Smart Wallet

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Abstract- *With the help of the mobile phones, All the management mechanisms are automated to make the work Quick and Perfect. Secured machines, like Laptop machines, as well as Vehicle Security System, are attempting to find ways to Secure the object or service from unauthorized access. The smart phone is also finding itself to be a Secured wallet Manager. A Smart wallet (Secured and Managed by a smart phone), similar to a physical wallet, holds (or keeps track of your cash and other personal information safely). An individual sets up a Smart Wallet by Fingerprint Security. The Smart Wallet stores your fingerprint data inside the wallet, which can be used only for Authorize the owner of the wallet. In order to purchase goods or services with cash pay you can pick the money from the Smartphone by a simple finger Impression . Noone can open the wallet except owner of the wallet (Who's fingerprint is stored). If wallet lost or theft happens the Smartphone can notify that wallet is in out of circle (within the Bluetooth range) by installing an Application for the Smart wallet. The project is implemented using a Bluetooth and GPS tracker that provides access to the locate the wallet anywhere in the world. Smartwallet are works by solar power and also battery power. It also consists of a mobile application (Android) used to perform tracking and emulate the function of a physical wallet. In the future, this project can serve as the basis for a more highly functional Smart wallet capable of providing services such as user identification, purchasing goods and services. A Smartwallet will hold all kind of personal things like, cash, credit/debit card. A real wallet with the added advantage of being secure and more traceable, makes tracking of misplaced or lost wallet easier.*

Keywords- Arduino Extension Board, LED Light, Intel Edison, Buzzer Sensor, Base Shield, Ordinary Wallet, Android Smartphone.

I. INTRODUCTION

The objective of this project is to detect the wallet which is ever misplaced or lost and also have you have a habit of forgetting it behind? Now don't worry about losing or misplacing your wallet.Because, we have come up with an idea to make your ordinary wallet as smart.In this smart wallet,pair your wallet with your smart phone,using Bluetooth.

Get notification on your phone if your wallet is out of range.Locate your wallet from your smartphone app by pressing the locate button.This wil trigger the buzzer on the . A digital wallet is a software component that allows a user to make an electronic payment with a financial instrument and hides the low-level details of executing the payment protocol that is used to make the payment. As the mobile phone continues to take on an ever more central role in our lives, it is increasingly replacing old activities and practices. It is commonly accepted, for example, that the mobile phone is superseding the wrist watch, especially among the younger generation. Further, Internet-enabled smart phones that also include cameras, music and video players, large storage, and navigation services are reducing the need to carry multiple devices. In response to these significant changes, we have been experimenting with ideas about how the mobile phone might also entirely replace the function of a physical wallet. Beyond the analogy with a physical wallet, a mobile digital wallet provides additional functions and benefits, such as virtually unlimited storage, location awareness, and quick sorting or searching of its contents, making it an even more compelling replacement for the physical wallet. Doing away with paper receipts, business cards and other paper artefacts, and the potential for optimizing or eliminating rips, all have environmental benefits. We define a mobile digital wallet as a heterogeneous managed store of content items related to daily transactions, both electronic and physical, providing secure, automated multi-channel access to the user and other parties. What issues does the research community need to address to make a mobile digital wallet a reality?

II. RELATED WORK

The paper deals with the comprehensive study of GPS space segment and control segment. A detailed overview of GPS navigation message format, satellite tracking and selection processes, frequency planning, C/A code generation and timing is studied and illustrated. Also, the user end implementations of location measurement processing algorithms are discussed. In [2], the paper deals with asset tracking using RFID. Here, the proposed mobile device uses Radio Frequency Identification (RFID) to keep track of registered objects that are within range of the user.The assets are attached with RFID tags with unique identifiers for each

tag by using EPC Gen2. [3] The paper discusses various techniques that have emerged for estimation of location and tracking of stationary and mobile objects both in the open terrain as well as inside a building. The objective of their research has been to provide a seamless, sensor fused tracking system in which data from various sensors may be processed using Kalman filters or more general Particle filtering algorithms. In [4], the paper proposes and implements a low cost object tracking system using GPS and GPRS. Here the system tracking system using GPS and GPRS.Here the system allows a user to view the present and the past positions recorded of a target object on Google Map through the internet and reads the current position of the object using GPS, the data is sent via GPRS service from the GSM network server using the POST method of the HTTP protocol.

