# Data Transfer between Flash Drives using Bluetooth

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*Abstract: Storage devices like Pen drives and hard drives, popularly known as USB flash drives, usually requires a middleware desktop for data transfer between the storage devices. Since an USB flash drive is a peripheral device, it requires a host like computer. Our aim is to provide a system of wireless communication between USB devices so that a computer is not needed in between, for transfer of data. This is possible by connecting a BLUETOOTH module to the USB flash drive. A display element can be used to display the contents of the storage device. Bluetooth is preferred rather than other communications since it is cost effective. A low power battery cell (Rechargeable cell that can automatically charges when USB is connected to the computer) can be implemented inside the USB devices to enable the Bluetooth functionality. The implementation of this project will be helpful and it will provide a handy portable device for any user.*

*Keywords: USB, Flash Drives, Arduino, Bluetooth, Processer, Host.*

## I. INTRODUCTION

Due to increased digitization in recent years, computers and mobile phones are becoming very useful electronics gadgets in our daily life. The ability to store data is one of the greatest advantages in any electronic components. Other than this internal storing ability, when a data is to be carried along with the user or the user wants it to store somewhere, storage devices such as Pen drives and hard drives can be used. With the increasing use of computers, the storage devices are also getting importance because of its portability and light weight.

External Hard drives provide a suitable means of communication between these USB flash drives to enable them to communicate among them without any intermediate computer will prove to be time consuming and enable faster rate of communication. Bluetooth standard can be used to overcome such needs. Providing a wireless communication system between such flash drives using Bluetooth would eliminate the use computers just only for data transfer. This in turn supports power conservation.

## II. SYSTEM OVERVIEW

The system deals with data transfer between two USB flash drives without using a computer. We are creating modules that will help us to create a communication as well as transfer data between the given two pen drives. There will be two modules, each accepting one USB flash drive. The device will be connected to the USB port of the module. This USB port will pass a signal of detection of pen drive to the microcontroller. The pen drive and the data inside the pen drive will be denoted on the

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LCD screen attached on the module. Similarly, the other pen drive will also be connected to the different module and it will display the detected pen drive on the other display screen. Then we will establish a connection between this two pen drives so as to transfer the data. So, we will pair the devices with the help of Bluetooth. There will be separate Bluetooth modules for the two given USB's. For the security purpose it will ask for a passcode pin to establish a Bluetooth connection in between the two devices. Further, the successful connection will be shown on the respective display screens. Now there is a proper connection established in between the two devices. This will be used as a connection medium to transfer the data. The basic operation of copy, paste, delete can be successfully implemented in these two devices.

For example, if we want to transfer a file from Pendrive 1 to Pendrive 2, then we will select the file to be transferred in first module and give the command operation for copying, and also it will show the data in Pendrive 2. So we will just move over to Pendrive 2 at Paste the file which we need to transfer to it. This will successfully transfer the data from one Pendrive to other Pendrive.

Our main aim is to transfer the data between two Pendrive without using a computer. As, many times, it is not easy to carry the computer or the laptop just for the sake of data transfer. This not only consume time but also it will not be easy to take the computer wherever we need to transfer only the data. Instead of using the computer we'll be using these modules, so that we could easily transfer the data between the Pendrive. The easy to handle and portability factor plays a very important role in the flow of this project. Various factors are considered in creating the respective modules. Your paper must be in one column format only.

### III. ARDUINO UNO BOARD

The Arduino UNO board is a microcontroller that we are using for performing the embedded programing operations we will be using in to build a data transfer module. Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. It is simple and user accessible through programming.
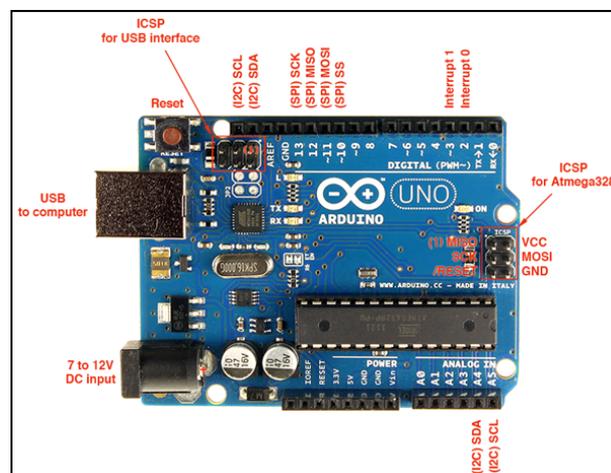


