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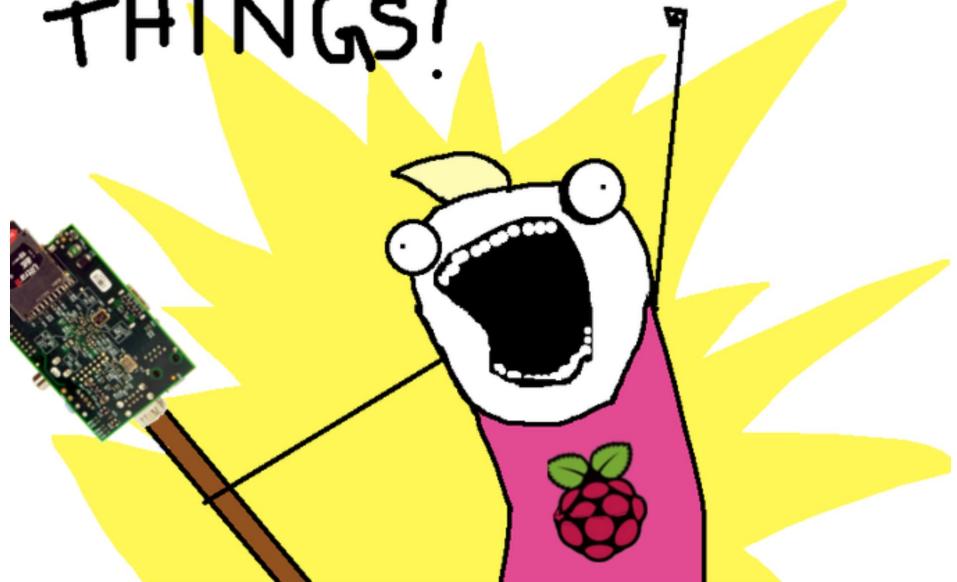
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ritlug.com/get-involved, rit-lug.slack.com

Pi Fest!

October 2019
Jeffery Russell

CONNECT ALL THE
THINGS!



What Is a Raspberry Pi?



Raspberry Pis are...

