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Raspberry PI 3B+ Mini Laptop

Aditya Jadhav, Kiran Gambhir, Monika Doiphode, Ms.A.S.Kamthe, Mrs S.A. KAULAGE

Diploma Students, Department of Computer Engineering, Jayawantrao Sawant Polytechnic, Hadapsar,

Pune, India

Project guide, Department of Computer Engineering, Jayawantrao Sawant Polytechnic, Hadapsar, Pune, India

Project coordinator, Department of Computer Engineering, Jayawantrao Sawant Polytechnic, Hadapsar,

Pune, India

ABSTRACT: Mini laptop is a very useful for students and also different software working like MS-Office, VLC, Mozilla fire fox, Libber CAD, Arduino IDE, Liber Office etc for mini laptop power is provided by 5600mAh battery part. Once fully charged the mini laptop runs for above 2hrs. Mini laptop is firstly connected by to joint with raspberry pi 3.Then take 7 inch display and joint with the other end of display adaptor. Raspbian os imager 16GB memory card inside slot of memory card of raspberry pi 3. The recommendation of the S.D card depends on the operating system we install. We us 16GB micro SD card which is class 10(this cards are faster to boot and perform read and write operation). Then connect 5600mAh power supply to raspberry pi 3. Then connect speaker to raspberry pi 3. Then connect all this parts to plastic box. Keywords: Raspberry Pi 3, Raspbian OS, 7 inch LCD screen with LCD adapter, mini Bluetooth USB keyboard Introduction Basically, Pocket laptop is easily affordable and portable [1]. This is light in weight which makes ideal for users who would want to carry them around in a bag or hand for long durations [2]. Pocket laptop provides most input features like keyboard, USB ports and touch pad [3]. People who use pocket laptops can change the software according to their choice and prepare on their own selves. Professionals working in field far away from office can easily carry this [4].Engineers with business methodologies are the greatest support to our society. The advancements in technologies drive their thoughts and speculates to achieve various goals in fields of science. Arduino has been used as a platform to work for a long time [5]. But with the dispatch of Raspberry pi, a credit card size low-price affordable computer, Arduino is no longer used in application platform. Raspberry pi platform is being used widely from the past few years as it provides easy use support and documentation. It is readily available to all the end users. From simple educational to smart application projects, Raspberry Pi has proved its significance in the development of applications spreading out in various fields. EXISTING SYSTEM: Already, laptops are in use in present day life. The design of the laptop places the keyboard, screen, and internal components into a small, portable case. Another popular feature of the laptop is that it can be used almost anywhere PROPOSED SYSTEM: In this project we propose pocket laptop in which we can use any type of software according to the need and can easily portable, affordable by anyone

I.INTRODUCTION

A mini laptop based on the Raspberry Pi combines portability with the computing power of the Raspberry Pi single-board computer. It's compact, versatile, and suitable for various tasks like programming, web browsing, and multimedia playback. With its affordability and customization options, it's a popular choice for education, hobby projects, and lightweight computing needs.

- **Compact Design:**

A mini laptop based on the Raspberry Pi features a compact and lightweight design, making it highly portable and suitable for on-the-go use.

- **Raspberry Pi Integration:**

The mini laptop is powered by a Raspberry Pi single-board computer, which serves as the central processing unit (CPU) and provides computing capabilities.

- **Versatile Applications:**

A mini laptop based on the Raspberry Pi can be used for a wide range of applications, including programming, web browsing, document editing, multimedia playback, and IoT projects.

- **DIY and Customization**:

One of the advantages of a Raspberry Pi-based mini laptop is the ability to customize and modify the hardware and software according to individual preferences

- **Affordability and Accessibility:**

Mini laptops based on the Raspberry Pi are often cost-effective compared to traditional laptops, making them accessible to a wide range of users, including students, educators, hobbyists, and tinkerers

Mini Laptop Raspberry Pi 3+B

The Raspberry Pi 3 Model B+ is a versatile and affordable mini computer developed by the Raspberry Pi Foundation. Here is detailed information about the Raspberry Pi 3B+:

Specifications:

Processor: Broadcom BCM2837B0, Cortex-A53 64-bit SoC @ 1.4GHz

Memory: 1GB LPDDR2 SDRAM

Connectivity: Dual-band 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2/BLE, Gigabit Ethernet

Ports: 4x USB 2.0 ports, 1x HDMI port, 1x 3.5mm audio/video jack, 1x CSI camera port, 1x DSI display port, MicroSD card slot

GPIO: 40-pin GPIO header for interfacing with external devices and peripherals

Power: 5V/2.5A DC via micro USB connector or GPIO header

Dimensions: 85.6mm x 56.5mm x 17mm

Features:

improved performance and connectivity compared to previous Raspberry Pi models.