Fig.1: Arduino Uno Board

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins, 6 Analog input pins, a board to computer port, and power supply port, The Uno board differs from the other boards, basically other boards uses FTDI-USB to serial driver chip while this board uses an Atmega programmed as USB to serial convertor. It operates on a 5 V power supply, it can work on DC sources such as portable batteries. It has a clock speed of 16 MHz. It is a small handheld chip of 53.4 x 68.6 mm size.

This board connects the other components such as USB shield or a Bluetooth module with the given input pins. Which contains Rx and Tx that acts as a receiver and transmitter pins respectively.

## IV. ARDUINO USB HOST SHIELD

The Arduino USB Host Shield is a simple board that is used for connecting a USB pen drive to the complete module. It consists of a USB input port, through which we will   be using it for connection.

The Arduino USB Host Shield allows us to connect a USB device to an Arduino Uno board. It is a USB peripheral controller containing the digital logic and analog circuitry required to implement a full speed USB peripheral. The shield also supports other USB devices such as keyboard, mouse, joysticks etc. for different projects. It operates on a 5V battery supply.  It has a MAX3421E 500 mA USB controller. The Arduino USB libraries must be installed so as to program it for any kind of use.
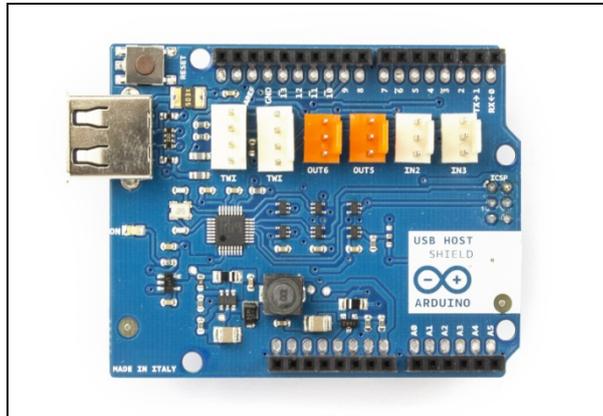


Fig.2: Arduino USB Host Shield

We are connecting this board with the input output pins of the Arduino Uno board. This will allow us to connect a Pendrive to the microcontroller indirectly. The main reason for using this board is to connect a Pendrive to the module.

## V. HC-05 BLUETOOTH MODEL

The HC-05 Bluetooth module a chip which is used for establishing a Bluetooth   connection between these two devices. It is a very small chip that can be connected to the input/output pins of the Arduino USB host shield which itself will be connected to the Arduino Uno board.



Fig.3: HC-05 Bluetooth Module

The HC-05 Bluetooth module is a serial port chip which allows to create a connection with the paired devices. Serial port Bluetooth module is completely qualified Bluetooth V2.0 with enhanced data rate of 3 Mbps modulation. It is a CSR single chip system that uses CMOS technology. It has a small dimension of 12.7 x 27 mm. It can be operated on 1.8 V power supply. It also has an integrated antenna for transmission and receiving purpose.