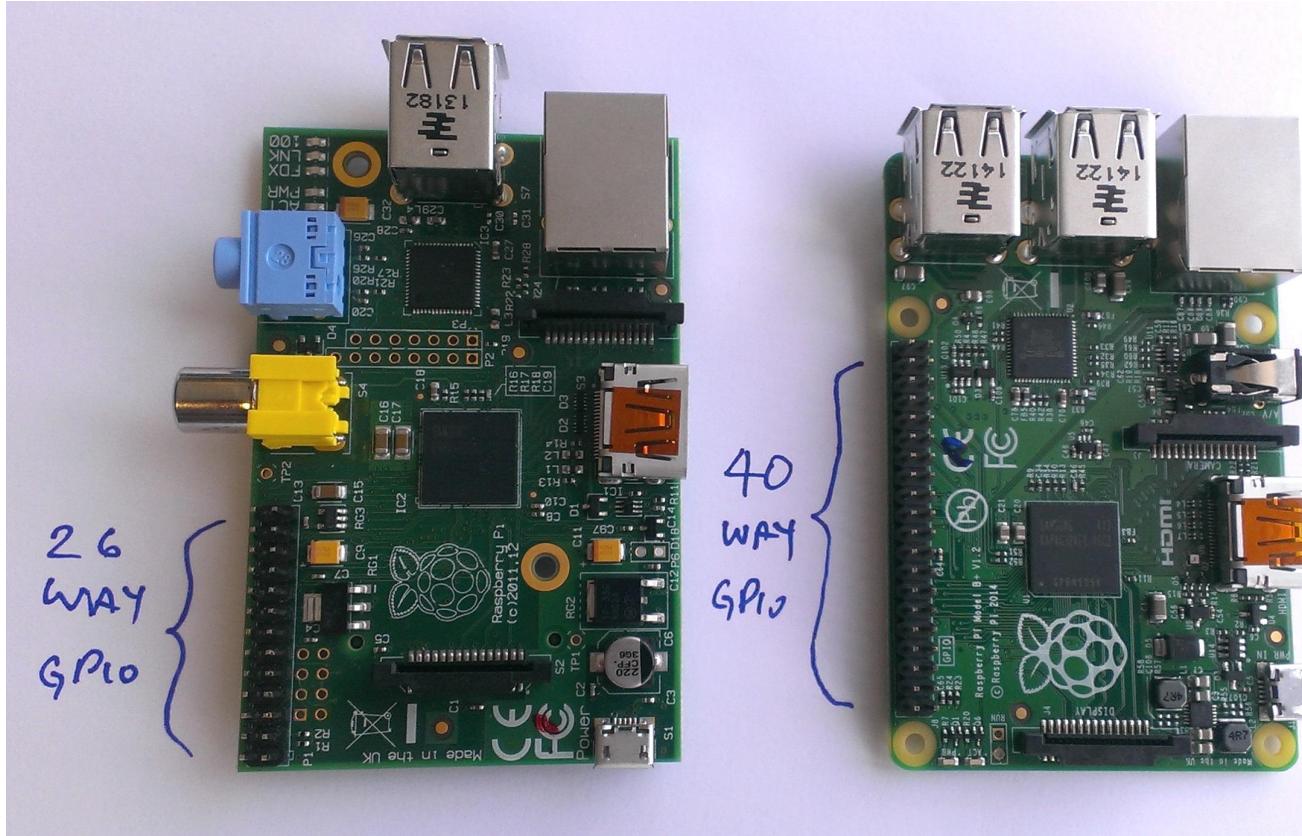


- Small
 - Cheap
 - Single Board Computers
 - Developed by a UK company
 - Aimed towards education and DIY projects
-

What Type of Pis are there?



Pi 1, 2: Aka “good old bois”



Pi 3: Aka Just a Pi

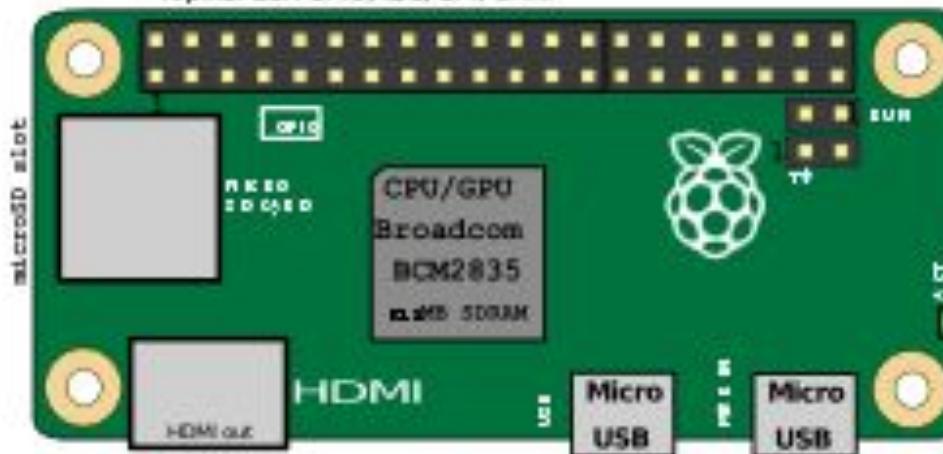


- Only \$35
 - On board wifi and bluetooth 4.1
 - 4 USB 2.0 ports
 - 1 GB of RAM
 - Full sized HDMI port
 - Micro sd card port
 - 40 GPIO pins
 - 1.2 GHZ quad core processor
 - Micro usb power
-



