TECH-BAG

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Abstract— **This Paper gives the general idea about Tech bag and its Applications. Also it gives brief idea of how the bag is made and its various components. Tech bag contains a circuit components like solar panels, RFID, Android application etc which makes it a multi-purpose bag. [1]**

Keywords: RFID, Solar panels, Bluetooth, Android application, Buzzer, LCD screen

I. INTRODUCTION

Nowadays there's revolution in field of technology and the world is developing at faster pace. Due to changes in lifestyle and surroundings, the needs of the people are changing day by day thus new inventions and innovations come into picture. As we use smart phones it drains a lot of battery due to use of high graphics and internet etc. So there is a need for charging throughout the day but we can't roam with a switch board here and there and also power bank available in market are costly. So the idea of charging our phones using solar energy came into our mind and we made a system which provides charging facility. Also security has become a prime concern due to rise in criminal activities like kidnappings rapes etc thus safety feature is necessary. So we developed a panic button which uses GPS and GSM system to intercept and message our location to police and relatives thus helping us and making us more secure. So such several day to day problems were noticed by us and we decided to make a all in one solution and we made this techbag having several applications .In TechBag, front part of bag is covered with solar cell which will continuously produce power through day light while we travel and it will have a rechargeable battery for latter an usage like charging mobile phone or tab, laptop. Bag will even have an Rf-id reader with microcontroller chip to check if it matches with that days schedule or not and give beep indication to user from missing book or extra book, which is not required for the day. One main feature of this bag will be a panic button. If it gets pressed by user during panic condition like getting kidnapped or rape attempt or material emergency, it will send panic trigger to mobile. Bluetooth inside the bag will be even used to track the mobile if it is in range of1 bag or not and if Bluetooth linkage between mobile and bag breaks then alert beep and vibration is generated in mobile and bag as well to alert user of missing device.

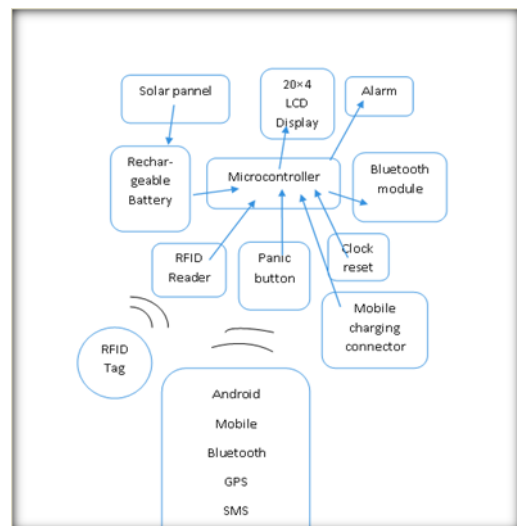.   Fig.1. Tech Bag

II. SYSTEM DESIGN

Fig.2 Internal block diagram of Tech Bag
The components used are:

A. Solar Panels:

A solar cell (also called a photovoltaic cell) is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect.[5] It is a form of photoelectric cell when exposed to light can generate and support an electric current without being attached to any external voltage source.

B. Battery:

12V, 1.3 A, maintenance free lead acid battery.[5]

C. RFID Reader:

The RFID reader will be communicating with the microcontroller through RS232 interface. The RFID reader provides the power for RFID tags and receives the feedback from the RFID tags through the antenna. The reader will then pass the information to the microprocessor for further processing.[4]

D. LCD:

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals. The basic function of the LCD is to display the action performed by the microcontroller. The LCD used here is 16X2 character LCD display. The figure shows the pin diagram and pin description.[4]

E. . Android OS:

Android gives you everything you need to build best-in-class app experiences. It gives you a single application model that lets you deploy your apps broadly to hundreds of millions of users across a wide range of devices—from phones to tablets and beyond. Android also gives you tools for creating apps that look great and take advantage of the hardware capabilities available on each device. It automatically adapts your UI to look its best on each device, while giving you as much control as you want over your UI on different device types.

F. Bluetooth Modem:

Bluetooth modem is a device that acts as mediator between any embedded system and the Bluetooth communication medium. It has built-In protocol for serial communication i.e. serial port profile. This unit requires +3.3 VDC for it proper operation.[5]

G. Microcontroller 89s51:

The AT89s51 is a low-power, high-performance CMOS 8-bit microcomputer with 4Kbytes of Flash programmable and erasable read only memory (PEROM).[4] The device is manufactured using Atmel's high-density non-volatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89s51 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

III. HARDWARE IMPLEMENTATION

The RFID Reader is connected in the circuit, it scans the RFID tags attached to the book, and give indications according to the time table set previously in the microcontroller. The tags are numbered as no.1, 2, 3 & 4. For every correct book entered in the bag, a small continue buzzer rings and a pulsating buzzer rings for the incorrect book entered.