## VI. LCD TOUCH SCREEN DISPLAY

The complete visualization of the working can operated and displayed using a LCD screen display. It will be connected at the top of the module, for handy use of user. It allows user to interact with the module and perform the operations with respect to the data transfer visualization.
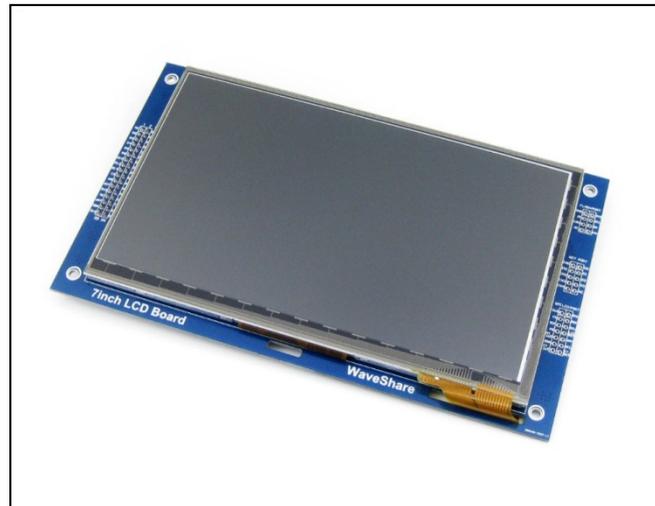


Fig.4: LCD Touchscreen Display

The screen will display all the graphical structure which will be programmed accordingly. It is a 3.5 inch capacitive display screen. That will be easily operated by the user.

## VII. SYSTEM CONNECTIONS

### A. Connecting Arduino Uno Board to Arduino USB Host Shield:

The first and the major connection is to connect the Uno board to the USB shield. So, to connect this we will connect directly with the help of berg pins that are fixed on the USB shield. The Rx and Tx pins of Uno board will be connected to the input / output receiver and transmitter pins if the USB shield. The remaining pins will be fixed accordingly, and the connection will be placed between these two boards. The connection will be seen as shown in figure below.

Care should be taken while pacing these pins on the board, if the pins got fixed incorrect then there are major chances of getting a short circuit. This will enable us to connect the flash drives to the module.
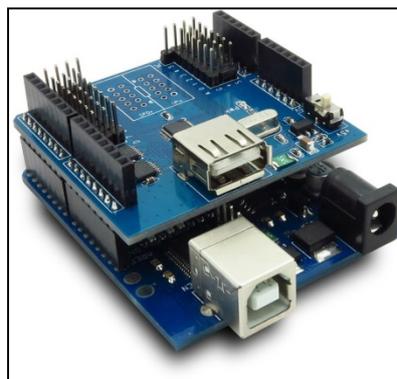


Fig.5: Connection between Uno board and USB shield

### B. Connecting USB host shield with the Bluetooth module:

For connecting the HC-05 Bluetooth module to the USB shield, first we will connect the input pins. But here the Rx of the Bluetooth module will be connected to the TX of the USB module and vice a versa.

The remaining pins will also be included in it. The GND (ground) pins will be connected to each other. And the power pin VCC will be also provided with the power supply. This will indulge a communication of Uno board, USB shield and the Bluetooth module.

### C. Connecting LCD screen and Power supply:

The LCD screen will be connected to the top of the USB host shield. There will be a 4 byte communication between these two. As we have already connected a Bluetooth module to the USB shield, we will not use all the pins of the LCD screen. So we will connect the USB shield with some pins of the LCD screen which will be sufficient for displaying the elements and performing the operations.

Also we will connect a power supply to the Arduino Uno board. Temporarily we will be using a cable to upload the program into the Uno board. So the device will get the supply from the same cable. But later on when the program will be uploaded into the board we will connect it to an external power battery.

The screen must be properly connected to the USB shield and the power supply must also be insulated to avoid the power cutoff and shot circuit problem. That will lead to problems in constructing the device. The battery must be of a voltage that will meet the minimum power requirement of the device. If it fails to provide the necessary power, the device will fail to implement all the operations.

