Pendrive to Pendrive Data Transfer Without Using Computer / Laptop

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Abstract-- In this project, we are transferring the data between one pen drive to another pen drive without using a computers or laptops. Normally, we use the computer or Laptop in order to send the data from one pen drive to other. But it is difficult to carry such a large size device to the particular location and data transfer is done by using a computer or laptop means it consumes more power. So to overcome this problem, we are designing a hardware which is more compact to carry at any place. In this project we can not only transfer the data but we can also see the transfer of the particular file which we want to send by using touch screen display. Whenever we insert the pen drive into the USB port then ARM11 processor receives the signal indicating that source pen drive is inserted .As soon as the pen drive is inserted ARM11 processor will start to send the data from the source pen drive into the buffer and ARM11 processor waits for the signal from destination pen drive. When ARM11 processor receives the signal from the destination pen drive now ARM11 processor is ready to transfer the data between those. Here we have to wait until the ARM11 processor gets the input from external hard key from the user, once the hard key is pressed by the user; the ARM11 processor gets the information to transfer the data between two pen drives. When the data is transferring the LED blinking rate will be increased and when data transfer is completed then LED will stop the blinking. The aim of this project is to achieve data transfer but independent on computer, from one Pen drive to another. Since it is a portable and battery operated, so it is an added advantage of this system.

Keywords: ARM11, Pen drive, Raspberry Pi, Qtopia GUI, LCD touch screen, SD card.

I. INTRODUCTION

Under normal circumstances, to copy or move data from one mass storage device to another, the computer/Laptop is used as an intermediate device. This system describes a device which can reduce the use of a computer/Laptop for transferring the data of one Pen drive to another. The methodology shows that the system can be used to do data communication between two Pen drive devices without using Computer/Laptop.

This means this system can also transfer data between digital-cameras, phone memories and other similar devices. Consider a Pen drive in which there is a large amount of data and there is urgent need to copy this data into another Pen drive. This can be done without any hesitation using this gadget. As a solution to the Pen drive, the system aims to develop a device that allows data transfers between two Pen drives without the need for Laptop and computers.

The Proposed System is going to be executed on a pure embedded Linux platform. System will be developed using an Open Source front end GUI software i.e Qtopia, through which we can run the program as an standalone application and using the Linux internals only will identify the Pen drives connected and allow the user to select individual file or complete transfer of the data from one device to the other.

II. LITERATURE SURVEY

USB drives are an external device which stores digital information and helps us to transfer it from one computer to another; they are also called pen drives. A USB flash drives is a data storage device that includes EEPROM (Flash) memory with a Universal Serial Bus (USB) interface. USB flash drives are typically removable and rewritable, and physically much smaller than a digital disc.

To copy data from one USB drive to another USB drive, third medium is needed since USB drives are pen drives device, USB slave devices cannot communicate directly with USB slave devices. The Third medium can be whole computer or laptop which has a CPU and Operating System which initiates data transfer between these two devices is called as USB host controller to handle the USB protocol and depending on the which firmware loaded it, It can handle the file system as well.

Another medium can be a wireless (Bluetooth or Wi-Fi) to create a link between two active devices to send or receive data from one device to another. The embedded systems are used to eliminate the use of whole computer or laptop for the purpose of just copying data from one USB device to other. This involves use of any third medium in between these two USB devices.

III. SYSTEM ARCHITECTURE

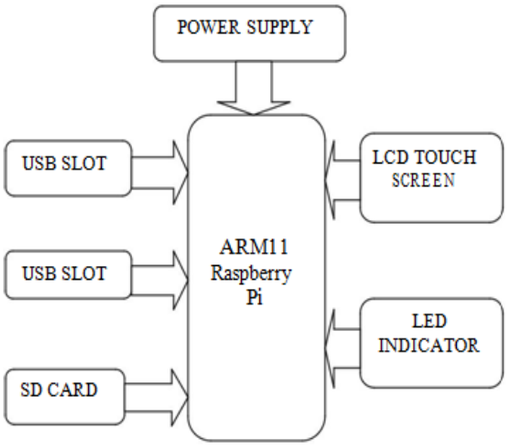


Fig.1 System Architecture

IV. HARDWARE REQUIREMENTS

i. ARM 11 Processor

The ARM11 is nothing but a Reduced Instruction Set Computer (RISC) and it incorporates the following typical RISC Architecture features such as, it consists of a large uniform register file. It consists of a load/store architecture, in which the data-processing operations only operate on register contents, but not directly on memory contents. It also consists of very simple addressing modes, in which all load/store addresses being determined from register contents and instruction fields only. It consists of uniform and fixed-length instruction fields, to simplify instruction decode.

