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IT Technologies

Raspberry Pi's

Raspberry Pi's are a low-priced small credit card sized computer containing only everything you need to connect a monitor, keyboard, mouse and the internet with some even featuring Bluetooth and Wi-Fi for example.
Newer editions of the Raspberry Pi like the model B series pack impressive features for its small size, sneaking up "on-par" with most laptops or small computers power wise.

- 4 USB ports
- Ethernet
- 4gb RAM
- Quad-core Processor
- Wi-Fi & Bluetooth
- Dual Monitor Support

Fig 1. Raspberry pi 4 Model B

Development

The Pi was initially a micro-computer used to teach coding, but once found in the hands of hobbyist and engineers alike, the potential of this small piece of tech was revealed making it one of the most popular tech items world-wide.

There is a long list of capabilities with Raspberry Pis and other small computing devices, of which is ever-expanding due to the rapid development of technology in general.
Hardware is becoming more powerful all while also decreasing in size, it is no hidden fact that as we advance with technology the "chunkiness" or size of a device is a huge factor taken into consideration regarding hardware tech advancement.
Raspberry Pi's being one of the first things I discovered once taking a deep dive into IT, I was very surprised by the amount of power they can produce for such a compact little card, more so for how useful these devices can be for people of any level of tech experience or knowledge. As soon as I hit search with "Raspberry Pi" in the google search bar, I was able to see how popular they are with many different projects being shared and spoken about all over the net.
With resources like YouTube & Reddit to learn how to emulate these projects and do it yourself, there is a MASSIVE community of people sharing their creations and teaching others how-to. Buying branded, overpriced and really just simple electronic devices is becoming overrated, because why not just build it yourself?

Models / Generations

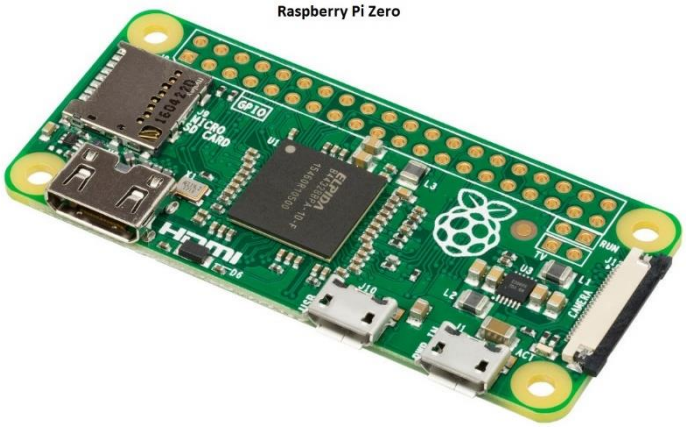
The first gen Raspberry Pi (Model B) released in February 2012, with a follow up Model A 2 years later in 2014. The "Raspberry Pi 2" was then released in 2015 originally comprising of a 900MHz 32-bit processor with 1gb RAM, with later versions featuring a 1.2Ghz 64-bit processor.

With Raspberry Pi's being only a decade in the market they have already shown how far they can come in such small spans of time. In the same year, the Raspberry Pi 2 was released, a smaller size "Raspberry Pi Zero" was introduced with reduced Input/Output and GPIO capabilities.

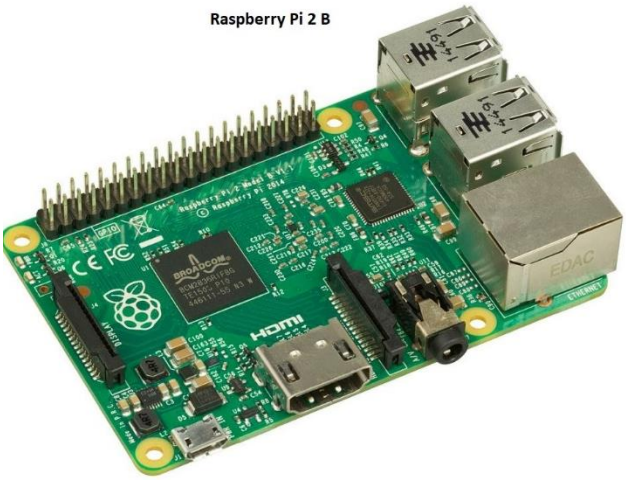
2 years after the release of the Raspberry Pi Zero, in 2017 a newer version of the Zero model featuring Wi-Fi and Bluetooth capabilities was launched as the "Raspberry Pi Zero W" model, with the "Zero WH" model following at the beginning of 2018. The WH model came with pre-soldered GPIO headers, knocking out the lack of I/O capabilities from the "Zero" generation of Raspberry Pi's, proving yet again how rapid the advancement is with small computing technologies.