III. SYSTEM ARCHITECTURE

The proposed system works in two phases: tracking phase and mapping phase. In the tracking phase the mobile device's application developed in Android using the mobile phone, the GPS receiver fetches the GPS loca tion, after calculating the exact location it further creates a GPRS packet. The same application later sends this GPRS packet to the server which stores the data in a Mobile Object Database (MOD) developed in MySQL. The next phase is mapping phase in which the data is fetched from the database and is displayed on the Google map on the mobile application to find the object that is misplaced from the specified range. For the short range, the transmitter end sends a signal to the receiver sensor, which after being traced will start ringing, to notify the user as to where the lost item is.
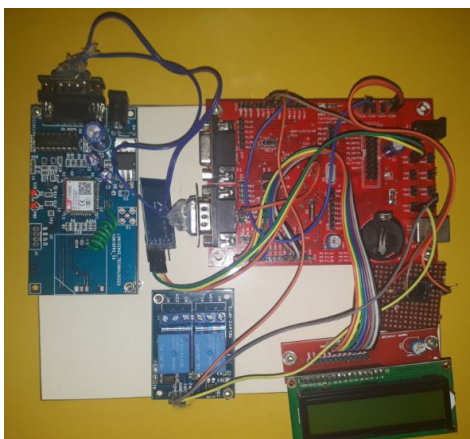
Hardware and Software Specification

A.The hardware components used in the proposed system are as follows:

Global Positioning System (GPS)

A GPS is a device, normally carried by a moving vehicle or person, that uses the Global Positioning System to determine and track its precise location, and hence that of stored within the tracking unit, or it may be transmitted to a central location data base, or Internet-connected computer, using a cellular (GPRS or SMS), radio or satellite modem embedded in the unit. This allows the asset's location to be displayed against a map backdrop either in real time or when analysing the track later, using **GPS tracking software**. Data tracking software is a vailable for smartphones with GPS capability.

Bluetooth

Bluetooth is a wireless technology standard for exchanging data over short distances. It is a packet-base protocol with a master-slave structure. One master may communicate with up to seven slaves in a piconet. All devices share the master's clock. Packet exchange is based on the basic clock, defined by the master, which ticks at 312.5 µs intervals. Two clock ticks make up a slot of 625 µs, and two slots make up a slot pair of 1250 µs. In the simple case of single-slot packets the master transmits in even slots and receives in odd slots. The slave, conversely, receives in even slots and transmits in odd slots. Packets may be 1, 3 or 5 slots long, but in all cases the master's transmission begins in even slots and the slave's in odd slots.
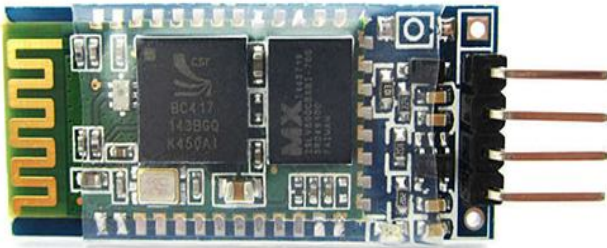
Arduino

Arduino is an open-source computer hardware and software company, project and user community that designs and manufactures kits for building digital devices and interactive objects that can sense and control the physical world. Arduino boards may be purchased preassembled or as do-it-yourself kits; at the same time, the hardware design information is available for those who would like to assemble an Arduino from scratch.

The present work is based on a family of micro-controller board designs manufactured primarily by Smart-projects in Italy, and also by several other vendors, using various 8-bit Atmel AVR micro-controllers or 32-bit Atmel ARM processors. These systems provide sets of digital and analog I/O pins that can be interfaced to various extension boards and other circuits. The boards feature serial communications interfaces, including USB on some models, for loading programs from personal computers. For programming the micro-controllers, the Arduino platform provides an integrated development environment (IDE) based on the Processing project, which includes support for C and C++ programming languages.
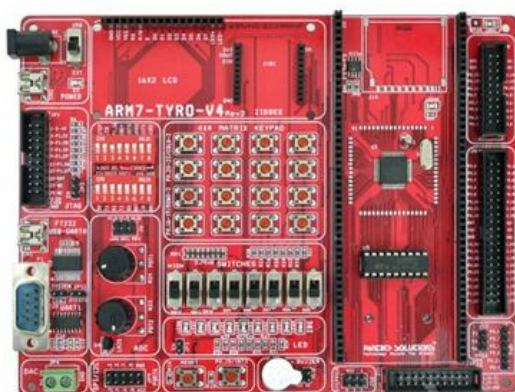
Connecting Wires

The wires are used for connecting the fingerprint sensor to Arduino and from Arduino to the bread board. Only through these connecting wires, the power is supplied to the system and simultaneous operations are performed.

Relay

This device is used to provide the security for locking and unlocking the smart wallet.If the wallet is misplaced or lost then the particular location is kept using GPS.Also this provide the lock and unlock to control that device.Through this relay this security mechanism is provided.The person can lock the device whenever it is lost and also unlocked that device.The device may locked and unlocked the device whether in different locations.