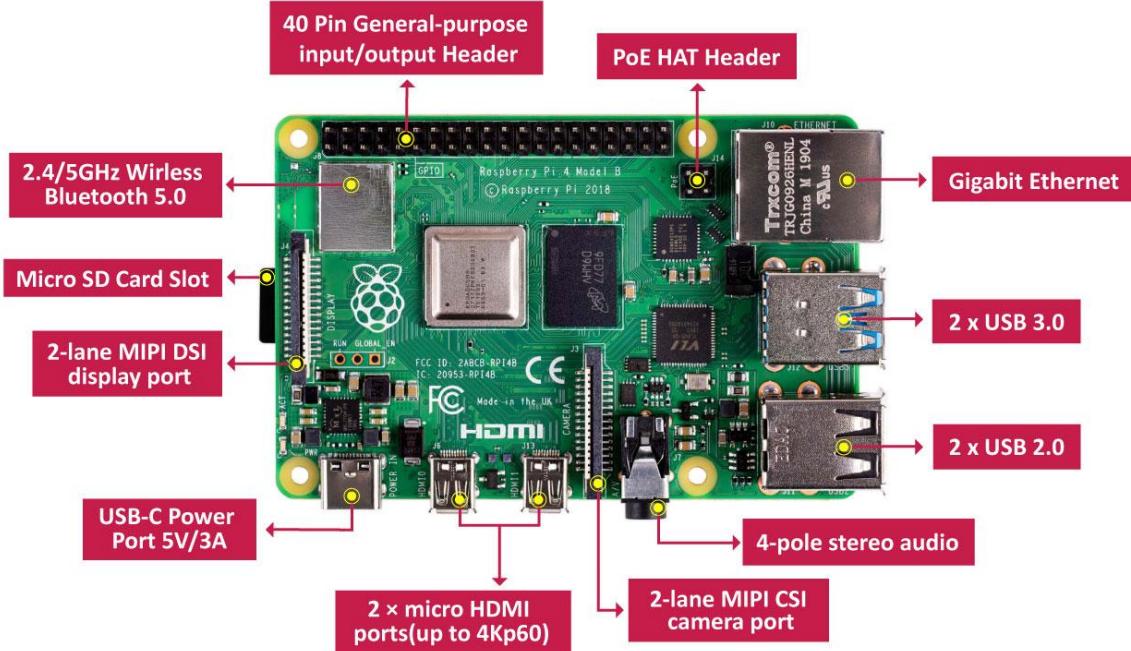
Pi Zero: Aka “Small Boi”

40pins: Z80 GPIO, I2C, SPI, UART



- 512 MB ram
- Mini hdmi
- 40 pin GPIO
- Micro sd card for storage
- Micro USB
- Only “\$5”!!!

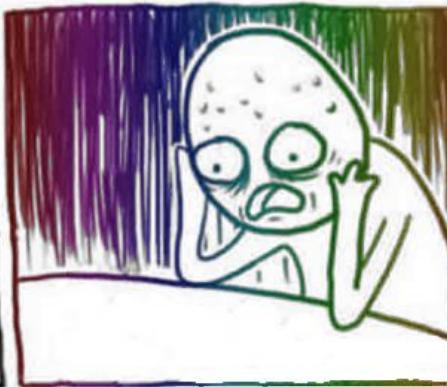
Pi 4: Aka “Big Boi”, “Basically a PC”



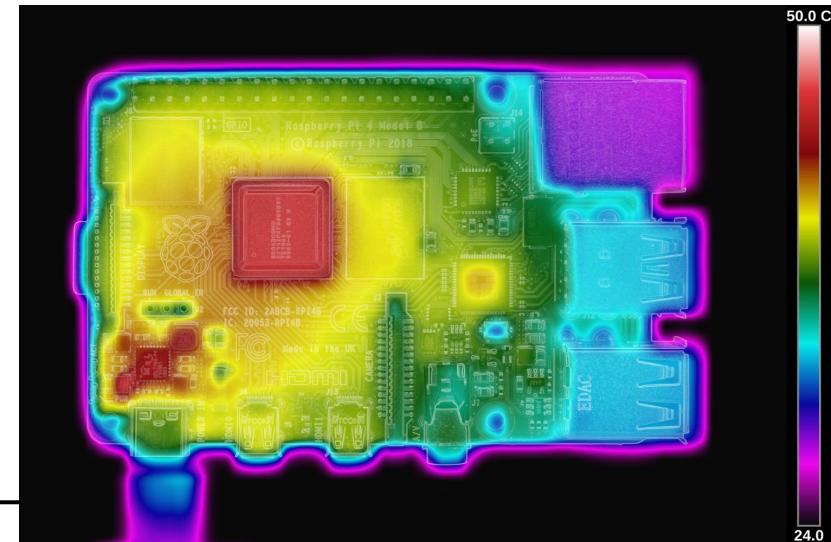
- Ram ranges between 1-4GB
- Quad core ARM chip running at 1.5GHZ
- USB 3.0
- Gigabit Ethernet
- Dual 4k Micro HDMI ports
- Bluetooth 5.0
- Onboard Wireless chip
- Price between 35-55

