

# Multipurpose Smart Bag

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## ABSTRACT

*The smart bag is an application specific design that can be useful for almost everyone in society. Arduino ATmega16 ,the brain of the proposed system can control all the distinguishable features. Solar panel attached on the front part of the bag will charge not only the electronic appliances like mobile phones, power bank and MP3 device. RFID automation will be used to solve the problem of the forgetting fullness to pack the required items. Arduino Board and a GPS Module that one may track the bag and a front end or Mobile application, is created in order to monitor. In this bag within a small platform, all the facilities are implemented together efficiently.*

*Keyword:- RFID module, GSM, GPS, Solar Panel, Battery, LCD.*

## 1. INTRODUCTION

Today's world has become much faster and smarter. In such world things, and objects need to be fast and smart, a bag is a common tool in the form of non-rigid container. Bag security is a delicate issue. Normal bags do not have any smart features. There are so many disadvantages of old bags, like if anyone forgets the bag, then he can't find it easily. To overcome this problem, we make a Multi-purpose smart bag. Smart bag build-in electronic for one or more purposes, for example USB charging ports as well as the ability to transmit its location via app and cellular. The need for a smart bag that relay an advance GPS tracking system is important to safeguard the bag in traveling. The system provides information regarding bag location. There is a need for an application which will make the tedious packing process more convenient and this is possible using RFID technology. Tag contains the unique identification of items. The information about all the items packed inside the bag is stored in the

NodeMCU. The microcontroller board is based on ESP12. We can connect with a USB cable or connect with ac to the dc connector. Solar panels which will continuously produce power through day light while we travel. The inside structure consists of a battery for usage like charging mobile phones or tabs anywhere. The RFID technology is used for the purpose of the forgetfulness of the persons. RFID reader reads the RFID tags attached to the objects which are very useful to be kept in the bag. As the object is kept in the bag, the RFID reader reads the object and save the name of that object in the database. If we fail to put the object return in the bag we get the list of that object on the LCD screen of that bag. The GPS module is for tracking the bag as the bag is not in range of the connected device then the message get generated. The message is send to the registered number. That contains the link of the location of the bag.

## 2. Hardware Components

- Microcontroller
- Solar Panel
- Rechargeable Battery
- RFID reader
- RFID tags
- GPS module

### 3. Software Components

- Aurdino IDE
- Android

### 4. Working

The smart bag will be activated by connecting the Wi-Fi of the mobile as soon as connection establish with device display screen activated. Once the display screen activate in that screen list of object is displayed. One of the important feature of smart bag is in forgetfulness. In certain case if any one of object is missing then it can show the missing object on the screen. The entered object by the user can be stored in the cloud database. Due to IOT mechanism it will be very helpful for the users to easily see the list of the object in the web portal.

The second important feature of the bag is used to track current location of the bag by using GPS module. If the bag and current user are out of the given range, GPS send the longitude and latitude of the bag. With the help of the GSM module this location link which includes the latitude and longitude of the current location of the bag, will be sent as a SMS on user's registered mobile.

The third important feature is charging of a bag through solar panel. This bag does not need electric charging as charging will be provided through battery. This battery would get charged automatically anywhere, anytime. The user can charge this inbuilt battery while travelling also as solar panel has been assembled over the bag, this saves time of a user as he need not wait until battery charged fully.

