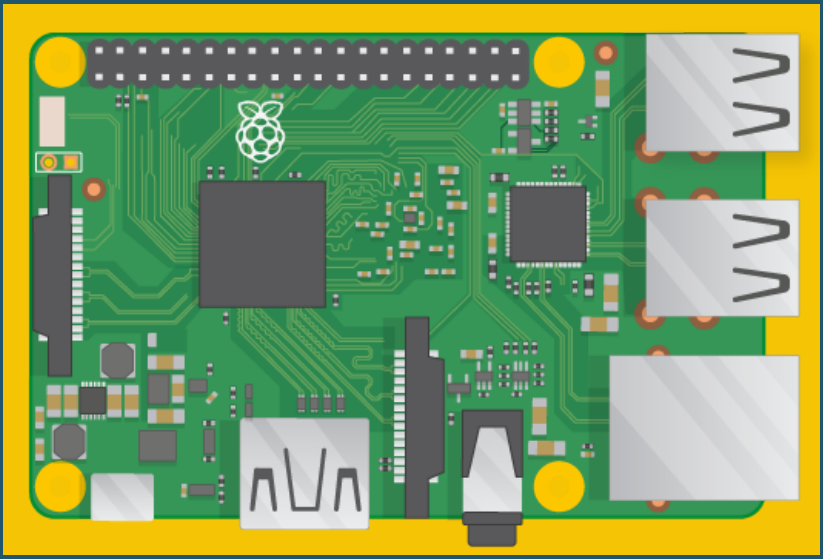

RASPBERRY PI & IT'S APPLICATIONS

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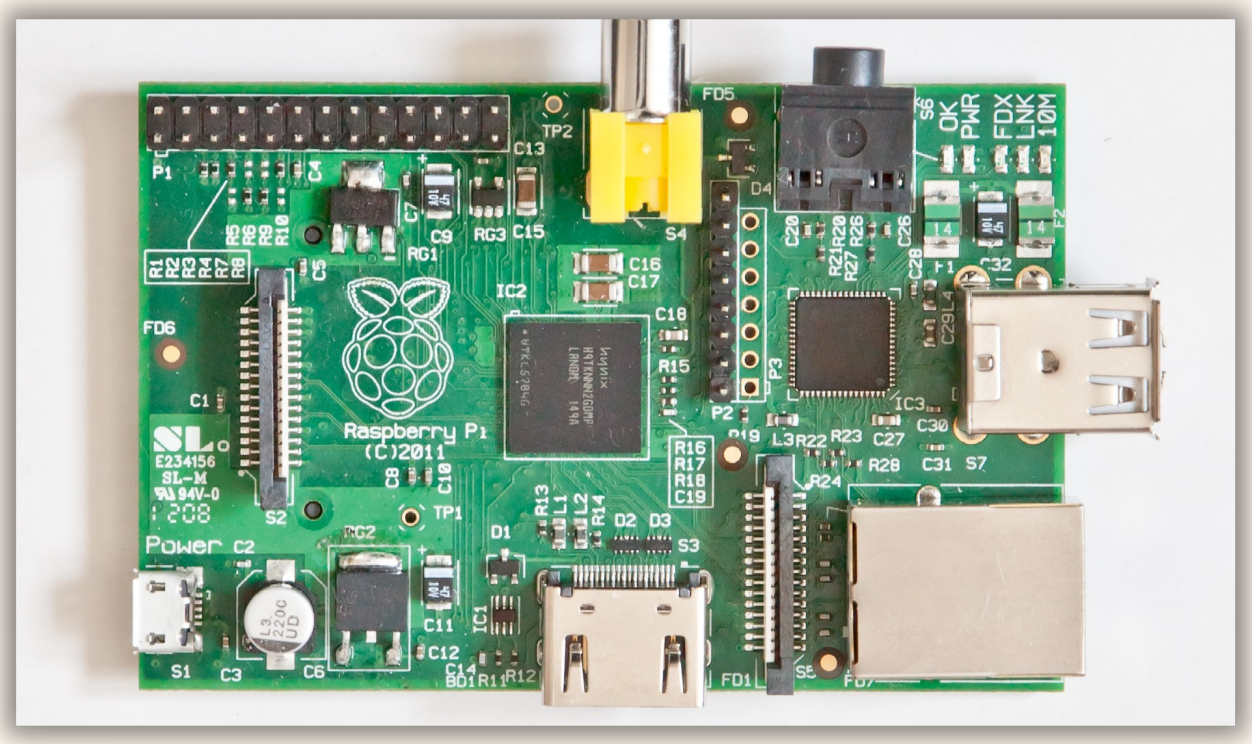

WHAT EXACTLY IS RASPBERRY PI ?

