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Assignment - 1

Aim - Study of Raspberry - Pi, Beagle board Arduino & other micro controller.

Theory - Study of Raspberry Pi3 -

The Raspberry Pi is a series of small single board computers developed in UK by Raspberry Pi foundation to promote the teaching of basic computer science in schools and in developing countries. The original model become far more popular than anticipated, selling outside of its target market.

Raspberry Pi 3 - Model B was released in Feb 2016 and has on-board Wifi, Bluetooth and USB boot capabilities. On 28 Feb 2017, the Raspberry Pi zero W has launched, which is like Raspberry Pi zero with Wifi, Bluetooth, for US \$10. Processor speed ranges from 700 MHz to 1.2 GHz for the Pi 3, The B-models have an 8P8C Ethernet port & the Pi3 and Pi zero W have on-board Wifi 802.11 n & Bluetooth, price range US\$5 to \$35.

The first generation was released in February 2012, followed by the simpler & cheaper model A. In 2014, the foundation.

the SDHC or Micro SDHC sizes.
Most boards have between one and four USB slots, HDMI and composite video output and 3.5 mm phono jack for audio. Lower level output is provided by a number of GPIO pins which support common protocols like I²C.

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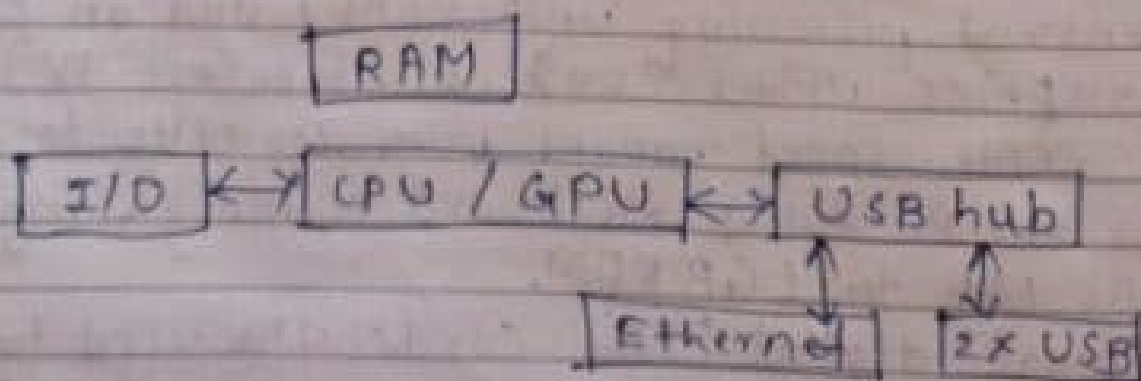
* Operating System -

The foundation provides Raspbian, a Debian-based Linux distribution for download, as well as third party ubuntu, windows 10 IoT core, RTSC OS, and specialised media centre distributions.

It promotes python and scratch as the main programming language, with support for many other languages.

The default firmware is closed source, while an unofficial open source is available.

* Hardware



- This block diagram depicts Models A, B, A+, and B+ Models A, A+ and Pi and Pi zero lack the Ethernet and USB hub components.

The Ethernet adapter is internally connected to an additional USB port.

In model A, A+, and the Pi Zero, the USB port is connected directly to the system on a chip (SoC). On the Pi 1 Model B+ and later models the USB/Ethernet chip contains a five-point USB hub, of which four ports are available, while the Pi 1 Model B only provides two.

On the Pi Zero, the USB port is also connected directly to the SoC, but it uses a micro USB (OTG) port.

* Raspberry Pi Vs Tkinter Board

Core Processor (SoC)	ASUS Tkinter Board	Raspberry Pi-3 Model B
Core Processor (SoC)	Rockchip RK3288 Quad-core 1.6GHz	Broadcom BCM2837 Quad-core 1.2GHz
Benchmark Score (tested by Geekbench)	2925 Almost 2x faster	2092
RAM	2 GB	1 GB RAM
Display	HDMI with H.264 & H.265 decode capability	HDMI with H.264
NIC	Gigabit LAN	100 M LAN
Audio	Supports up to 192K/24bit sample rate	48K/16bit
Wi-Fi	Yes, Wi-Fi 802.11 b/g/n + detachable antenna	Yes, Wi-Fi 802.11 b/g/n
Bluetooth	Yes 4.0 + EDR	Yes 4.2 + LE
SDIO	SDIO 3.0	SDIO 2.0
Official Supported OS	Linux - Debian / Kodi	LINUX PFBid

* Accessories

Camera - On 14 May 2013, the Foundation and the distributors RS Components & Farnell / Element 14 launched the Raspberry Pi camera board alongside a firmware update to accommodate it. The camera board is shipped with a flexible flat cable that plugs into the CSI connector which is located between the Ethernet and HDMI ports.

Exterboard - A Raspberry Pi Foundation sanctioned device, designed for educational purposes, that expands the Raspberry Pi's GPIO pins to allow interface with and control of LEDs, switches analog signals, sensors and other devices. It also includes an optional Arduino compatible controller to interface with the Pi.

Infrared camera - In October 2013, the foundation announced that they would begin producing a camera module without an infrared filter, called the Pi NOIR.

HAT (Hardware attached on Top) expansion boards - Together with the model B+, inspired by the Arduino shield boards, the interface for HAT boards was devised by the Raspberry Pi boards.

* Other Development Boards :-

- Asus TinkerBoard
- BeagleBone
- Banana Pi
- Orange Pi
- Ordioid