My new PC has
128GB of RAM, SLI,
1080ti an i9 7900X
and-

Needs RGB



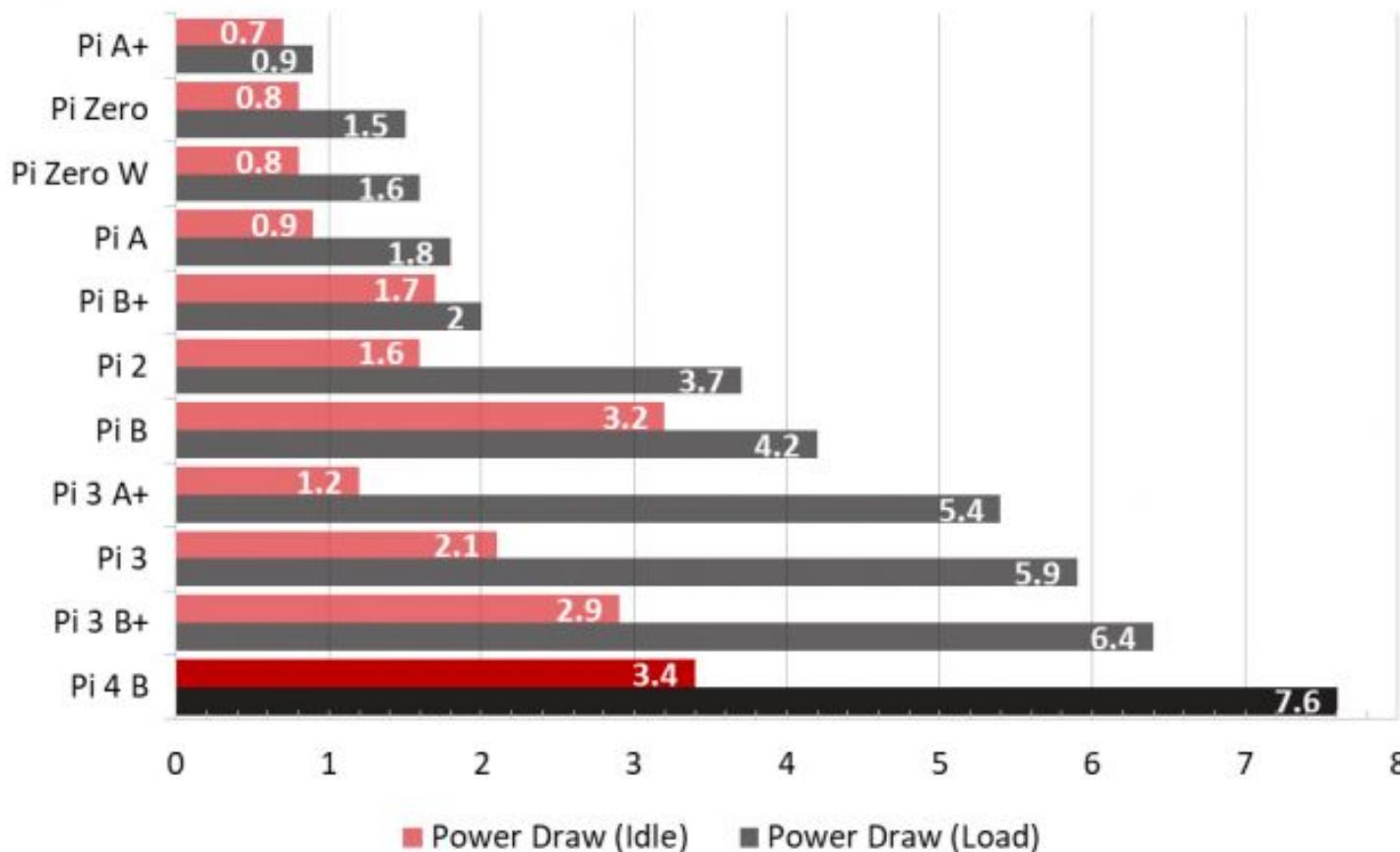
The Pi 4 gets hot...



