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→ Line Comment :→ There are two types of line comments, which are listed below:→

- Single line Comment
- Multi-line Comment

// Single line Comment :→ The text that is written after the two forward slashes are considered as a single line comment. The compiler ignores the code written after the two forward slashes. The comment will not be displayed in the output. Such text is specified for a better understanding of the code or the explanation of any code statement.

The // (two forward slashes) are also used to ignore some extra lines of code without deleting it.

• /\* Multi-line Comment \*/ :→ The Multi-line comment is written to group the information for clear understanding. It starts with the single forward slash and an asterisk symbol (/\*). It also ends with the /\*. It is commonly used to write the larger text. It is comment, which is also ignored by the compiler.

→ Raspberry pi :→ Raspberry pi the name of the "Credit Card-Sized computer based" developed by the Raspberry pi foundation, based in the UK. It gets plugged in a TV or monitor and provides a fully functional computer capability.

• Raspberry pi is developed by Raspberry pi Foundation in the United Kingdom. The Raspberry pi is a series of powerful,

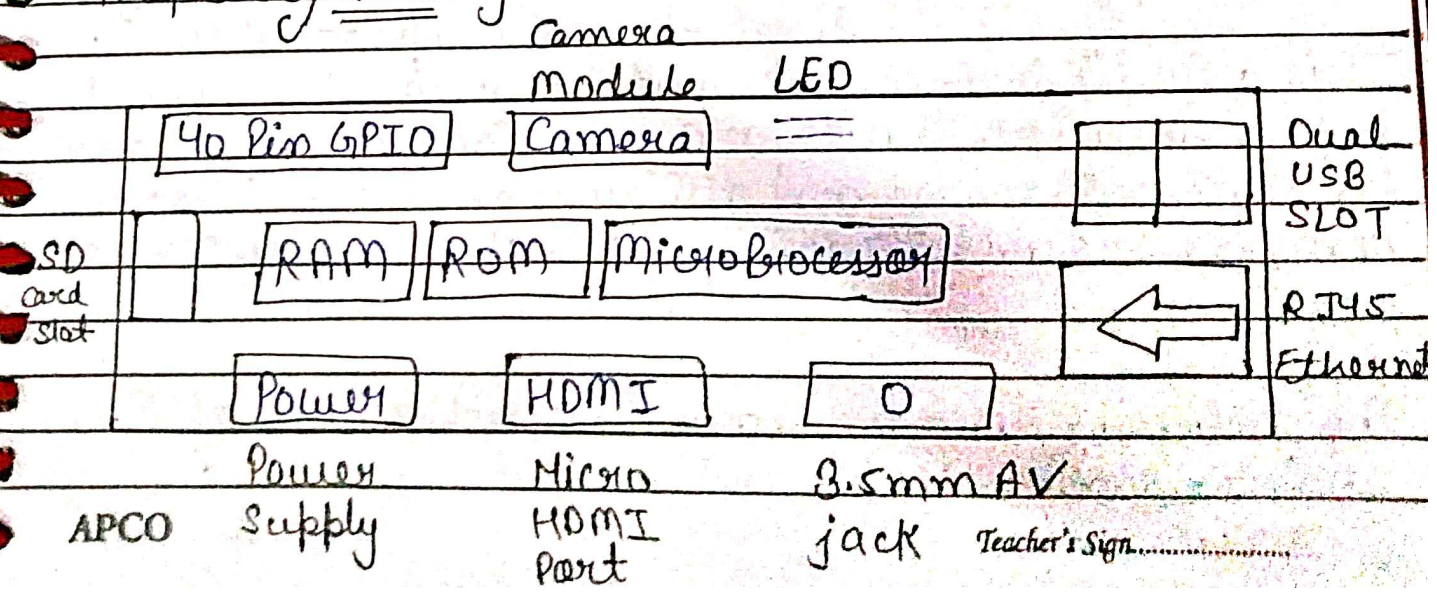
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Small single-board Computers.