## VIII. SYSTEM ARCHITECTURE

The system architecture of the data transfer module will be as shown in the figure below:
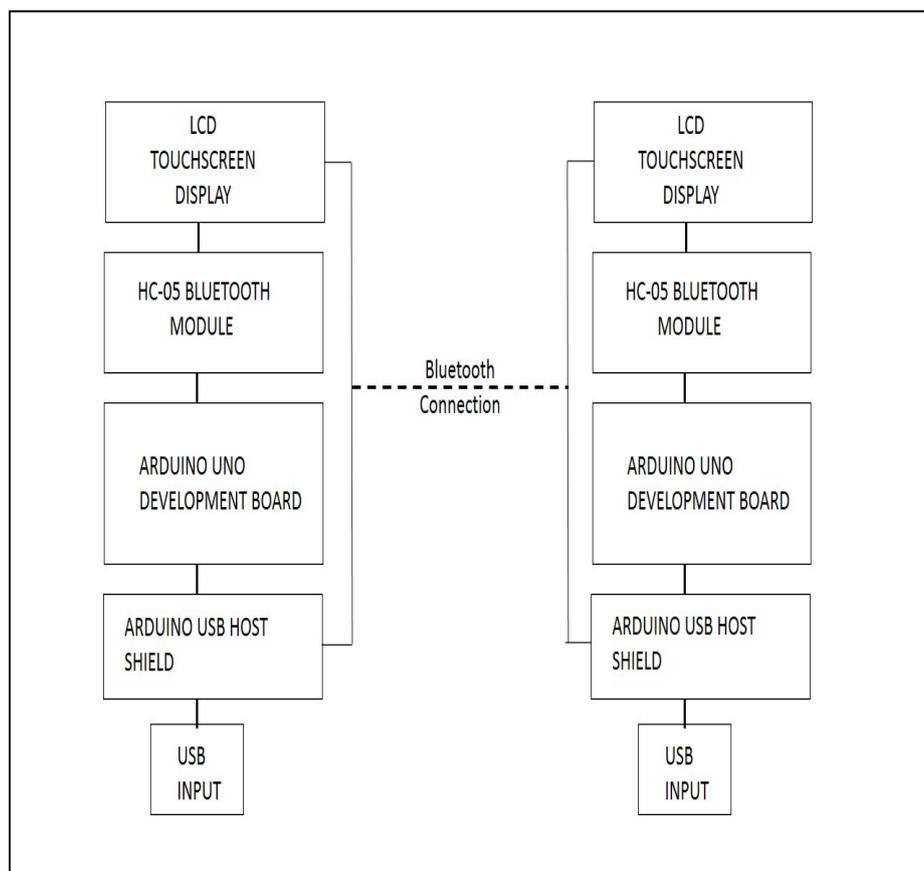


Fig.6: System Architecture

As shown in the block architecture, the two modules will be communicating with each other by Bluetooth connection. The Arduino Uno board is connected to the Arduino USB Host Shield and the Arduino USB Host is connected to the HC-05 Bluetooth module as well as the display screen. This is a pure connection that must be established so as to conclude the data transfer between the devices.

## IX. PROGRAMMING

The complete programming will be done in software named Arduino 1.6 genuine. Which can be operated on the Windows 7 / 8 / 10 operating systems? The basics of the programming language consist of some functions and variables that are used in any other object oriented programming and other graphical programming languages.

It is a simple software tool that enables a programmer to give input and command the real time hardware systems accordingly. It only requires some basic strategies and further logic can be ultimately applied through the requirement of hardware or the project.

## X. RESULTS

The final outcome will be the successful transaction between the two pendrives using Bluetooth. It will perform all the basic operations that need to be used during a data transfer such as, copy, paste, delete. The capacitive touchscreen will enable the user to provide necessary information regarding data transfer as well as the data inside the given USB drives.

## XI. CONCLUSION

Hence, we conclude that we can transfer data between two pendrives without using a computer. The problem of security and virus will also be resolved. It is necessary that, a successful communication must be also established between the devices and it will result into proper transmission. All the basic operations of data transfer i.e. copy, paste; delete is implemented by using this device. It has also resolved the problem of easy user portability. Which means this module can be easily carried    to any place rather than carrying bulky computers or laptops just for the sake of data transfer.

## XII. FUTURE SCOPE

The data transfer could be performed more quickly by using Wi-Fi instead of Bluetooth. The transfer media files like videos, mp3, audio files etc. can be transferred. Minimization of circuit can be done. Also we can use high security antivirus systems.

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