Power Draw Benchmark

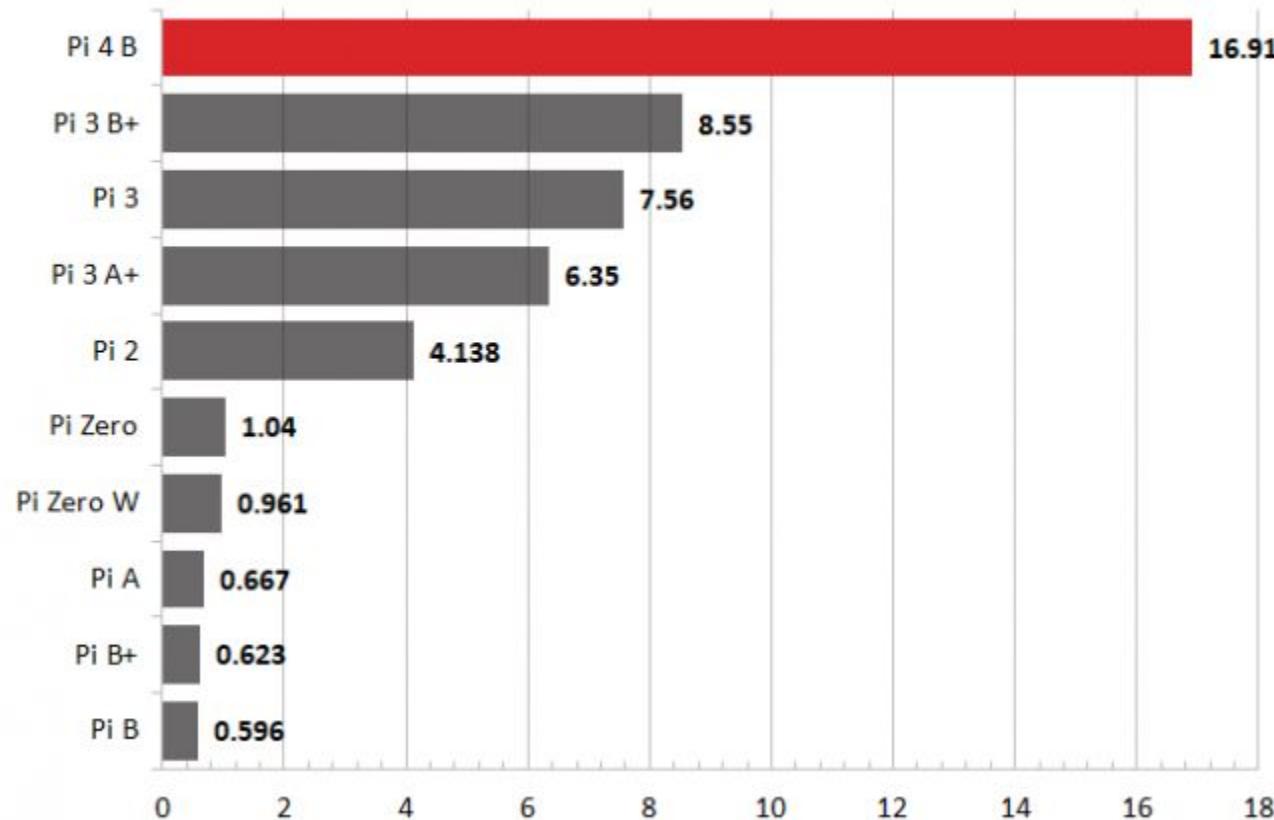
Watts (Lower is Better)

tom's HARDWARE



Speedometer 2.0 Browser Benchmark
Runs Per Minute (Higher is Better)

tom's HARDWARE



- The “speedometer” benchmark measures overall responsiveness by loading web apps.
- [Source](#)

What Can they Do?



