

## USB to USB and Mobile Data Transfer Without Connecting to PC Using Arm Processor

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### ABSTRACT

In this paper, a data transfer between pen drive to pen drive 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. To overcome this, a data transfer is done by using an ARM processor (handy device). A pen drive is inserted into the USB hub then a signal will be sent to the ARM processor. By using this signal processor identifies the host pen drive is detected. Now the ARM processor will start fetching the data from the source pen drive into the buffer and the ARM processor waits for the signal from the destination pen drive. When the ARM processor gets the signal from the slave pen drive, the ARM processor is ready to transfer the data. Before transferring a data the ARM processor should get the input from an external touch panel from the user. Once the user press the button from TFT display unit, the arm processor gets the information to transfer the data between two pen drives.

**Keywords** - ARM, USB, TFT display unit, mini 2440 development board, os

### I. INTRODUCTION

Several data and application are developed daily which common computer user has to transfer from one USB Flash device into another, with the minimum wastage of time. For this user has to first find a computer then wait for it to boot up, then plug in his device, and then transfer the data. Different types of USB ash devices are used now-a-days. It is not necessary that all of these devices are supported by the computer and the operating system and their device drivers are available and installed.<sup>1</sup>

Carrying a computer or a laptop just for the sake of data transfer is not affordable these days in the age when people want all devices to be handy. Moreover, transferring data via a computer involves a lot of power to be wasted, since the computer has to be entirely functional before it can transfer data. Also, the threat of viruses and malware has made the life of computer users more complicated.<sup>12</sup> These viruses get activated as soon as the device is plugged into the system and get copied along with other data from one ash device into another. Our project here can provide a valuable solution to all problems faced by person in above situations.<sup>13</sup> The main idea of this project is

related to one such peripheral the USB. This user friendly device is actually recognized by its Connection type-the BUS; called the Universal Serial Bus. It comprises of just four connection wires between the Host (Computer) and the Device, governed by a set of rules called the Protocol.<sup>2</sup>

### II. SYSTEM BLOCK DIAGRAM

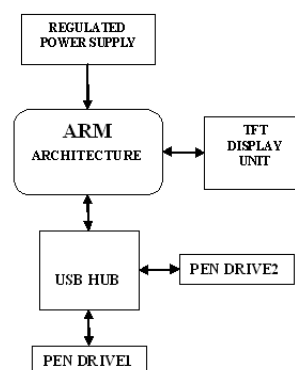


Fig 1. System block diagram

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.<sup>11</sup> 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.<sup>14</sup> 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.<sup>3</sup>

### III. IMPLEMETATION

#### III.I Mini2440 Development Board

Mini2440 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.<sup>4</sup>



Fig2. Mini2440 Development board

The mini2440 Immersion Gold 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.<sup>5</sup>

#### III.II Embedded Linux

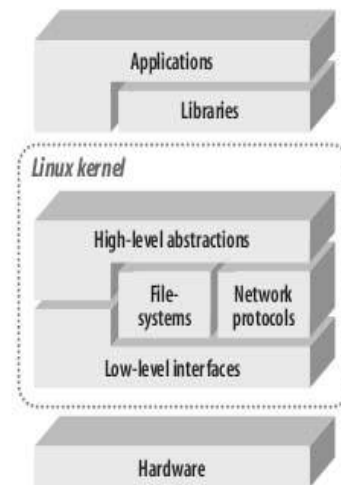


Fig3. Typical architecture of an Embedded Linux System

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.<sup>6</sup> 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.<sup>15</sup> Higher-level components provide the abstractions common to all UNIX systems, including processes, 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.<sup>7</sup> 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.<sup>8</sup> 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.<sup>9</sup>

#### III.III 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.<sup>10</sup> 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:

- a. Single Interface for many devices.
- b. Considerably high Data rate.
- c. Automatic Configuration.
- d. Easy connection.
- e. Hot Pluggable.
- f. No user Settings.
- g. Frees Hardware Resources for other devices.

#### III.IV 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 colors 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)*

```
void MainWindow::listDir(char *dirName)
{
    DIR* dir;
    struct dirent *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::string stdtxt = txt.toStdString();
    filetxt = stdtxt.c_str();
    sprintf(cmdarr,"cp /udisk/%s /mnt",filetxt);
    system (cmdarr);
}
```

*//copying folder from USB device1 to another*

```
if (ui->checkBox->isChecked() == true)
{
    memset(cmdarr,0,512);
    QString txt = ui->comboBoxFolder-
    >currentText();
    std::string stdtxt = txt.toStdString();
    filetxt = stdtxt.c_str();
    sprintf(cmdarr,"cp -r /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.

#### VI. Future Scope

- a. It can transfer the data from pen drive to systems.
- 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.

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