Fig 3. LCD Display

The Bluetooth module of the circuit is always paired with the mobile's Bluetooth, as soon as any one of them goes out of the Bluetooth range, the mobile as well as the bag will start vibrating and a buzzer sound is heard. A message will be displayed on the LCD screen that the mobile is missing.
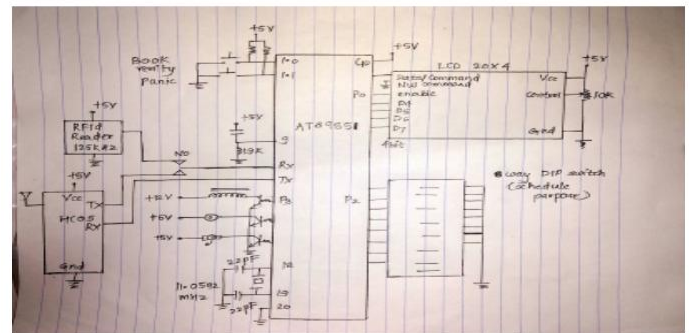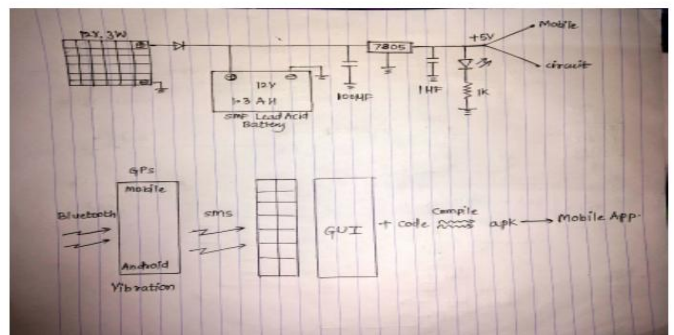

Fig 4a. Circuit Diagram of Tech Bag

Fig 4b. Circuit Diagram of Tech Bag

In panic condition, after the button is pressed, a message will be send to the registered mobile no .along with the mobile's location seeking for help.

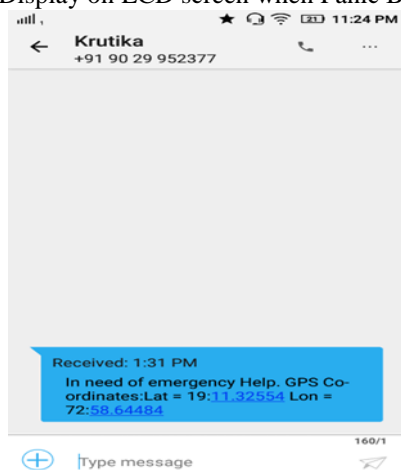Fig 5. Display on LCD screen when Panic Button is pressed

Fig 6. Text Message received when Panic Button is pressed

On connecting the mobile with the USB cable provided, one charge the mobile. The solar energy stored in the battery can charge the mobile phone.
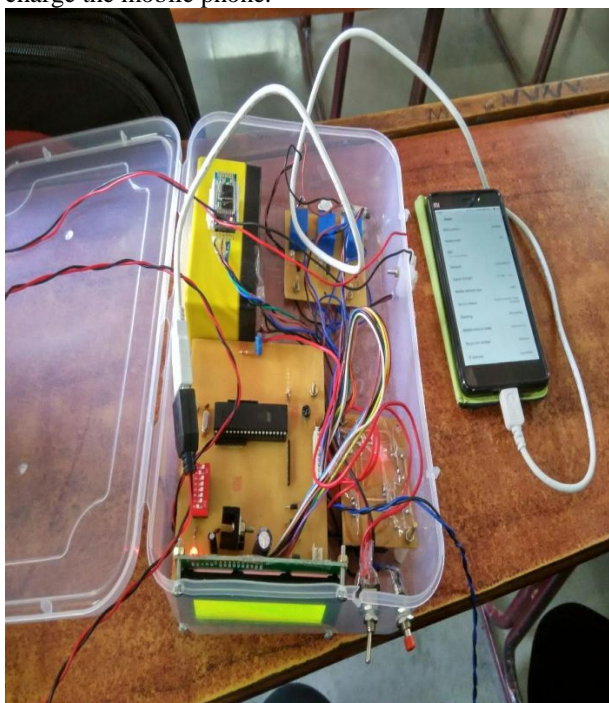

Fig 7. Hardware of Tech Bag

IV. ADVANTAGES AND APPLICATIONS

1. Solar mobile charging- The charging is done because of the previously stored solar energy with the help of solar panels.

2. Mobile theft prevention-The user's mobile phone and the TechBag is connected via a Bluetooth Module. Thus in case of theft, the user will come to know is the mobile phone goes out of the Bluetooth range.

3. Emergency panic button- In case of an emergency, the user can use the provided panic button which is attached on the tech Bag.

4. RFID Book Reader- the RFID tags attached to books or important files can be detected by the RFID and gives the desired result with respect to the data feed into the processor.

V. LIMITATIONS

1. In Rainy season the sunlight available is less, thus the user may not be able to charge his/her phone on daily basis.

3. In case of unreachable mobile network sms will not send.

VI. CONCLUSION AND RESULT

The Tech bag is purely application based. This project may be useful and has various advantages. Thus, we conclude that the project made will be eco-friendly and does not have hazardous effect on environment.

VII. FUTURE-SCOPE

We can use flexible solar panels and solar panels with more power rating.

We can feed the daily schedule in the processor which does not require manual changing.

Barcodes can be used in place of RFID tags.

VIII. REFERENCES

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