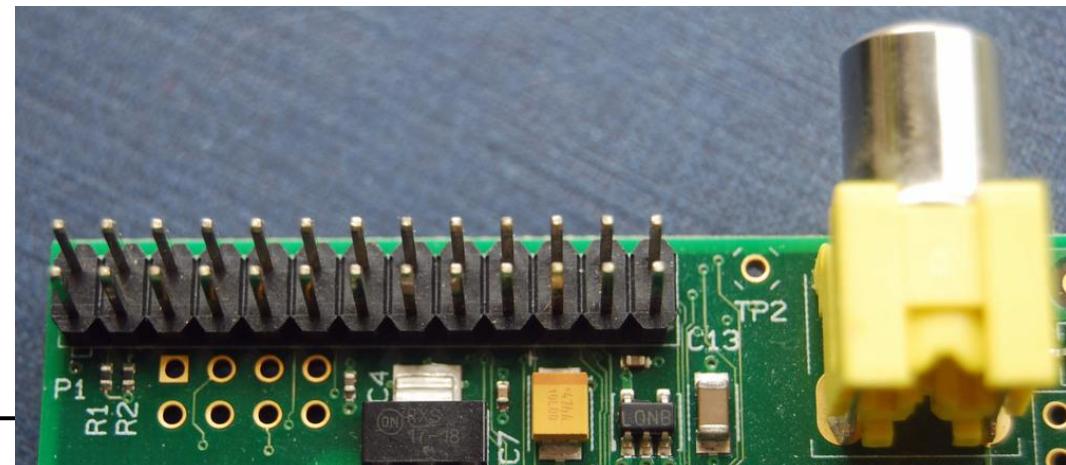
GPIO#	2nd func.	Pin#	Pin#	2nd func.	GPIO#
	+3.3 V	1	2	+5 V	
2	SDA1 (I ² C)	3	4	+5 V	
3	SCL1 (I ² C)	5	6	GND	
4	GCLK	7	8	TXD0 (UART)	14
	GND	9	10	RXD0 (UART)	15
17	GEN0	11	12	GEN1	18
27	GEN2	13	14	GND	
22	GEN3	15	16	GEN4	23
	+3.3 V	17	18	GEN5	24
10	MOSI (SPI)	19	20	GND	
9	MISO (SPI)	21	22	GEN6	25
11	SCLK (SPI)	23	24	CE0_N (SPI)	8
	GND	25	26	CE1_N (SPI)	7

(Pi 1 Models A and B stop here)

EEPROM	ID_SD	27	28	ID_SC	EEPROM
5	N/A	29	30	GND	
6	N/A	31	32		12
13	N/A	33	34	GND	
19	N/A	35	36	N/A	16
26	N/A	37	38	Digital IN	20
	GND	39	40	Digital OUT	21

GPIO Pins

- GPIO (General-Purpose input/output)
- Programmable pins makes it ideal for hardware projects



These things run an entire OS with a Desktop environment!