Liquid Crystal Display

A liquid crystal display or LCD draws its definition from its name itself.LCD (Liquid Crystal Disolay) screen is an electronic display module and find awide range of applications.A 16X2 LCD display is very basic module and is very commonly used in various devices and circuits.These modules are preferred over seven segments and other multi segment LEDs.Liquid crystal displays are super thin technology display screen that are generally used in laptop computer screen,TVs,cellphones and portable video games.LCDs technologies allow display to be much thinner when compared to cathode ray tube(CRT) technology.Here we use this LCD display for displaying the comments from the user.

IV. MODULES

The software specifications are as follows,

Arduino IDE

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.

Android Studio

Android Studio is the official integrated development environment (IDE) for developing for the Android platform.

The system architecture diagram is shown. The design of GPS and Bluetooth based object Tracking System comprises of the following modules:

Bluetooth Module

The Bluetooth module is used to track objects in short range. Firstly the objects should be registered with the object name and id in the registration application. Then the Bluetooth module is used to receive signals from the GPS module. The signals are used to turn on a buzzer. Based on the sound of the buzzer the user will track the device.

GPS Module

In GPS module, we determine the long range position of an object by means of communicating with the satellite and sending the latitude and longitude coordinates to an android mobile. The coordinates are then mapped using Google Maps. The wallet is tracked by the GPS module for obtaining the location of that particular area. It is identified the particular location which indicate the wallet is in that location. The GPS module determines the position of the wallet which is used to got it easily.

Circuit Design

In this System, We have developed an android application which is used to track the smart wallet position based on GPS values like Longitude and Latitude, Using our Android Application we used to connect our mobile with the Smart Wallet Kit and we used to monitor its position. Once if the Smart Wallet Kit is disconnected due to out of range between our Android Mobile and Smart Wallet Kit our android mobile will play an Alarm which indicates that the

Smart Wallet Kit is disconnected with our Mobile due to out of range of Bluetooth Range. This will alert the User.
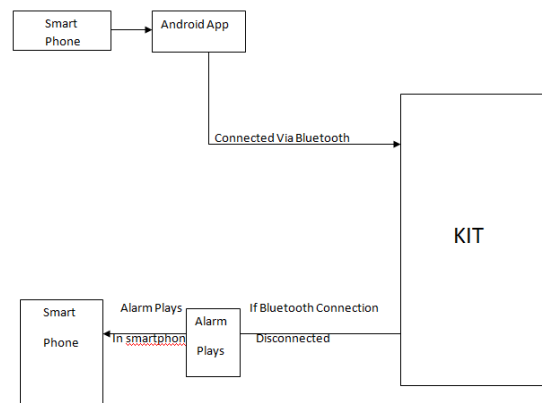
Kit Architecture

To secure the wallet which is carrying our personal information and may have consequences if we lost it. It is becoming necessary to secure our wallet. Smart Wallet is a concept in which our wallet will be connected to our smart phone via Bluetooth. Wallet will be containing sensors like GPS sensor which is used to continuously send the wallet position like GPS Latitude and Longitude to our connected mobile and Bluetooth Sensor to connect with our Mobile. This makes the wallet more Secure and keep our personal Data and cash secured from unauthorized access.
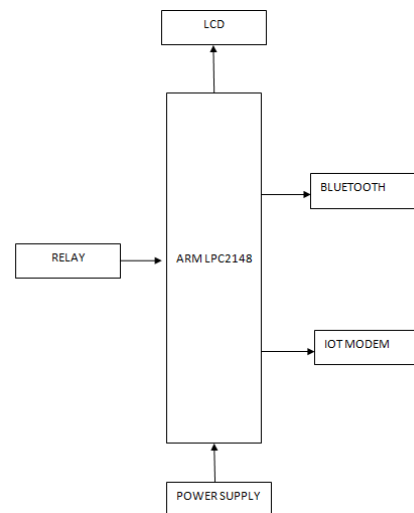
The power supply is provided to the ARM LPC2148 .Addionally , the relay is connected to the device for locking and unlocking the device which secures from another persons. The IOT modem is connected with the ARM for providing GPS locations of where the wallet is present.

SYSTEM TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that theSoftware system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components

System Test

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is

purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot "see" into it. The test provides inputs and responds to outputs without considering how the software works.

Unit-Testing:

Unit testing is usually conducted as part of a combined code and unit test phase of the software lifecycle, although it is not uncommon for coding and unit testing to be conducted as two distinct phases.

V. CONCLUSION

In this paper, we presented the design of architecture of Mobile based Digital Wallet for peer to peer payment system. Proposed solution is encryption software that works like a physical wallet during electronic commerce transactions. It can hold a user's payment information, a digital certification to identify the user, and shipping information to speed transactions. The consumer certification to identify the user, and shipping information to speed transactions. The consumer will automatically input shipping information at the merchant's node and will give the consumer the option of paying by digital cash or check.

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