- Raspberry pi is launched in 2012 and there have been several iterations and variations released since then.
- Various versions of Raspberry pi have been out till date. All versions consist of a Broadcom system on a chip (SoC), with an integrated ARM-compatible CPU and onchip graphics processing unit (GPU).
- The Original device had a single-core processor speed of device ranges from 700MHz to 1.2 GHz and a memory range from 256MB to 1GB RAM.
- To store the operating system and program memory, Secure digital (SD) cards are used. Raspbian OS which is a linux operating system is recommended OS by Raspberry pi Foundation.
- Some other third party OS like RTSC OS pi, Diet pi, Kali, linux can also be run on Raspberry pi.

used: It also provides a set of general purpose input/output pins allowing you to control electronic components for physical computing and explore the IoT.

→ Raspberry Pi Diagram:→



→ Raspberry pi model → There have been many generations of raspberry pi from pi 1 to pi 4.

There is generally a model A and model B. Model A is a less expensive variant and it tends to have reduce RAM and dual cores such as USB and Ethernet.

→ list of Raspberry pi models and releases year:→

- ① pi 1 model B - 2012
- ② pi 1 model A - 2013
- ③ pi 1 model B+ - 2014
- ④ pi 1 model A+ - 2014
- ⑤ pi 2 model B - 2015
- ⑥ pi 3 model B - 2016
- ⑦ pi 3 model B+ - 2018
- ⑧ pi 3 model A+ - 2019
- ⑨ pi 4 model A - 2019
- ⑩ pi model B - 2020
- ⑪ pi 400 - 2021

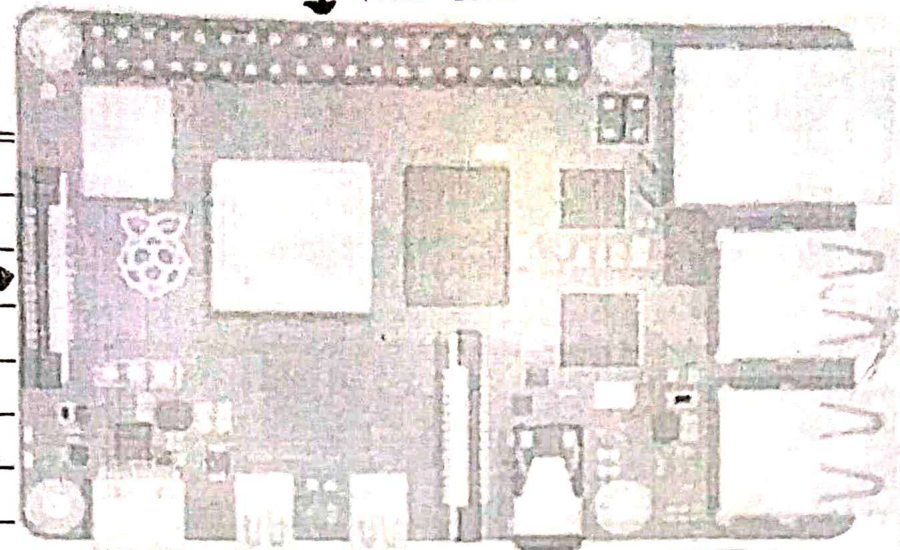
→ Raspberry pi Architecture → Raspberry pi is a small single-board Computer (SBC).

