**Word Count: 1222**

Video, Getting acquainted with Raspberry Pi, the credit card-sized computer.

In this video, we will learn about Raspberry Pi and why it stands out. We will also do a brief hardware overview of the Raspberry Pi 4 Model B.

The Raspberry Pi is a remarkable device. This credit card-sized computer costs less than most video games but is capable of all the things you would expect from a computer. Everything from browsing the internet, listening to music, playing games to watching movies, can be done on the Raspberry Pi. The Raspberry Pi is often referred to as a Single Board computer, which means exactly what it sounds like. It’s a computer just like a laptop or a smartphone but built on a single piece of a printed circuit board. But the Raspberry Pi is much more than a modern computer.

With a Raspberry Pi, you can get into the heart of a computer. You get to set up your own operating system and can connect circuits directly to the pins on its board, to build your own physical devices. The Raspberry Pi family was born from a desire to encourage more hands-on computer education around the world. The boards were so popular that it found its way into homes, classrooms, offices, data centers, factories, and even self-piloting boats and meteorological balloons. People of all ages use the Raspberry Pi to create and share exciting projects as a community. The Raspberry Pi community is an integral part of the board’s success, as it has ignited a love of computer science and technology in the new generation all over the world.

Various models of Raspberry Pi has been released since the first release in 2012, and each brings either improved specifications or new features based on the market needs. The major design accomplishment of the Raspberry Pi lineup is its price point, which has always remained at 35$. Furthermore, all Raspberry Pi models are inter-compatible, which means that the software written for one model will run on any other model. Throughout this course, you will learn about the latest and greatest Pi in the lineup, named the Raspberry Pi 4 Model B. With the launch of the Raspberry Pi 3 Model B+, the tiny hobbyist computer came within touching distance of becoming a fully-fledged desktop computer. With the Raspberry Pi 4 Model B, that dream is realized. Raspberry Pi 4 Model B comes with either 1GB, 2GB, or 4GB of RAM. For most educational purposes and many hobbyist projects, 1GB is enough; for use as a desktop computer, we recommend 2GB, and for gaming and advanced use cases, like for swarm networking or machine learning, we recommend the 4GB Model.

Before getting acquainted with the credit card-sized computer, let’s understand some basics of computers. Computers can be thought of as calculating machines with mainly four parts. Input, Memory, Processing Unit, and Output. Along with these basic building blocks of a computer, the Raspberry Pi 4 Model B, also comes with many bells and whistles under its hood. Unlike a traditional computer, which hides its inner workings in a case, a Raspberry Pi has all its hardware out on display. What a show-off, right?

In this video, we will do a brief overview of the Raspberry Pi 4 Model B features. In the next video, we will go in-depth about the significance and applications of these hardware features.

Now unbox your Raspberry Pi from its box and place it like this, with the Raspberry Pi logo facing up. Make sure that you are placing the board on a clean and non-metallic surface, as the PCB is exposed at the back of the Pi.

While it may look like there is a lot packed into this tiny board, the Raspberry Pi hardware components are pretty simple to understand. The first, and arguably the most important, of these can be found just around the center point of the board covered in a metal cap. This is called an SoC or a system on chip, which is essentially the brain of the computer. It consists of a Central Processing Unit, and a Graphics Processing Unit. A brain is no good without a memory. Just to the side of the SoC you will find a small, black chip. This is the Raspberry Pi’s Random Access Memory, also known as RAM. This will only hold the data of the things you are currently working on. Once the power goes, the RAM will be cleared out. The operating system and permanent data will be stored inside the microSD card, which will be inserted in this slot behind the board. It is just like the hard disk of your personal computer.

At the top left corner of the board, you will find another metal lid. This covers the chip that handles the radio communication on the Raspberry Pi. The purpose of the lid is to reduce electromagnetic interference. The radio chip supports a WiFi Radio and Bluetooth Radio. Another black, plastic-covered chip can be seen at the bottom edge near the USB C port. It is known as a Power Management Integrated Circuit, which handles power coming in through the USB C port. On the right side of the board, you can see two black chips. The bigger one is the USB Controller Integrated Chip that handles both the USB 2.0 and USB 3.0 support on the board. The smaller chip handles the gigabit ethernet network connection. On the top edge of the board, you will find 40 metal pins, split into two rows of 20 pins. This is the General Purpose Input/Output header, which allows the board to talk to other electronic circuits and additional hardware. Just below and over to the right of the header is another, smaller four-pin header, which is used to connect the Power Over Ethernet HAT, an optional add-on that lets the Raspberry pi receiver power form a network connection rather than the USB type C port.

Now let us look at the different ports on the Raspberry Pi 4 Model B. We have already shown you the microSD card port on the back of the Pi. On the right end of the board, you can see several ports. There are 2 USB 2.0, 2 USB 3.0 and 1 Gigabit Ethernet port here. On the front edge of the board, we can see the USB Type C power port, 2 micro hdmi ports, and a composite video output port. Near to this port, you can see a strange looking connector with a plastic flap. This is a camera connector, known as Camera Serial Interface, also known as CSI. At the left extreme edge of the board, there is yet another strange-looking connector, which at first glance appears to be identical to the camera connector. This is actually a display output port called Display Serial Interface, also known as DSI.

Summary

In this video, we have covered the following topics

* What is a Raspberry Pi
* Why it stands out
* Basic Hardware Overview of the Raspberry Pi 4 Model B

In the next video, we will get in-depth insights into the hardware features of the Raspberry Pi 4 Model B single-board computer.