USB To USB And Mobile Data Transfer Using Arm

[1]Ms. Sonal N. Kawale,[2]Prof. Shraddha Mohod

[1]Electronics and Communication,
[1]TGPCET, Nagpur,India

Abstract- **In the present world of electronics there are various ways are present for storage of any type of data electronically, USBs are most used and flexible devices but data transfer between them related with computer, and we are not able to share files between two USB drives when user is away from computer. So we wanted do a project which is complete blend of hardware and software. In this paper, a data transfer between USB to USB without using a computer or laptop is discussed. A data transfer is done by using a computer or laptop means it consumes more power and it is not a handy device to carry to particular locations. The aim of the propose system is to remove the every time need of the computer for the data transfer. The concept of the USB to USB will make it possible to carry out the mass data transfer anywhere, anytime. To overcome this, a data transfer is done by using an ARM processor (handy device) and USB bus protocol.**

Keywords-ARM, USB ,TFT display

I. INTRODUCTION

The aim of this project is to transfer data without using a computer, from one USB flash disk to another. Electronics plays a vital role in our daily life. It is a key in making this world a small and making everything happen at our finger tips. In the present world of electronics there are various ways are present for storage of any type of data electronically, today's most used and flexible is pen drives. But data transfer between them related with computer, and we are not able to share files between two USB flash drives when user is away from computer. So we wanted do a project which is complete blend of hardware and software. This project is used to direct data transfer between USB flash drive to USB flash drive without connecting to computer. The disadvantage of using USB Flash Drives is that it requires a personal computer or a laptop to initiate file transfers between one another. As a solution of this disadvantage of USB pen drive, our research project aims to develop a device that allows the file transfers between two USB devices without use of personal computer or a laptop.
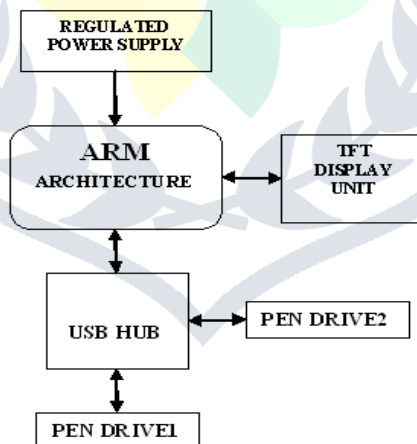
II. SYSTEM BLOCK DIAGRAM

Fig. System Block Diagram

The system mainly uses ARM9 micro controller unit. The two pen drives are connected to ARM9 board through USB hub. The data which has to be transferred is placed in one pen drive. The USB hub is connected to ARM9 board through USB device. TFT display unit is also interfaced to the board. The file can be selected by pressing the select icon on the display. After selecting the file, ARM9 board will read the file from the pen drive and store it to internal memory. After that the controller will transfer the selected file to another pen drive by pressing send option on display unit. The options are present on display unit like send, delete, refresh, and exit. By pressing the icon, particular action will be performed.

III. IMPLEMETATION

A. Mini2440 Development Board

Mini24440 is a practical low-cost ARM9 development board, is currently the highest in a cost-effective learning board. It is for the Samsung S3C2440 processor and the use of professional power stable core CPU chip to chip and reset security permit system stability.

Fig2. Mini2440 Development board

The board measures 10 cm x 10 cm, ideal for learning about ARM systems or integrating into numerous products. The mini2440 Immersion PCB using the 4-layer board design process, professional, such as long-wiring to ensure that the key signal lines of signal integrity, the production of SMT machine, mass production; the factory have been a strict quality control, with very detailed in this manual can help you quickly master the development of embedded Linux. The main intention of this system is to transfer the data from one USB to another USB device.The pen drive is connected to one port and another pen drive is connected to second port. The transfer of data without PC makes use embedded board which makes use of less power consumptive and advanced micro controller like S3C2440. S3C2440 is a Samsung company's microcontroller which is designed based on the structure of ARM 920T family.
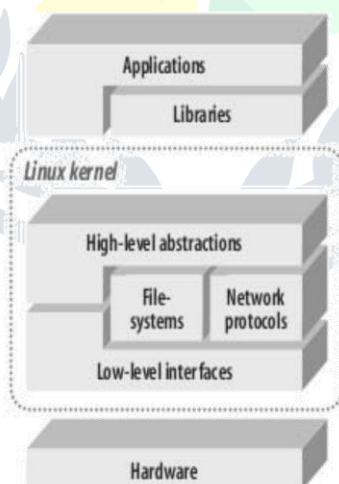
B.   *Embedded Linux*

