Lesson 1 Raspberry Pi Hardware Introduction

1.Raspberry Pi Introduction and Usage

Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation. It hopes to help the learner all over the world to learn programming and learn about the basic computer science.

With the ability to connect a keyboard, mouse and network cable, as well as a TV output for video analog signals and an HDMI HD video output, the Raspberry Pi is suitable for people from all ages to learn to use, for example, to learn programming languages like Python. It can also do everything as a desktop computer, from browsing the web and playing HD video, to creating spreadsheets and word processing, and playing games!

1) Web server

The Raspberry Pi can stay around the clock because it only requires very little power.

2) Laptop

The Raspberry Pi can be used as the "brain" of a laptop, just need to equip it with a computer screen.

3) Home theater set-top box

There are many free operating systems that can turn the Raspberry Pi into a set-top box that can run your favorite content.

4) Game simulator

Use the free RetroPie OS on any Raspberry Pi to play Game Boy, arcade, SNES

and other games.

5) Monitor

With simple steps and an external camera, a simple monitoring system can be built.

6) Wi-Fi extender

If you cannot get a good Wi-Fi signal in some rooms of your home, your Raspberry Pi can help by turning into an extender. On the Raspberry Pi's built-in Wi-Fi, only a USB Wi-Fi adapter is required to repeat the signal.

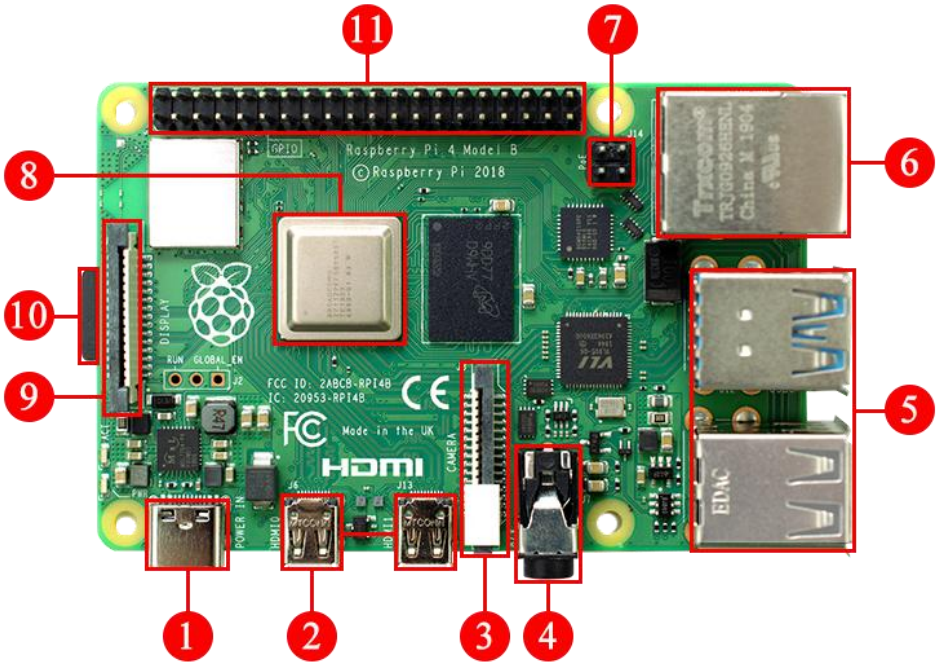
7) Music streamer and multi-room audio

Using the right software and some Raspberry Pi, you can create an inexpensive sound system to play music in different locations in your home.

As mentioned above, Raspberry Pi is not only a small developer, but also a "caring companion" in life.

2. Raspberry Pi Hardware Structure

The hardware structure of Raspberry Pi 4B is explained in following list.



No.	Name	Instruction
1	Type-C power supply port	Use Type-C port to supply power and support larger power input (5V 3A). If directly connecting Raspberry Pi to USB interface of computer, it can not be driven.
2	Micro-HDMI interface	Used to connect monitor. 4K resolution supports dual monitors.
3	Camera interface	CSI interface type camera can be connected for video recording and image capture.
4	Audio interface	Audio interface (3.5mm headphone jack) when not using HDMI connection, you can use the standard 3.5mm headphone jack speakers or headphones to play audio
5	USB2.0/3.0	Used to connect keyboard, mouse, U disk, wireless network card, etc. Two of

		four USB interfaces are USB3.0.
6	Ethernet interface	The Raspberry Pi can be wired into a computer network, which allows us to easily access the Internet or log in to the Raspberry Pi remotely.
7	Poe Interface	From Raspberry Pi 3B+, power can be supplied over Ethernet. No extra power is needed, which is convenient for some application scenarios.
8	Processor	Raspberry Pi uses Broadcom BCM2711 chip as the SOC chip, which integrates CPU, GPU, DSP and SDRAM memory, among which CPU and GPU share memory and can be manually modified in the system to account for memory. Four generations of Raspberry Pi is memory optional.

9	DSI Display Connector	Used to connect LCD display to Raspberry Pi. LCD displays can be typically used for embedded product development.
10	SD Card Slot	It is allocated on the back of Raspberry Pi. SD/ MicroSD card is an essential storage component for Raspberry Pi, used to install the operating system and store data.
11	Universal input and output port	The universal input/output interface is designed as two lines of pin slot used to connect various electric peripheral electronics and sensors. Through input/output level signal, control or monitor these devices.

3. Board Dimension