It has control over both the Arithmetic Logic Unit (ALU) and logical shifter in most data-processing instructions to maximize the use of an ALU and a shifter. It is built with auto-increment and auto-decrement addressing modes to optimize program loops. It is built with Load and Store Multiple instructions to maximize data throughput. It has conditional execution of instructions to boost the execution speed. All These features of ARM11 processors provide a high performance, least code size, less power consumption, and small size.

ii. *Raspberry Pi Board*

The Raspberry Pi is a small computer whose size can be compared with the size of a credit. Programmed and how they will function.

This small computer is having features like amazing HD (high-definition) quality audio and video playback, sports has the ability to play 3D games. This device uses the ARM processor which does most of the hard work in the Raspberry Pi. Therefore ARM processors can be thought of as the brain of the Raspberry pi.

In the devices such as cell phones and also in case of hand held mobile gaming devices and other small digital devices these processors are used. The reason behind this is that ARM11 processors are extremely efficient and will perform very fast when used in small devices. This advantage makes the ARM11 processor the best choice for the Raspberry Pi.

It consists of SD card for the starting up and storing of information. Therefore for the Raspberry Pi, the SD card will do the same job as a hard drive does in case of traditional computers. The SD card consists of the operating system, programs and the data needed to run the Raspberry Pi.

Fig.2 Raspberry Pi Hardware Module

In the Raspberry Pi Models such as model A, B and B+ the chip Broadcom itself is used. Since the chip BCM2835 is a cost-optimized, having full HD and multimedia applications processor for advanced mobile. Since this chip is designed for the optimized for power efficiency, and Broadcom's Video Core® IV technology is used by the BCM2835 to enable applications in 3D gaming, imaging, camcorder, media playback, streaming media and graphics

iii. SD Card

A SD (Secure Digital) card is a storage device that incorporates many useful features which depends on how and where it is used. We can add the SD card to small devices such as mobile phones to extend the storage capacity for multimedia applications and other data. Since the Raspberry pi board does not include a built in hard disk, but uses an SD card for booting purpose and persistent storage.

As the Raspberry Pi has no internal storage or built-in operating system, therefore it requires an SD-Card that is set up to boot the Raspberry Pi. It can creates an own preloaded card using any suitable SD card. The SD Card was always quite a large storage medium in case of model B. But the new B+ model uses an improved storage device that provides for both a more compact storage medium and a positive experience in inserting and removing the card.

iv. 3.2" inch Touch screen

system uses a client-server architecture to exchange, store, and visualize the information. It uses the accelerometer readings for the step detection with a new proposed algorithm to perform the detection in real-time, which

Fig.3 LCD Touch Screen Module

- It has TFT type Display
- Serial SPI Interface
- LCD touch screen panel control chip XPT2046
- Memory storage capacity is 65536
- It has LED backlight
- Screen Resolution is of 320x240 (Pixel)
- Aspect size ratio 4:3
- Low power consumption TBD
- Low backlight current TBD
- Low operating Temperature TBD

v. USB Slots

The most obvious improvement in this project is perhaps, the addition of a further two USB 2.0 ports bringing it to the total to four. This will helps to them those who want to plug in a Wi-Fi dongle and an external hard drive in addition to the keyboard and mouse. The Pi B+ also manages over current behavior and hot plugging in the USB ports, in an improved manner over the model B.

