This concept project can be used for developing areliable smart flash storage solution. It provides high security to the files,To allow only authenticated users access the flash storage device, we will create a code for controlling the VCCand GND pins of a flash drive. We will also use a Bluetooth

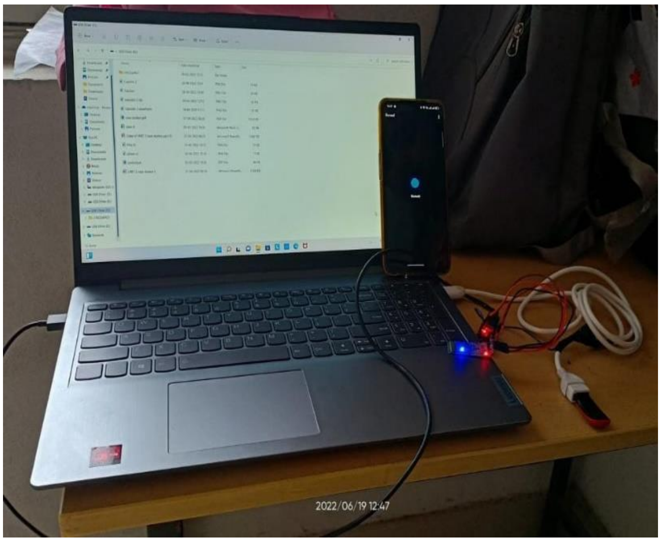
HC 05 so that the app can wirelessly perform userauthentication. This will enable safe usage of the flash device with any OS including Linux, Windows, Android,or with any other system that supports USB flash storage. First, create a string variable, which will store thepassword for device authentication and another variable to store the password coming from Bluetooth for authentication. Then, define the pin number to control the VCC pin of the USB flash storage device. Next, create a setup function where the serial Baud Rate for Bluetooth HC 05 is 9600. Now create a loop functionthat will check the incoming password and compare it with the already saved password. If there is a successfulmatch between the two, then it gives the VCC pin of the USB to power and the USB device will be recognizedby the PC, allowing access to the files inside it.



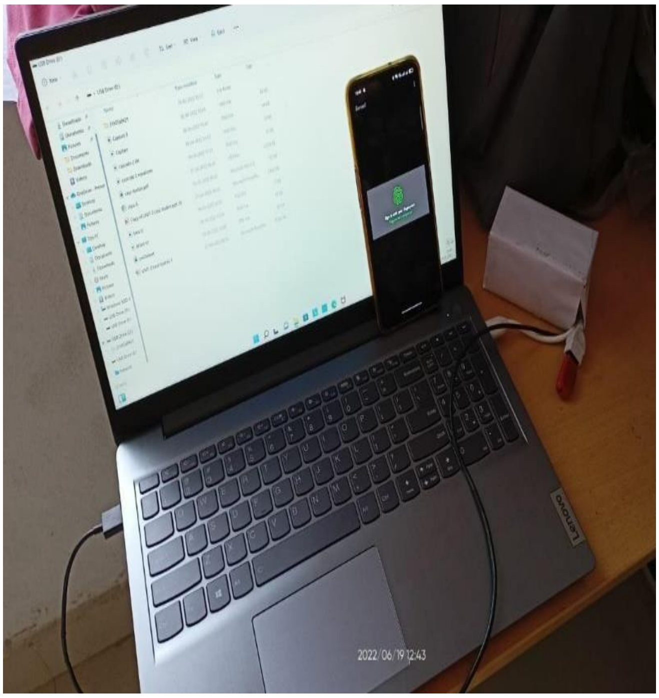
Block Diagram

4. EXPERIMENTAL RESULTS

Prototype



Business Model



5. CONCLUSION

This smart flash storage device that is based on fingerprint authentication and works without installing anysoftware or drivers in a PC. Using Bluetooth serial terminals, a user's fingerprint or password authentication is done via an app on a phone. This concept project can be used for developing a reliable smart flash storagesolution.

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