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Raspberry Pi Technology

V.Trivenu[1] | G.Sumana[2] | N.Kumar Raja[3]

[1,2,3]Department of CSE, Balaji Institute of Engineering and Management Studies, Andhra Pradesh, India.

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ABSTRACT

Now-a-days, computer is not only a luxury but also a necessity for every person in today's world. Raspberry pi is a credit-card sized computer aimed at providing a computer to every person in the world. The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries.[3][4][5] The original model became far more popular than anticipated,[6] selling outside of its target market for uses such as robotics. Peripherals (including keyboards, mice and cases) are not included with the Raspberry Pi.

I. INTRODUCTION

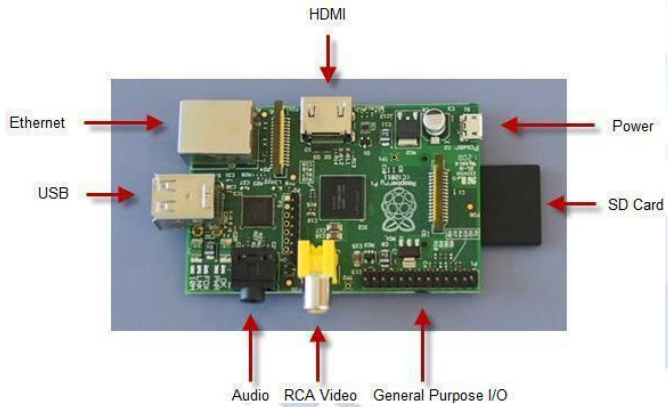

Fig. 1:- Overview of Raspberry Pi Processor

The Raspberry Pi is a low cost, credit-card sized single board developed at United Kingdom. It was designed and manufactured by Raspberry Pi Foundation from UK with the intention of stimulating the teaching of basic computer science in schools students and every other person interested in computer hardware, programming and DIY (Do-it Yourself) projects. It acts like a computer when plugs into a computer monitor or TV, and uses a standard keyboard and mouse.

The Raspberry Pi is manufactured in three board configurations through licensed manufacturing deals with Newark element14 (Premier Farnell), RS Components and Egoman. These companies sell the Raspberry Pi online.

II. HISTORY

In 2006, early concepts of the Raspberry Pi were based on the Atmel ATmega644 microcontroller. Its schematics and PCB layout are publicly available. Foundation trustee Eben Upton assembled a group of teachers, academics and computer enthusiasts to devise a computer to inspire children. The computer is inspired by Acorn's BBC Micro of 1981. Model A, Model B and Model B+ are references to the original models of the British educational BBC Micro computer, developed by Acorn Computers. The first ARM prototype version of the computer was mounted in a package the same size as a USB memory stick. It had a USB port on one end and an HDMI port on the other.

III. Implementation of Raspberry PI Technology

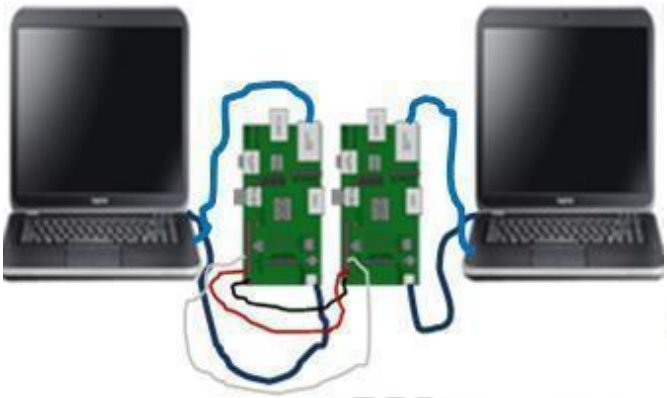

Fig. 2: Implementation of RC4 algorithm between two Raspberry Pi boards.

We implement RC4 algorithm using two raspberry pi boards enabling UART communication. So according to RC4 algorithm left board will be used for encryption and the right board will be used as decryption. First we need to send encrypted message from the left raspberry pi board and the right raspberry pi board will ask for the symmetric key to decrypt the message. So we need to enable the UART communication. So in the above figure we can see that red wire is used to transmit for left board to right board and white wire is connected to left board to receive from right board and black wire is used for ground. In this way UART communication occurs using raspberry pi technology.

IV. Advantages

- It is credit-card sized single board computer.
- Due to its low cost, it is affordable.
- Due to its size, it can be hidden anywhere, behind television sets, within walls etc.
- It provides high performance.
- It provides basic computer functions like word processing, web browsing etc. [12]

V. Disadvantages

- Though it can be used as a computer but it is closer to a mobile device.
- Since it is not covered with any case, it is exposed and can be touched easily which can cause damage.
- It is time consuming to download and install software and is unable to do complex multitasking.

VI. Applications

Applications of raspberry pi technology are as follows:

- Used in programming concepts and hardware interfacing.
- Used for making digital photo frames, tablets etc.
- Used in robotics for controlling motions, sensors, etc.
- Can be used in creating and handling of small servers.
- Used in voice activated coffee machine.
- Used in automated system to detect leakage from microwave oven.

VII. Conclusion

This paper gives us the detail knowledge about raspberry pi technology. Also that raspberry pi is an innovative product which is available in market at a low cost. Due to its credit-card sized single board, it is very easy to handle. This device is really helpful to anyone who wants to learn electronics and computers. Raspberry pi helps to increase hardware knowledge and software applications related to it. Raspberry pi is anamazing piece of hardware because of the combination of the features of a traditional computer and an embedded device. Here we have implemented the RC4 algorithm using two raspberry pi boards to create the communication between the two computers. Use of RC4 algorithm has enhanced the working between these computers.

REFERENCES

[1] Raspberry pi. [Online]. Available: http://www.raspberrypi.org/

[2] Eben Upton, Gareth Halfacree: *Raspberry Pi® User Guide* 1st edition 2010 John Wiley & Sons Ltd., Publication, United Kingdom.

[3] Raspberry Pi Technology [Online]. Available: http://www.collegelib.com/traspberry-pi-technology-intro-specificationsseminar-abstract-technical-report.html