Fig3. Typical architecture of an Embedded Linux System

Immediately above the hardware sits the kernel, the core component of the operating system. Its purpose is to manage the hardware in a coherent manner while providing familiar high-level abstractions to user-level software. It is expected that applications using the APIs provided by a kernel will be portable among the various architectures supported by this kernel with little or no changes. The low-level interfaces are specific to the hardware configuration on which the kernel runs and provide for the direct control of hardware resources using a hardware-independent API. Higher-level components provide the abstractions common to all UNIX systems, including process, files, sockets, and signals. Since the low-level APIs provided by the kernel are common among different architectures, the code implementing the higher-level abstractions is almost constant, regardless of the underlying architecture. Between these two levels of abstraction, the kernel sometimes needs what could be called interpretation components to understand and interact with structured data coming from or going to certain devices. File system types and networking protocols are prime examples of sources of structured data the kernel needs to understand and interact with in order to provide access to data going to and coming from these sources.

C. Universal Serial Bus (USB)

USB was initially designed to be an interface for communicating with many types of peripherals without the Limits and frustrations of older interfaces. Every recent PC includes USB ports that can connect to standard peripherals such as keyboards, mice, scanners, cameras, printers, and storage drives. It is a very useful protocol designed for a computer to communicate with almost any type of peripheral. Some of its benefits for users include:
Single Interface for many devices.

a. Considerably high Data rate.

b. Automatic Configuration.

c. Easy connection.

d. Hot Pluggable.

e. No user Settings.

f. Frees Hardware Resources for other devices.

Fig4. USB hub

A USB hub is a device that expands a single USB port into several so that there are more ports available to connect devices to a host system. Each hub has exactly one upstream port and a number of downstream ports. The upstream port connects the hub (directly or through other hubs) to the host. Other hubs or devices can be attached to the downstream ports. During normal transmission, hubs are essentially transparent: data received from its upstream port is broadcast to all devices attached to its downstream ports; data received from a downstream port is generally forwarded to the upstream port only. This way, what is sent by the host is received by all hubs and devices, and what sent by a device is received by the host but not by the other devices (an exception is resume signaling).

D. TFT display unit

TFT stands for Thin Film Transistor, and is a type of technology used to improve the image quality of an LCD. Each pixel on a TFT-LCD has its own transistor on the glass itself, which offers more control over the images and colours that it renders. While TFT-LCDs can deliver sharp images, they also tend to offer relatively poor viewing angles, meaning they look best when viewed head-on. If you view a TFT-LCD from the side, it can be difficult to see. TFT-LCDs also consume more power than other types of cell phone displays.

IV. PROGRAM IMPLEMENTATION

//Accessing USB removable disk (Pendrive)

```
voidMainWindow::listDir(char *dirName)
        {
                DIR* dir;
                structdirent *dirEntry;
                struct stat inode;
                char name[1000];
                dir = opendir(dirName);
                if (dir == 0) {
                perror ("error opening dir....");
                exit(1);
        }
                if (S_ISDIR(inode.st_mode)){
                ui->comboBoxFolder-
                >addItem(QString(dirEntry->d_name));
                } }
                }
                //copying files from USB device1 to another
                if (ui->checkBox->isChecked() == true){
                memset(cmdarr,0,512);
                QString txt = ui-
                >comboBoxFile->currentText();
                std::stringstdtxt = txt.toStdString();
                filetxt = stdtxt.c_str();
                sprintf(cmdarr,"cp /udisk/%s /mnt",filetxt);
                system (cmdarr);
        }
```

V. CONCLUSION

This paper is for transfer the data between two USB data drives without the help of PC or laptop. It has been developed by integrating features of all the hardware components and software used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced ARM9 board and with the help of growing technology the project has been successfully implemented. Here we are also using Linux as an operating system so that we can protect the device from viruses and malware which make the users life more complicated. We are showing how two or more USB devices can communicate with each other without restriction of speed, data type, nature of device, function of device and power of device. So we conclude that using USB – USB way any type of communication, storage, representation of data possible without restriction.

VI. FUTURE SCOPE

a. It can transfer the data from pen drive to cell phones.

b. We can handle the data of pen drive by making folders or deleting them using the display and scroll keys.

c. We can implement the project for reading, editing any data by installing the software's which support's for opening the document like MS word, notepad etc.

d. It can also be implemented to provide security for data transfer with the help of Ethernet.

e. The device can be used to play songs stored in your pen drive on speakers.

f. Since it's a low power device it can work on batteries.

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