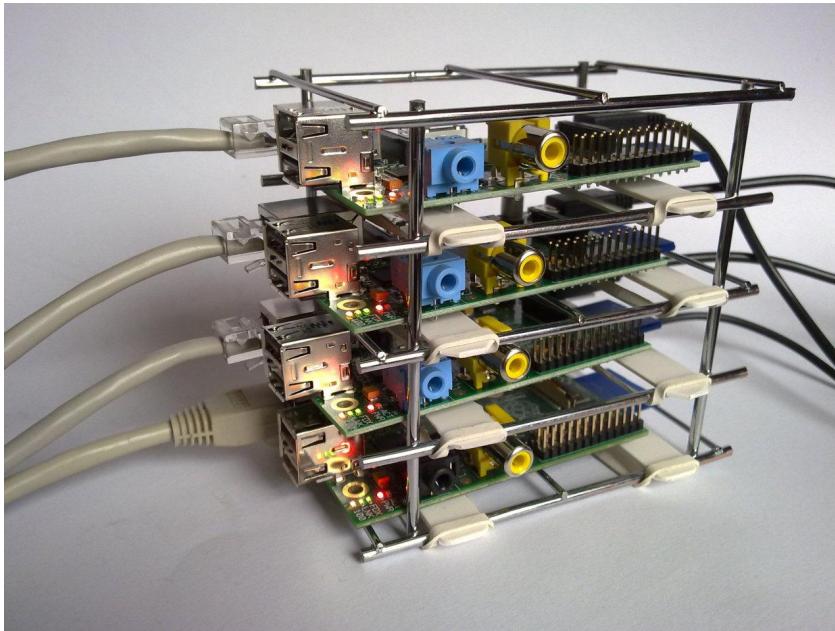
- Official distribution for the Pis is Raspbian
 - Comes with a bunch of educational software bundled
 - Debian based
 - Optimized for Raspberry pis

Raspbian

Projects!!



Clusters



- Small, cheap computers is an excellent way to play around with and test distributed systems

-
- 
- [Cluster Hat](#) project created a board which enables you to connect 4 Pi Zeros to a single Raspberry Pi
-

Magic Mirrors



- oh mirror oh mirror on the wall... how shall I install Gentoo on this ball?