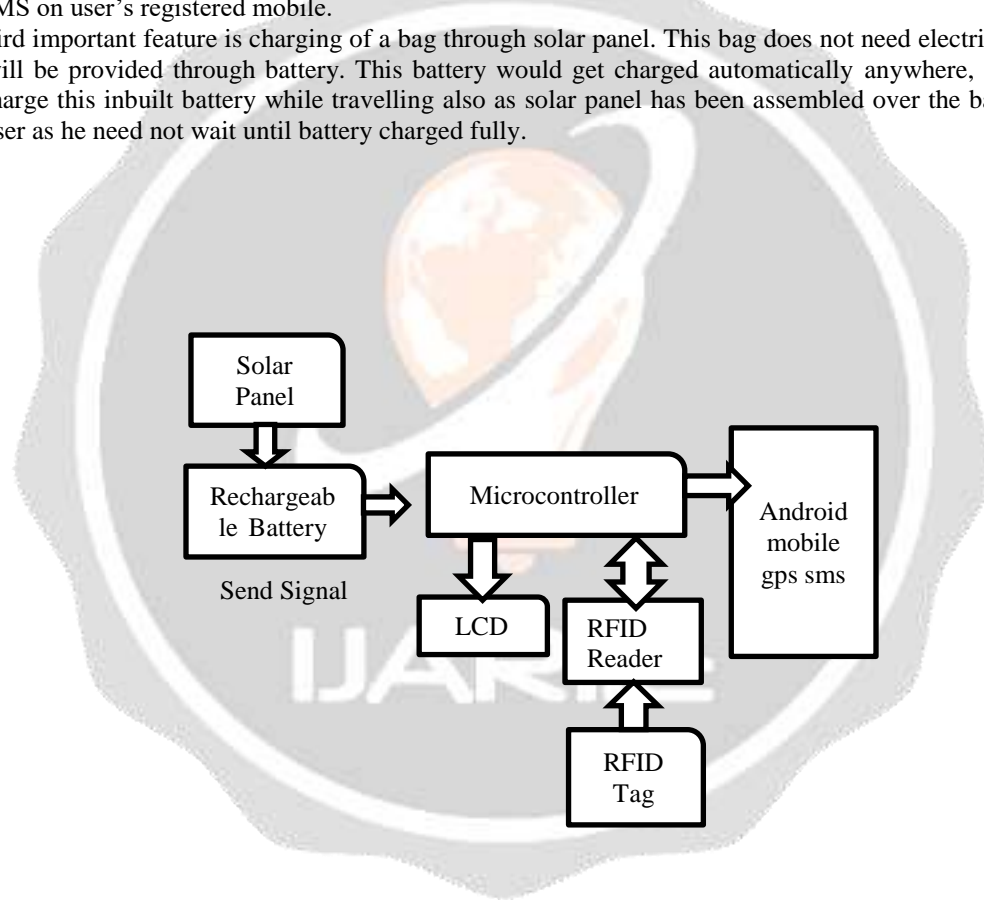
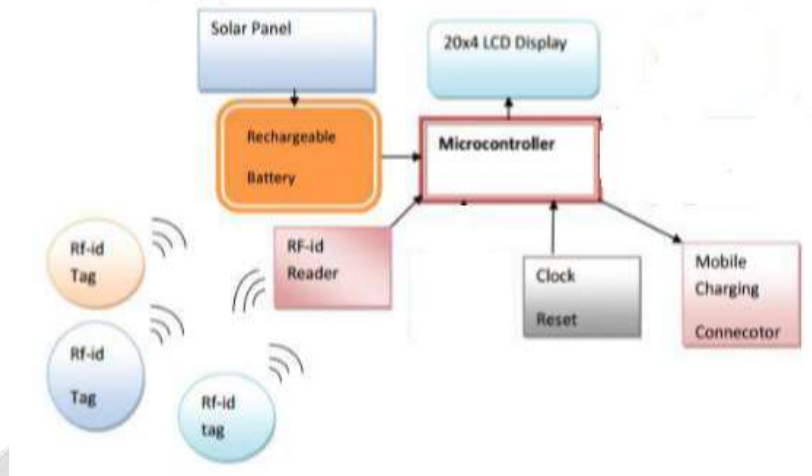


Fig 1: Block Diagram of Multipurpose Smart bag.

**System Architecture**



**Fig. 2 System Architecture**

The block diagram is given below showing the flow of working of the project.