V. SOFTWARE REQUIREMENTS

i.Embedded Linux:

Linux operating system provides a powerful, flexible kernel and run time infrastructure that is continuously being improved by the open source access and extended by hardware providers in order to support the new processors, buses, devices, and protocols. These embedded device projects reduces the hardware costs by taking advantage of the power and flexibility. The Linux kernel and the associated open source infrastructure is the heart of embedded operating system, and application prototyping, optimization, infrastructure and deployment.

ii.Raspbian Operating System

Raspbian is the operating system for normal use on a Raspberry Pi. Raspbian is a free operating system optimized for the Raspberry Pi board. An OS is the set of basic programs and utilities that make our Raspberry Pi board to run program. It provides more than a 35,000 packages and pre-compiled software bundles in a nice format for easy installation on your Raspberry Pi.

iii.Qtopia GUI

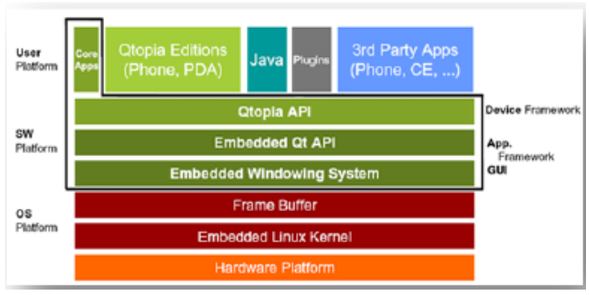


Fig.5 Qtopia Application

Qtopia is a graphical environment for the embedded devices and we can develop Qtopia application on Linux. Qtopia Platform is a comprehensive C++ platform to interface Linux-based consumer electronics applications. It offers an intuitive environment for embedded GUI applications and includes a rich set of controls that provide standard GUI functionality and event handling.

VI. ALGORITHM

- Step-1 Start
- Step-2 Initialize Touch screen and Display string.
- Step-3 Wait for detection of both drive A and B.
- Step-4 If both drives are connected and detected then select drive as per user requirement.
- Step-5 Display contents of the selected drive.
- Step-6 Perform required operation on selected file from selected drive A to B.
- Step-7 check the contents of drive B.
- Step-8 Operation done then go to step 5.
- Step-9 Stop

VII. SYSTEM CODE

```
#include "mainwindow.h"
#include "ui_mainwindow.h"
#include<string.h>
void MainWindow::on_pushButton_1_clicked()
{
```

```
   qDebug()<<"copy "<<path;
ba=path.toAscii();
}
void MainWindow::on_treeView_clicked(const
QModelIndex
&index)
{
QString sPath=dirmodel-
>fileInfo(index).absoluteFilePath();
// ui->textEdit->setText(sPath);
path=sPath;
}
void MainWindow::on_pushButton_2_clicked()
{
char ch[100];
qDebug()<<"paste";
ba1=path.toAscii();
pt=ba1.data();
strcpy(ch,"cp -r ");
strcat(ch,pt);
strcat(ch," ");
strcat(ch,pt);
qDebug()<<"paste "<<ch;
system(ch);
}
```

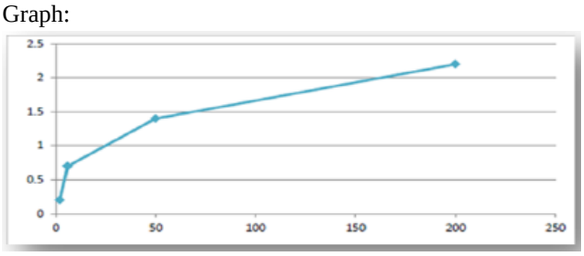
VIII. ANALYSIS OF TRANSFER SPEED

The results from the transfer speed test show that increasing the files sizes requires more time .Table show the speed test.

File Name	Size	Speed of Transfer
A	2 MB	0.2 S
B	6 MB	0.6 S
C	50 MB	1.4 S
D	200 MB	2.2 S

Table I. Performance of developed device

Graph:



IX.APPLICATIONS

To transfer the data between

- Two Pen drives.
- Two digital cameras.
- Two Mobile devices.
- Pen drives and digital Cameras.
- USB flash drives and mobiles.
- Mobiles and digital cameras.

X. CONCLUSION

The project “Pen drive to Pen drive Data Transfer Without using Computer/Laptop” will be successfully designed and tested. It will be developed by integrating features of all the hardware components and software used. Secondly, using highly advanced ARM11 board and with the help of growing technology the project will be successfully implemented

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