Suitable for a wide range of projects including IoT, robotics, home automation, media centers, and educational purposes.

Supports various operating systems such as Raspbian (official OS), Ubuntu, Debian, and thirdparty distributions like RetroPie for retro gaming.

GPIO pins allow for interfacing with sensors, actuators, displays, and other electronics.

HDMI output for connecting to monitors or TVs, making it a compact media center solution.

Expansion possibilities through add-on boards (HATs) for additional functionalities.

Community and Support:

Active and vibrant community of Raspberry Pi enthusiasts, developers, and educators.

Extensive documentation, tutorials, and projects available on the official Raspberry Pi website and community forums.

Dedicated forums, forums, and social media groups for sharing ideas, troubleshooting, and collaboration.

Use Cases:

Education: Used in schools and learning institutions to teach programming, electronics, and computing concepts.

DIY Projects: Enables enthusiasts to build custom projects such as home automation systems, weather stations, retro gaming consoles, and more.

Prototyping: Ideal for prototyping IoT devices, robotics, and embedded systems.

Media Center: With the right software, it can function as a media center for streaming videos, music, and games.

Availability:

Widely available for purchase online through authorized Raspberry Pi resellers and distributors.

Comes in different kit options including bare boards, starter kits with essential accessories, and customized bundles for specific projects.

Overall, the Raspberry Pi 3 Model B+ is a powerful and versatile mini computer with a strong community and extensive support ecosystem, making it an excellent choice for various DIY projects, educational initiatives, and prototyping endeavors.
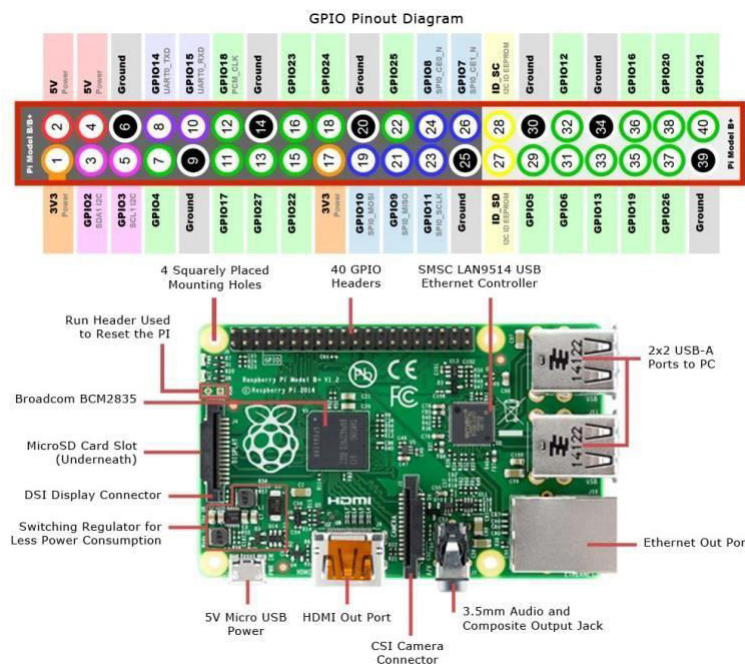
II.METHODOLOGY

Fig I :Block diagram of the Pocket Laptop SYSTEM DESIGN Hardware System Design: Raspberry Pi board: Raspberry Pi board is a miniaturized fascinated computer having ample processing speed and size not bigger than credit card [6]. Incredible things can be done by using it. Firstly, to work with raspberry pi, we need a list of things to get desired operation and functioning. Paper Title: - Pocket Laptop

Figure 1: Raspberry Pi computer Model B+ The Model B+ is the most popular updated version of the Pi, with an enhanced functionality. But it uses bit more power to feed the processor [7]. The Model B has received a stealthy update after it was released by adding some more RAM. But the Raspberry Pi Foundation has released third version of the Model B called the B+. Difference exists in the arrangement of components on the pi board. Sd card is sized to Micro sd along with the removal of the video outport. Four usb ports are now available compared to two on model [All the input and output pins are placed along the sides of the pi to make workspace for project. 40 GPIO pins are now accessible while preserving the same layout as previous version. Same pin configuration is reserved which comes in handy in implementing old projects . Nearest form factor is achieved as all the connections are along broad edge. Two more clock signals are available along with three extra serial peripheral B.7-INCH LCD SCREEN WITH LCD ADAPTER: It is a flat-panel display. LCDs are available to display arbitrary images. LCDs are used in a wide range of application ns, Including LCD televisions, computer monitors etc. LCD stands for "Liquid-crystal display [9].