There have been many different models over many

Raspberry Pi Zero



Raspberry Pi 2 B

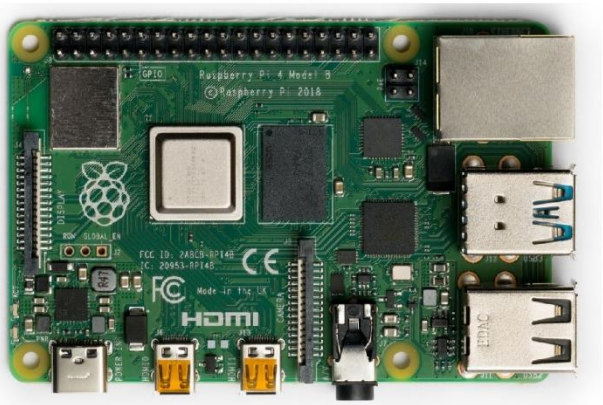


generations of the Raspberry Pi, from Pi 1 to 4 and everything in between. Most launches generally including A and B models, A model being the lesser costing variant with reduced capabilites, and B being the initial model without any re-evaluated designs or being reduced down into something more compact and simple. The full list of all the models follow below;

- *Pi 1 Model B (2012)*
- *Pi 1 Model A (2013)*
- *Pi 1 Model B+ (2014)*
- *Pi 1 Model A+ (2014)*
- *Pi 2 Model B (2015)*
- *Pi Zero (2015)*
- *Pi 3 Model B (2016)*
- *Pi Zero W (2017)*
- *Pi 3 Model B+ (2018)*
- *Pi 3 Model A+ (2019)*
- *Pi 4 Model A (2019)*
- *Pi 4 Model B (2020)*
- *Pi 400 (2021)*

Raspberry Pi 3 B+

Raspberry Pi 4 B



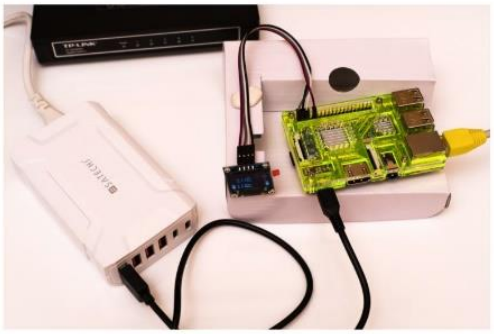
GPIO Pins

General Purpose Input/Output pins are a powerful feature on the Pi's located at the top of the board containing 40 GPIO pins. Prior to its 2014 Pi 1 model, the boards only held 26-pin GPIO's. The pins send and receive electrical signals allowing you to control them through an Operating System, meaning you can control a range of things that require electricity to run; LED lights, buttons, switches, motors, audio & radio signals, LCD's the list goes on.

A few examples of leading projects out there:

- *Wi-Fi Extender*
- *LCD Displays (clocks, stats, images & videos etc.)*
- *Smart Mirror*
- *Media Streaming (DIY chrome cast)*
- *Security Cameras*
- *AI Thermometer*
- *Network Attached Storage (NAS)*
- *Touchscreen Tablets*

Wi-Fi Extender



Smart Mirror

AI Thermometer

How will this affect you?

In the long run this will affect me in a hobbyist way, I am very interested in making my own means of something useful. Finding out how advanced it can get and is becoming with small computing devices like the raspberry pi's fills myself with nothing but excitement and curiosity. Knowing I can make small and handy devices from the comfort of my home with these devices is ground-breaking, no more forking out ridiculous amounts of money for small, highly breakable devices used daily? Yes please.
Along with that I believe the massive community already out there amongst raspberry pi's affects the way I can learn about this technology, simply typing in a search bar 'how to make a smart mirror' for an example. AI Thermometer? Who knew I would be able to tell who has a fever when they enter my home or quarters, small computing technology is ground-breaking to D.I.Y as an aspect. Not only all that, but I also feel this technology has furthered my interest in my ideal job, computing & hardware engineering, wanting to know more of what is out there and can be done now. Before I chuck away or consider any unused electronics like TV's or computers useless to me, I now think of them as useful for making another electronic device, raspberry pi's make that doable.

References

Smart mirror photo reference:
Design Review: Smart Mirror – Aesthetics of Design (aesdes.org)
Leading Project examples reference:
17 Best Raspberry Pi Projects for 2021 | Simply Smarter Circuitry Blog (circuitspecialists.com)