It is a Credit Card-sized Computer that can be plugged into a monitor. It acts as a mini Computer by connecting the keyboard, mouse and display. Raspberry pi has an ARM processor and 512 MB of RAM. ~~The architecture of Raspberry~~

The following diagram shows the architecture of Raspberry pi:→

↓ GPIO Pins

(63)



Micro SD card →

← Ethernet Port

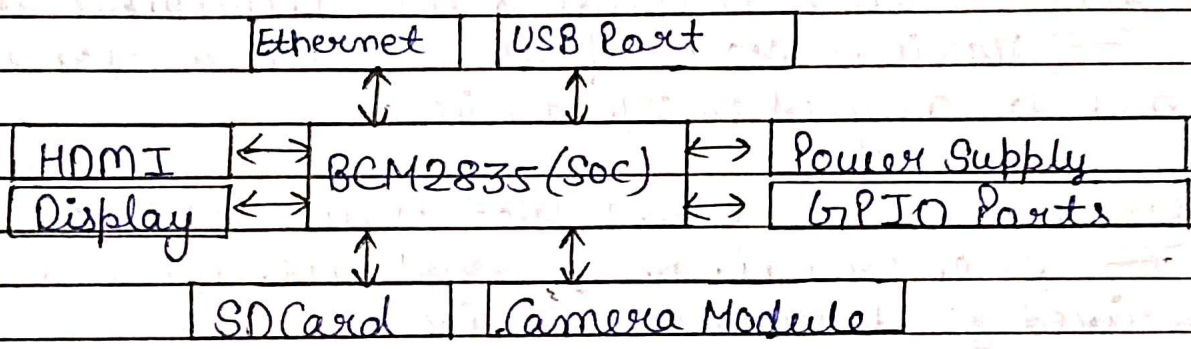
→ USB Ports

↑ Micro USB Port

↔ HDMI Port

↑ Audio Jack

→ The following diagram shows some main blocks of Raspberry pi :->



Raspberry pi mainly consists of the following blocks :->

- Processor → Raspberry pi uses Broadcom BCM2835 System on chip which is an ARM processor and video core Graphics processing unit (GPU). It is the heart of the Raspberry pi which controls the operations of all the connected devices and handles all the required computations.

- HDMI → High Definition Multimedia Interface is used for transmitting video or digital audio

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- data to a Computer monitor or to digital TV. This HDMI port help Raspberry Pi to connect its signals to any digital device such as monitor digital TV.
- GPIO ports  $\Rightarrow$  General Purpose Input Output ports are available on Raspberry Pi which allows the user to interface various I/P devices.
  - Audio output  $\Rightarrow$  An audio connector is available for connecting audio output devices such as headphones and speakers.
  - USB ports  $\Rightarrow$  This is a common port available for various ~~per~~ peripherals such as a mouse, keyboard, or any other I/P devices.
  - SD Cards  $\Rightarrow$  The SD Cards slot is available on Raspberry Pi. An SD Cards with an OS installed is required for booting the devices.
  - Ethernet  $\Rightarrow$  The ethernet connector allows access to the wired network, it is available only on the model B of Raspberry Pi.
  - Power Supply  $\Rightarrow$  A micro USB power connector is available onto which a 5V power supply can be connected.
  - Camera module  $\Rightarrow$  Camera Serial Interface (CSI) connects the Broadcom processor to the Pi camera.
  - Display  $\Rightarrow$  Display Serial Interface (DSI) is used for connecting LCD to Raspberry Pi using 15x15-pin ribbon.

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ables. DST provides a high-resolution display interface that is specifically used for sending video data.

→ TOT devices and Deployment Models: → TOT devices come in various type and are deployed using different models depending on their use case and deployment requirements. Here's an overview of common TOT device types and deployment models: →

### ① Types of TOT devices: →

① Sensors → Function: → Collect and transmit data about the physical environment.

Example: → Temperature sensors, humidity sensors, pressure sensors and etc.

Use Cases: → Smart homes, Industrial automation, healthcare devices and environmental monitoring.

② Actuators → Function: → Perform actions in response to data or commands received from a central system.

Example: → Motors, valves, relays and pumps

Use Cases: → Industrial Machines, robotics, smart agriculture, HVAC system.

③ Smart devices → Function: → Combine sensors, actuators and connectivity to perform specific tasks.

Example: → Smart thermostats, smart locks, smart lighting system.