**Raspberry PI – Session 1 – 14th Sept 2013**

**What is the Raspberry PI**

Produced by Raspberry PI foundation

Released in Feb 2012

System on a Chip (SOC) – CPU & GPU + RAM on single chip – unlike PC architecture.

Model A – Single USB, No network port

Model B 2 USB port, network port

512MB RAM on newer models

Runs Linux Operating System

Operating System is stored on SD card

Raspberry PI **does not** come with monitor, keyboard, mouse, power supply, Operating System, hard disk

**What the PI can be used for**

Web browsing – Default browser is Midori

App development - Scratch, Python installed

Multi media server, web server ..etc

GPIO to control LEDs ..etc

**Connections on the PI – Model B**

*SD Card slot* – used to hold SD card which contains the Operating System

*USB* – 2 USB connections

*LAN* – for wired internet connectivity

*HDMI* – Provide High Definition picture quality and is used to connect to digital TV or monitors. HDMI connection can carry video and audio sign. A DVI or VGA connector can also be used to connect to computer monitors.

*Power supply* – micro USB (same as used in some mobile phones)

*General Purpose Input/Output* – Set of 26 pins that can be used to connect to other electronic devices.

*Composite video out* - Provide “low” definition picture quality and is used to connect to older TV

*Audio* – Standard 3.5mm jack which can be used to connect headphones or external speakers.

**Setup**

Putting Linux on SD card

* Download Operating System image ([www.raspberrypi.org/downloads](http://www.raspberrypi.org/downloads))
* Suggest standard Raspbain “wheezy” image
* For Windows OS – you need Win32DiskImager app to copy Linux image to SD cards

Connecting up the PI

* Keyboard and mouse connected to 2 USB ports. An additional USB Hub may be connected to PI to provide additional USB ports
* HDMI cable to TV/monitor
* Put DS card into slot on PI
* Power supply
* Boot Up

**Booting up for 1st time**

Runs through some configuration tasks and checks

Configuration program (Raspi-config) starts. This allows you configure some key features.

* Use *expand\_rootfs* option to utilise all space on SD card
* Can use *boot\_behaviour* option to boot directly into GUI, will come back and use this options later.
* Look at *memory\_split* option to show/change on RAM is split between CPU & GPU
* Look at *configure\_keyboard* to ensure correct setting

Raspi-config can be started manually by running sudo ***raspi-config***

Login user: pi / Password: raspberry

To start the desktop - ***startx***

**Additional tasks**

* Look at apps/tools already installed (Scratch, Midori Brower, Terminal)
* Installed an Geany IDE (Integrated Development Environment) on Pi (*sudo apt-get – install Geany*)

**Creating new user account in Linux**

*sudo adduser paul* create a new user, enter password. Leave other details plan

To allow the new user run the sudo command, you will need to add the new user to sudoers file.

*sudo visudo*

Add following line under the "root ALL=(ALL:ALL) ALL" Line:

*paul ALL=(ALL:ALL) ALL*

CTRL+O to save file. Then press CTRL+X to exist.

Test login from laptop