Raspberry Pi, an efficient and powerful minicomputer having the dimension approximately equal to the size of a credit/debit card. It was invented by the United Kingdom Raspberry Pi foundation with the hope of enlightening and empowering the generation of learners to be more creative and efficient. Since its launch, many open-source communities have contributed towards open-source operating systems, apps and various other forms of computers which are similar to Raspberry Pi. Moreover, various embedded system scholars and researchers across the globe are constantly involved in the development of innovative projects using this module which is observed to have out-of-the-box application. Since its inception, Raspberry Pi is under constant up-gradation both in terms of both software and hardware which is thereby making it a “Full-Fledged Computer” with a possibility to compute intense task within a specific timeframe.

RASPBERRY PI APPLICATIONS

1. Desktop PC

Using Raspberry Pi, the microSD card, and a power supply, a simple desktop can be made.

2. Game Servers

Raspbian, the default OS of pi comes with a special version of Minecraft game pre-installed.

3. Retro Gaming Machine

Raspberry Pi is ideal as a retro gaming machine. it fits as one of the lightest components of a machine. Particularly, it's a version, The Raspberry Pi Zero, that can fit into small spaces for gaming projects.

4. Robot Controller

There are many robot-controller Raspberry Pi projects. There is a dedicated robotics package for Pi, duly powered with the device battery and used to communicate and control robots.

5. Stop Motion Camera

Using Python and a suitable mount (standard tripod for clay- or toy-based) and the availability of a well-lit area Stop motion camera can be built.

6. FM Radio Station

Raspberry Pi can also be used to broadcast on FM radio. Pi can broadcast only over a short-range.

7. Web Servers

Another great application of Raspberry Pi are to create a web server out of it. What this means is that it can be configured to host a website much like any other server.

8. Build a Twitterbot

A Twitterbot is a software program that controls a Twitter account. The bot program runs autonomously, tweeting, re-tweeting, liking, following, or direct messaging other accounts.

RASPBERRY PI REAL WORLD PROJECTS

All of the Raspberry Pi projects mentioned below may be completed under an hour. They're great for beginners because they don't require any prior understanding of coding, 3D printing, or wiring.

SPEECH RECOGNITION

Raspberry Pi can turn spoken words into text in real-time. All you need is a Raspberry Pi, a microphone, and the free, open-source spchcat software.

TIME-LAPSE CAMERA

This project is for beginners explores time-lapse photography, so you can direct your brick flix, watch cress grow in minutes, or watch the stars turn.

Hue Ambient Light Synced to TV

If you have a Phillips Hue light, you can sync it to any TV set via the Raspberry Pi cam, providing ambient lighting around the TV that mimics the colors on TV

VIDEO DOORBELL

The project isn't very complicated, you just need some basic soldering skills to finish it off, and the good news is that all the components fit in a small case.

AIR QUALITY MONITORS

If you live in a dense city, air quality is something to consider. A Raspberry Pi with a Sensirion SPS30 sensor can measure the air quality both in and out.

WIFI EXTENDER

This project turns the Raspberry Pi into a low-cost, high-performance WiFi extender. The inbuilt WiFi module provides the network connection.

PROS AND CONS OF RASPBERRY PI

PROS

- Inexpensive device and is easily available across the worldwide
- Extensive peripheral support
- Multiple Sensors
- Supports all the kinds of Coding languages
- Fast Processor
- Can be Used as a Portable Computer

CONS

- Missing Internal Storage (increases the boot time of the board)
- Missing Graphics Processor
- Overheating
- Unable to Install Windows OS
- Real-Time Clock (RTC)
- Unable to do any complex multitasking.

Great resources to learn more about Raspberry Pi :

Teach, Learn, and Make with Raspberry Pi

Raspberry Pi

Raspberry Pi - Wikipedia

Some exciting Raspberry Pi projects :

Projects | Raspberry Pi Projects

Raspberry Pi projects | Uses and ideas for 2022 - IONOS

Raspberry pi Projects - (projectideas.co.in)

- (PDF) A Review Paper on Raspberry Pi and its Applications (researchgate.net)
- Uses Of Raspberry Pi | Top 10 Vital Uses Of Raspberry Pi In Real World (educba.com)
- Raspberry Pi Technology, Working and Its Applications (watelectronics.com)

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