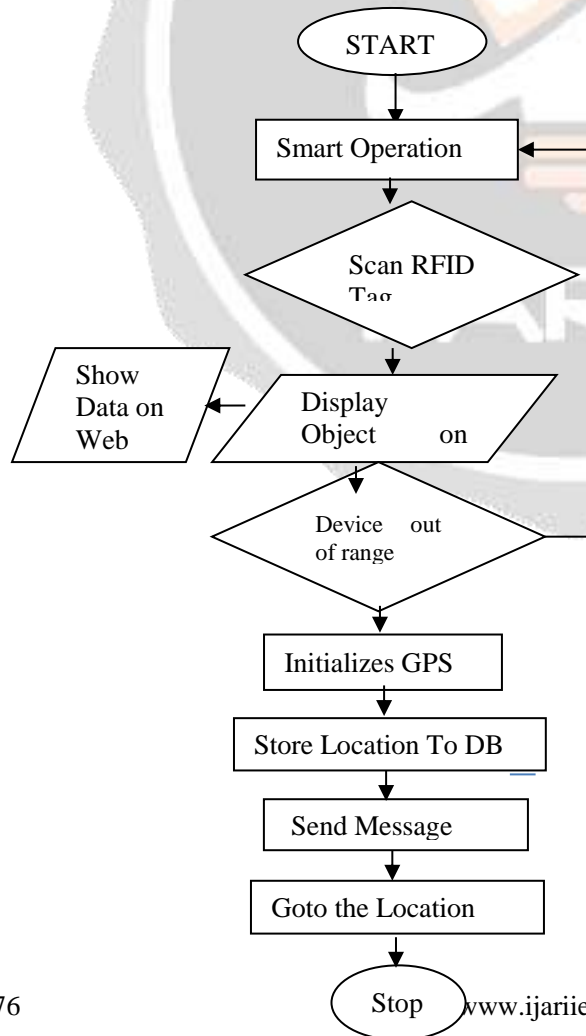


Fig.3 Data Flow Diagram Of Multipurpose Smart Bag

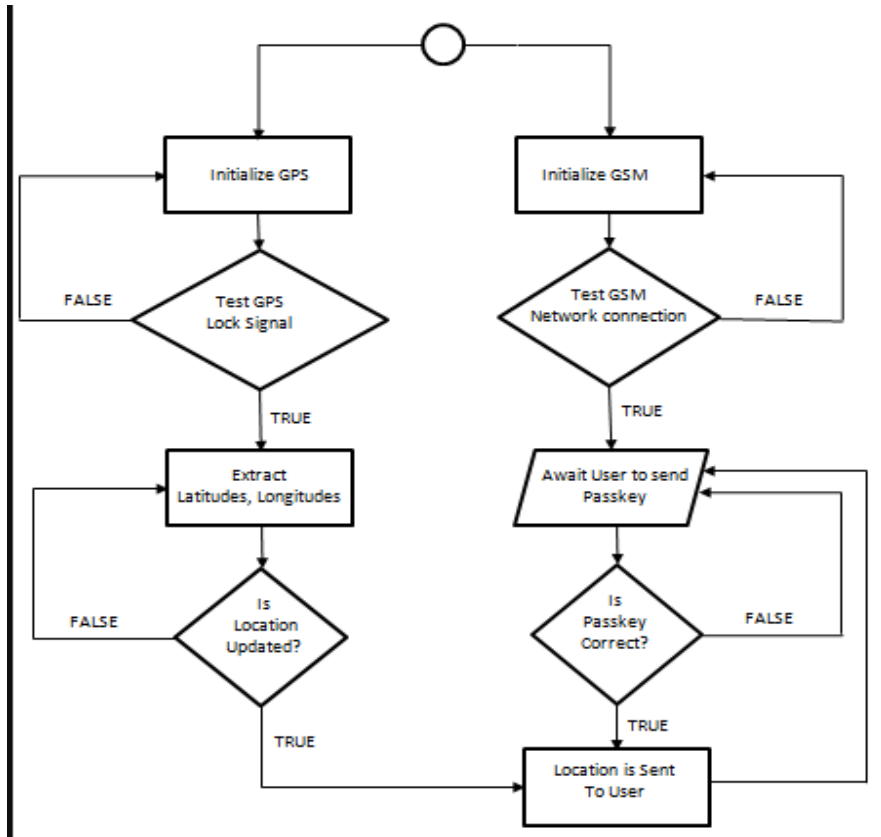
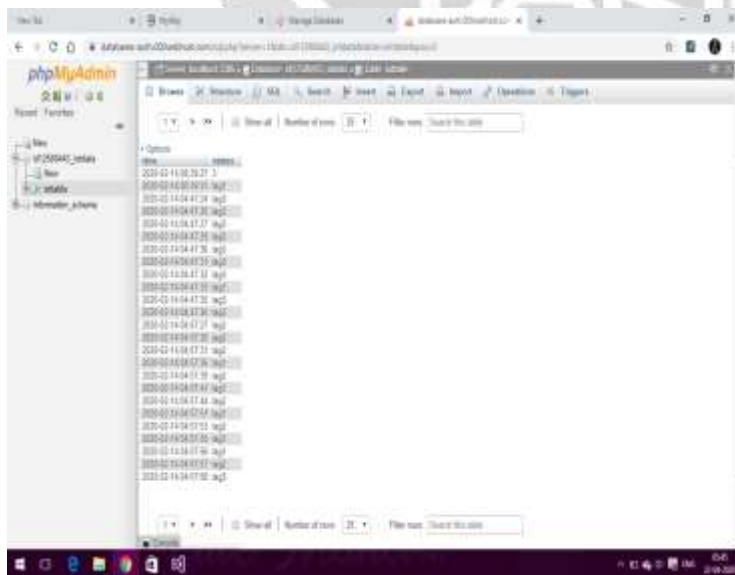