Figure 2: LCD Screen with adapter C.BLUETOOTH KEYBOARD: It is a keyboard that connects and communicates with its device via Bluetooth protocol. It is also known as wireless keyboard. These devices are used with such portable devices as smart phones and tablets [10].

Figure 3: BLUETOOTH KEYBOARD D.BATTERY MODULE: It is used to put energy into secondary batteries [11]. The charging protocol depends upon size and type of battery charged. They are best for Arduino, DIY kits, power banks etc.

Figure 4: BATTERY MODULE E.LI-CD BATTERIES: For rechargeable cells, the term anode (or negative electrode) designates the electrode where oxidation is taking place during the discharge cycle; the other electrode is the cathode (or positive electrode). During the charge cycle, the positive electrode becomes the anode and the negative electrode

becomes the cathode. For most lithium-ion cells, the lithium oxide electrode is the positive electrode; for titanate lithium ion cells (LTO), the lithium-oxide electrode is the negative electrode. Paper Title: - Pocket Laptop

III. RELATED WORK

 LI-CD BATTERIES Additional Hardware utilized Compatible to Raspberry: For the project use of Raspberry Pi is not enough. For input and connectivity some other devices are required. 1. Wifi Adapter 2. SD card 3. Monitor 4. HDMI to VGA converter 5. Mouse and Keyboard Software System Design: Raspbian OS: Raspbian Jessie version is used in this project. It is based on Debian linux and different versions of os are named from toy story film characters. This Os is fully revised for the raspberry Pi's hardware. Modifications were made to enhance system processes performance. It runs LXDE (Lightweight X11 Desktop Environment) as the desktop environment. Upgrading to Raspbian jessie from rasbian wheezy will add a considerable amount of changes and improvements to desktop user interface. Figure 6: Raspbian OS IMPLEMENTATION: First Raspbian os is downloaded and in burnt in wing32diskmanager. The obtained output is copied into sd card using card reader .this sd card is inserted into raspberry pi 3which is attached with 7 inch LCD display with adaptor. Now power is supplied using battery module and li-cd batteries. Pi python programming: GPIO library: "sudo apt-get install python-rpi. gpio" I2C library : "sudo apt-get install i2c-tools" The figure 7 shows the installation of RASPIAN OS tools Figure 7: Raspbian OS installed Installation of python-smbus module: "sudo apt-get install python-smbus" Figure 8: Python smbus installed Connecting LCD SCREEN: After connecting accelerometer, run i2cdetect command to check the connection. Paper Title: - Pocket Laptop

After interfacing with LCD SCREEN if the screen is connected correctly, it is detected at the 53 port of the i2c bus as shown in above figure OTHER APPLICATIONS: Pocket laptop can be used in order to complete office work, school work and to take down the notes which can replace books and reduce the burden of students. One can make their own laptop with the software they want. RESULTS: Pocket Laptop was implemented by lcd screen, raspberry pi 3 and blue tooth mini REFERENCES: [1] " Embedded System Based Air Pollution Detection in Vehicles " S. Arun, V. Siva Krishna, J.L Mazher Iqbal in International Journal of Emerging Technologies in Computational and Applied Sciences. [2] Yamada, K. and M. Soga, A compact integrated visual motion sensor for ITS applications. Intelligent Transportation Systems, IEEE Transactions on, 2003. [3] Azrina Abd Aziz, Y. Ahmet Seker cioglu, Paul Fitzpatrick, and Milosh Ivanovich, "A Survey on Distributed Topology Control Techniques for Extending the Lifetime of Battery Powered Wireless Sensor Networks", IEEE communications surveys& tutorials, VOL. 15, NO. 1, FIRST QUARTER 2013 [4] Sandborn, P.A.M. and P. Abshire. 2D motion sensor with programmable feature extraction. in Circuits and Systems (ISCA S), 2013 IEEE International Symposium on. 2013. [3] Kamnik, R., S. Stege and M MunI h. Design and Calibration of Three

IV. CONCLUSION

In conclusion, the Raspberry Pi mini laptop offers a compact and versatile computing solution that combines portability with the capabilities of the Raspberry Pi single-board computer. Its affordability, customization options, and wide range of applications make it a popular choice for education, hobby projects, and lightweight computing needs. Whether for learning, experimentation, or creative projects, the Raspberry Pi mini laptop provides users with a flexible and accessible platform for exploration and innovation in the digital world.

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