



# NEWSLETTER

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The meeting was attended by 22 members and guests for an Open Forum based on the Raspberry Pi module. The session was guided by Chris Rosehnburg who outlined the basic features of the module and then followed by Roy Stevens who gave a summary of Possible applications based on an article in the Computeractive July edition.

The Raspberry Pi (RPi) is a credit card sized computer. Originally designed to be an educational tool for schoolchildren and would-be computer science students, sales have mushroomed and a multitude of uses have been thought up by enthusiasts both private and commercial. The device is inexpensive costing less than £30 on its own. However, to equip it with all the items necessary to make it stand-alone (with the exception of a display), costs somewhat under £100.

The Pi comes in two models (A and B) and consists of a small board on which are mounted:

A multimedia ARM RISC SoC (system on a chip) 700MHz and 512MB of RAM

A LAN controller chip

Two USB 2.0 ports (only one on Model A)

One Ethernet (RJ45) port

An HDMI output

An RCA video output and a 3.5 mm audio out jack

A micro USB power input socket

An SD card socket

There is also a row of connections for GPIO

There is no VGA output, the intention being that the visual output would be by means of a TV rather than a monitor.

The extras required are as follows:

NECESSARY	DESIRABLE
Power supply (5V, 1.5A)	A case to protect the device
USB keyboard	Powered USB hub
USB mouse	Converter to VGA
SD card with or without OS on it (4GB min)	External HD or other storage medium
Display – a TV set	Headphones or powered speakers for audio output

The Pi does not have an on/off switch so the operator has to be careful about switching off which has to be done via the mains socket used.

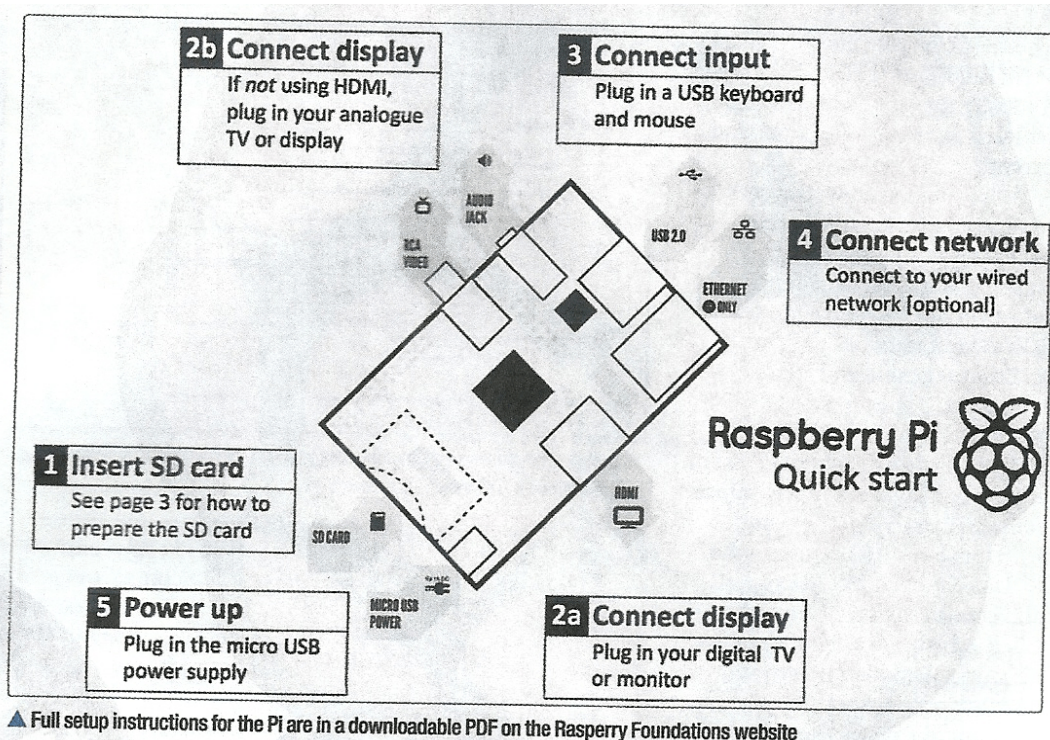
The preferred operating system (OS) is Debian/GNU Linux which can be downloaded free or obtained on a preloaded SD card. Interactions with the Linux kernel are via commands typed into a terminal (Linux/Unix term for the equivalent of the C prompt in Windows) or using the graphical user interface (GIU) which is included in the OS. The Pi can be configured to boot direct to the GUI if preferred.