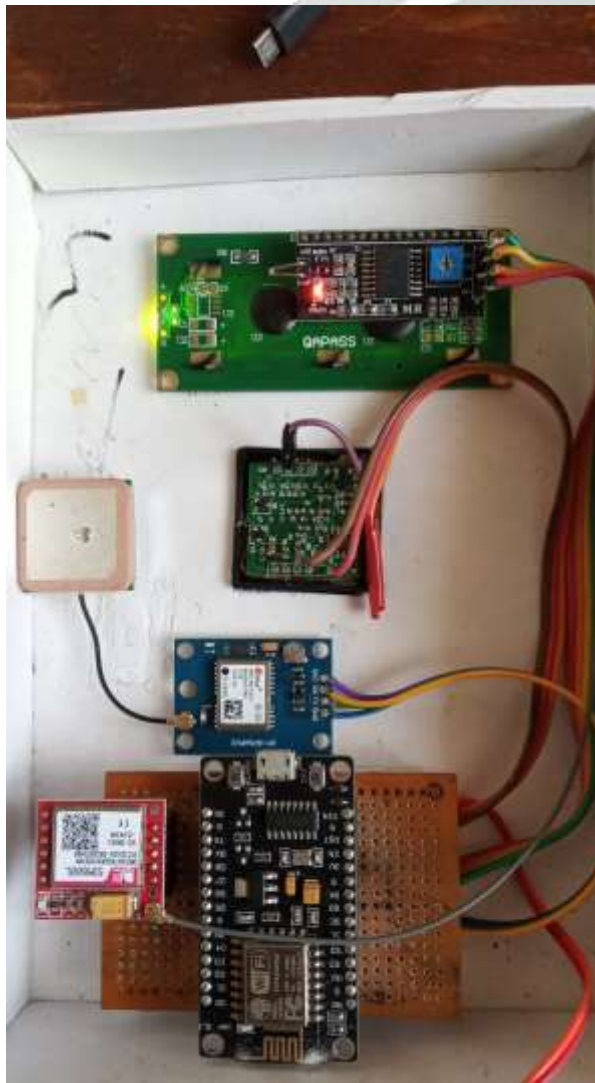
Fig.4 Data Flow Diagram when Wifi is not connected



**Fig.4 Screenshot of Database Server**



**Fig 5 Picture of the project**



**Fig 6.Circuit Diagram of RFID Reader**

## 7. Objective

The main objective of Multipurpose smart bag is, they provide day to day required features. This idea has been implemented for powering and charging electronics device through the solar panel as well as solve the problem of forgetfulness and tracking system.

- Battery is automatically recharged through the solar panel for charge mobile phones.
- Solve the problem of forgetfulness to pack the required items in the bag for travel purpose or daily life.
- The smart bag is time saving and safe for travel also easy to handle.
- GPS will be used to trace location of bag.
- Utilize the maximum solar energy through solar panel.

## 8. Advantages

- Battery is automatically recharge through the solar panel for charge mobile phones.
- The smart bag is time saving and safe for travel also easy to handle
- We can easily find a bag with the help of GPS.

## 9. Disadvantages

Because of small battery it get more time to charge mobile and other device

## 10. CONCLUSION

Smart bag is a implemented on such bag that make easier for travelling. In this bag, the bag provides security and better features helpful for handling smart bag. In this bag solar energy is used for charging mobile and mp3 device etc. Second feature in smart bag is RFID technology, by which the object are read by the RFID reader and the entry is stored into the database and if we forget to put item in the bag then the display screen attached on the bag display the item on it. Another feature is GPS for tracking purpose. Smart bag is most useful for the forgetfulness peoples.

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