There are two programming languages. Scratch is a very simple language intended for relatively junior schoolchildren whereas Python is much more comprehensive and is an interpreted language similar to the original form of BASIC. A program developer utility named IDLE (Interactive Development Environment) is included and is much preferable to a text editor for writing and amending programs. This is because IDLE has built into it the facility to detect and indicate such things as syntax errors which a text editor would ignore.

There is a multitude of uses to which the Pi can be put in its role as an educational tool as well as a large range of home applications such as controlling domestic items. To this end there are a lot of pieces of peripheral equipment such as robot arms that are available (eg from Maplin). A useful source of projects that the Raspberry Pi can be used for is "Computer Active issue 401" on their web site ([www.computeractive.co.uk](http://www.computeractive.co.uk)). There are also some very good books written about the Pi including a Haynes Manual which is very practical with simple descriptions and pictures.

Getting on-line is relatively easy using the WI-Fi dongle and will be necessary for downloading updates and any other material required for projects.

Chris Rosenberg



Roy continued with the session by showing us a diagram showing the functional layout and connections to a Raspberry Pi module.

Yje first edition strangely called Model B was launched in February 2012 and cost \$28. The model A was launched in February 2013 at a cost of £20

plus VAT More than a million have now been sold

If you need more than a single USB connection on the model A you will also require a powered USB hub. The Model B has two USB connectors..

The Pi can be connected to a home network either by cable or by plugging in a wireless module and could therefore be controlled remotely via the WiFi system. The Computer Active article described 6 possible projects that could make use of the Pi system. These included adding USB storage, Printing from the Pi, using it to create a media centre and controlling a robot which could be invaluable to stir a cup of tea.

Following the talks an a general discussion it was agreed by the members present that the group should purchase a Pi for use by the members to experiment with their own projects.

## Raspberry Pi for Central heating control

One application that would interest me would be to use the device to control my heating system. This

would be relatively simple using my existing electronic thermostats but would not add much apart from the ability to turn the system on and off remotely. The existing electronic room stats are programmed to set the room temperature to different temperatures at set times each day and operate the boiler and motorized valves by means of an on off signal via a simple two wire link. I can see no simple way in which the programming could be modified remotely. To make a significant improvement in performance it would need temperature sensors that could be read by the Pi unit so that temperatures could be reset by the Pi. This would also make it possible to measure the outside temperature and possibly the wind strength and direction. This would provide a much better control system that would also be capable of being modified remotely via the WiFi system.

My current electronic thermostats provide a digital signal to the display but no easy way to connect that reading to a remote device. They do have one of the major characteristic of a very low thermal mass to the sensor. If anyone has any ideas on the subject I would be interested to hear from them. Possibly the best solution would be a Pi in each roomstat linked via the WiFi system \

*Ron Everitt*

## **How To Recover Deleted Files - For Free**

So you lost an important file. Ouch. If you simply deleted the wrong file, you can usually get it back by opening the Recycle Bin (on Windows) and restoring it. On a Mac, you'll look in the Trash Bin. Linux users, check the Trash folder. The happy secret here is that in most cases, deleted files really aren't gone at all. They're just moved into the Recycle/Trash bucket, and can be restored to their original folders with a few clicks. But if that doesn't do the trick, try one of these free tools to do the heavy lifting. Read on and you'll find a crop of tools to recover deleted files.

Piriform's Recuva (pronounced like "recover" with a Brooklyn accent) will help you to find files and images on your Windows computer that were deleted by human error, including those deleted from your digital camera memory card or MP3 player. Recuva can also restore files deleted from the recycle bin or those that were deleted by a bug, virus or crash. This is a free Windows application that includes a support forum and because it is a freebie, Piriform would appreciate a small donation if you like their software. Recuva comes from the same people that developed the popular CCleaner, so the reputation is rock solid.

PhotoRec is a free undelete utility for Windows, Linux and Mac OS X. Despite the name, it can recover almost 400 different file formats (not just photos) including ZIP, Office (Word/Excel/Powerpoint), PDF, HTML, TXT, and JPEG. Photorec can recover files from a variety of media, including hard drives, CD/DVDs, digital camera memory cards, and USB flash drives. It can also be used with portable devices (including the iPod) and many digital cameras. Photorec doesn't even require that the drive be partitioned, formatted or mounted with a drive letter.

GlarySoft is a trusted source for free utility programs, and Glary Undelete is another file recovery program worth a look. It's easy to use, yet powerful, with support for all versions of Windows, and image recovery from CompactFlash, SmartMedia, MultiMedia and Secure Digital cards. After scanning your disk, Glary Undelete will display a list of deleted files, along with an estimate of the probability of successfully restoring each file.

Losing a file due to an accidental click or keystroke is bad enough. But losing your entire hard drive to a hardware failure, virus, flood or fire can be devastating. And no simple undelete utility will fix that. But backing up your hard drive will help in both the "Oops, I deleted a file" problem as well as the "Oh no... my hard drive died!" scenario. See my article [Free Backup Software Options](#) for tips on how to get the job done.

## **More Data Recovery Tools**

Another popular free file recovery tool for Windows is Restoration. This program will find just about everything you've ever deleted from your PC, including files deleted from the DOS prompt. When the program starts, choose a source drive, then click the "Search Deleted Files" button. If you have a file on

your hard drive with the same name, restore the file to a different folder, or flash disk so that your existing file is not wiped out. Restoration can also permanently delete files, making it almost impossible to restore or undelete them. Restoration has a no-frills user interface, but it's easy to use and does a good job.

One unique feature of Restoration is that you don't have to install it before running. This is a good thing, because installing a program will write to the disk from which you're trying to restore your deleted files, and this could possibly trample the very data you want to recover. I recommend that you download Restoration to a USB flash drive, then just double-click the .EXE file, and the program will open. Note that on Vista or Windows 7, you might see a message that you need administrator privileges to run Restoration. The fix is simple -- just right-click on the .EXE file and choose "RUN AS ADMINISTRATOR".

FreeUndelete has no charge for personal usage, although they charge for businesses. The program is spyware and adware free, works on Windows XP, Vista, Windows 7, and can restore files from your Recycle Bin or NTFS, FAT32 or FAT16 hard drives. Once recovered, they will be saved in a new user-selected location to prevent overwriting files.

There are also free tools for other types of data disasters.

Read more: [http://askbobrankin.com/free\\_tools\\_recover\\_deleted\\_files.html#ixzz2ducsCPRs](http://askbobrankin.com/free_tools_recover_deleted_files.html#ixzz2ducsCPRs)

#### **KeePass Password Safe 2.22**

Today you need to remember many passwords. You need a password for the Windows network logon, your e-mail account, your website's FTP password, online passwords (like website member account), etc. etc. etc.

The list is endless. KeePass is a free open source password manager, which helps you to manage your passwords in a secure way. You can put all your passwords in one database, which is locked with one master key or a key file. So you only have to remember one single master password or select the key file to unlock the whole database. The databases are encrypted using the best and most secure encryption algorithms currently known (AES and Twofish).

**FREE** to download and use from [http://www.freewarefiles.com/KeePass-Password-Safe\\_program\\_13620.html](http://www.freewarefiles.com/KeePass-Password-Safe_program_13620.html)

#### **WINDOWS 8.1 ON TEST**

Microsoft has announced that the "Windows 8.1 experience" will become available before the end of June even though there was no information as to when 8.1 will actually become available. The introduction to this announcement in Microsoft's Technet stated: "We built Windows 8 to bring a modern computing experience to businesses and to help professionals stay connected to their colleagues and clients from anywhere, anytime. Windows 8.1 advances this vision and introduces new manageability, mobility, security, user experience and networking capabilities that will be available later this year – with the goal of offering customers the best business tablets and versatile modern business PCs driven by the most powerful operating system designed for today's modern businesses."

However, it appears that Microsoft is also taking into account the widespread dissatisfaction with the Win 8 user interface in that there will be configuration options to enable users to boot directly to the desktop and, in addition, improvements have been made to better support users who prefer a mouse and keyboard experience to access applications. This, I suspect, applies to most of us using conventional laptops or desktop machines.

#### **LESLIE'S PUZZLE PAGE** contributed by Chris Rosenberg

Answers to last month's puzzle:

#### **Buying Books**

Alex and Bob go into a bookshop together with their sons Peter and Tim. All four of them buy some books each book costing a whole number of shillings. When they leave the bookshop they notice that both fathers have spent 21 shillings more than their respective sons have. Moreover, each of them paid per book the same amount of shillings as books that he bought. The difference between the number of books of Alex and Peter is five. Who is the father of Tim?



### Solution:

The purchase of  $N$  books at an average cost of  $N$  shillings each requires expenditure of  $N^2$  shillings. If the fathers buy  $N$  and  $M$  and the respective sons  $n$  and  $m$  then the first condition requires that:

$$N^2 - n^2 = 21 \quad \text{and similarly that} \quad M^2 - m^2 = 21$$

The only integer solutions to these equations are (11, 10) and (5, 2). The second condition that mod (number of books bought by Alex minus number of books bought by Peter) is 5 means that the two equations above cannot both have the same solutions.

We can obtain 5 from the 10 and 5 numbers only so they must represent Alex and Peter or Peter and Alex. But the bigger numbers in each pair solution must be the adult numbers thus 5 must be the number of books purchased by Alex and since Peter is from the other father/son pair then Tim's father must be Alex.

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### Covering a marble in a pot

Consider a flat bottomed parallel sided pot of radius 4 units. What is the radius of a marble that will fit in the pot (ie radius  $\leq 4$ ) and which requires the maximum amount of water to cover it?

### Grazing time

A field contains grass which grows at a constant rate up to a maximum uniform depth. The field full of grass is sufficient to feed a cow, a horse and a sheep for 20 days. It feeds the cow and the horse alone for 25 days and the cow and the sheep alone for  $33\frac{1}{3}$  days and the horse and sheep alone for 50 days. How long would the field feed the cow alone? The horse alone? The sheep alone?

### **MEETINGS ARE ON THE THIRD WEDNESDAY OF EACH MONTH THE MEETINGS WILL BE IN THE VILLAGE HALL AT NEWDIGATE**

(grid ref TQ 195 422) (A map and directions are available on the club website.

[http://www.ietrms-surrey.org.uk/pc\\_group.html](http://www.ietrms-surrey.org.uk/pc_group.html)

The hall is available from 9.00 a.m until 1.00 p.m. The meeting commences at 10.15a.m for 10.45a.m.

**The next meeting is on Wednesday September 18 History of the Global Positioning System given by Alan Thomas** Most of us now rely on these systems to tell us which way to go when we visit new destinations so it will be interesting to understand a bit more of the background to the system.

### **FUTURE MEETINGS**

**Wednesday October 16<sup>th</sup> Commercial Computers and Leo Geoff Cooper**

For the latest information on the program please see

[http://www.ietrms-surrey.org.uk/pc\\_group.html](http://www.ietrms-surrey.org.uk/pc_group.html)

We are looking for contributions to either the program or the Newsletter so if any member would like to give a talk or know anyone else capable please talk to the committee. A short note on your experiences might also make a useful addition to the newsletter and could provide a solution to someone else's problem. Please do not be shy and remember that what may seem obvious to you may help someone else to solve a difficult problem