Retro Pi

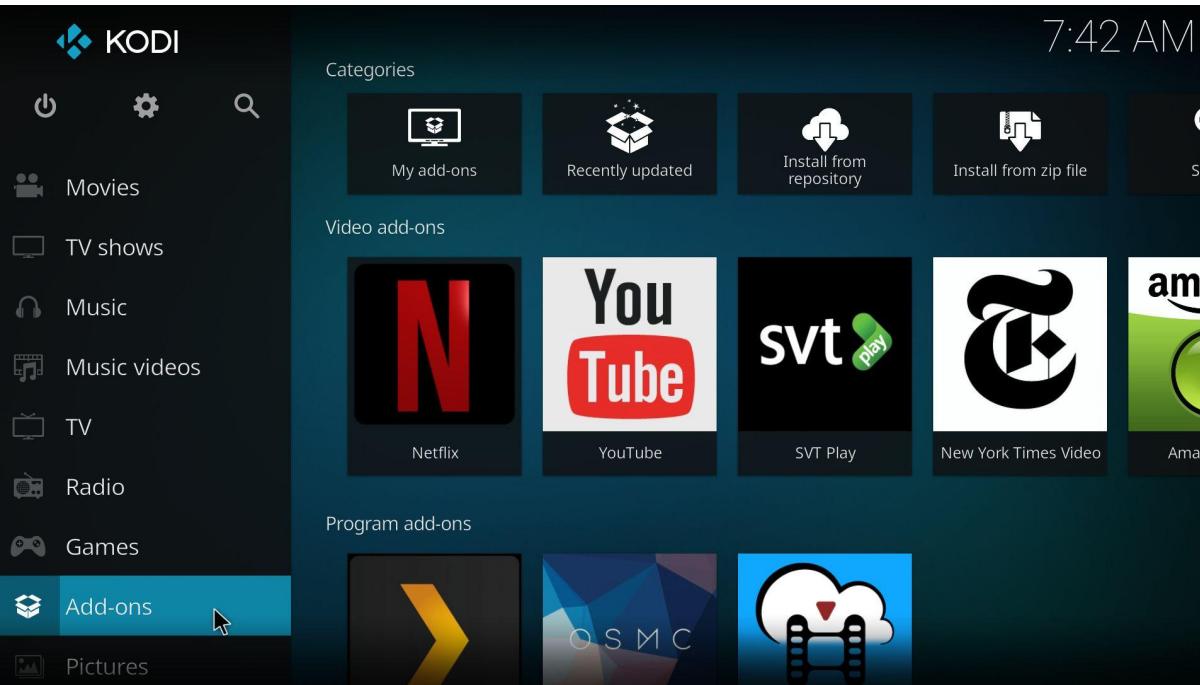


- Bundles and nicely provides a user interface for open source game emulators on the PI
- Easy to install
- You can play games from:
 - Atari
 - GameCube
 - GameBoy, GB Color
 - Nintendo 64
 - Nintendo DS
 - Dos
 - Dragon 32?
 - And many more!!!



Kodi

- Open source theatre software



Mozilla IOT Web Things



On/Off Switch



ACTIVE



Multi-level
Switch



Coloured
Dimmable Bulb



23W

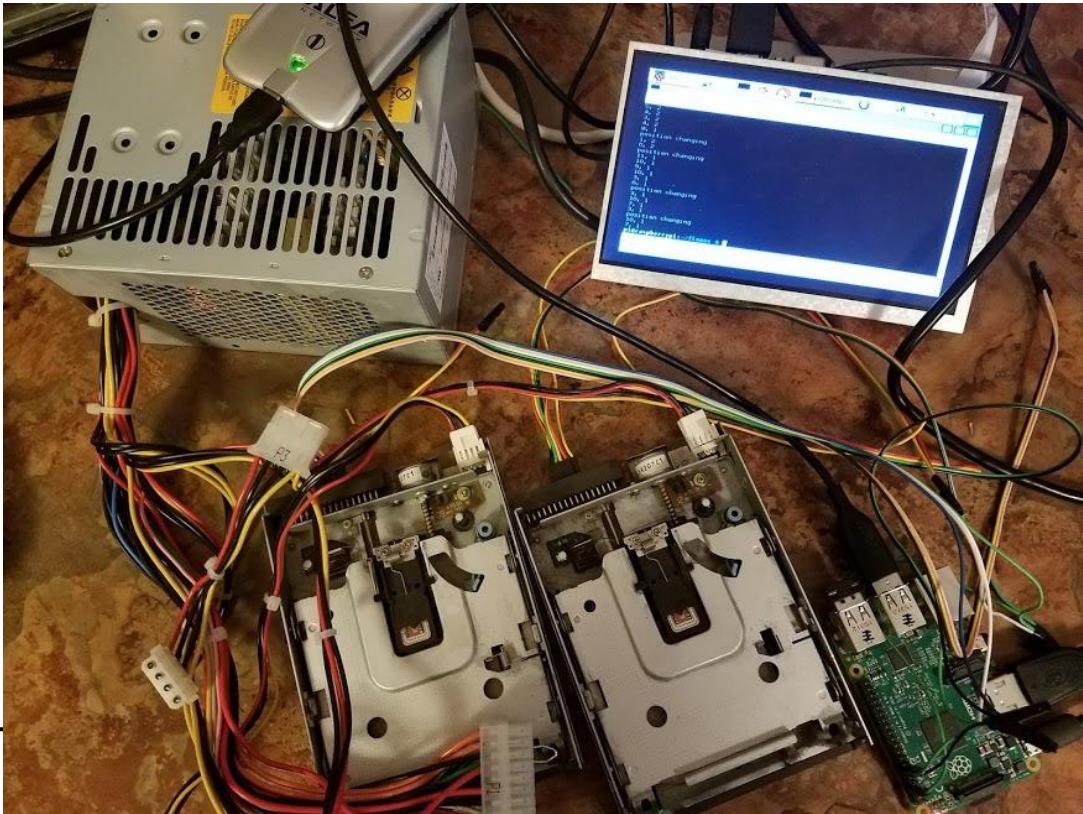
- Open platform for monitoring and controlling open home devices

Wiring Projects

- GPIO pins makes it easy to make diy projects with wiring similar to an arduino
- Magic Letters
- Garage door opener



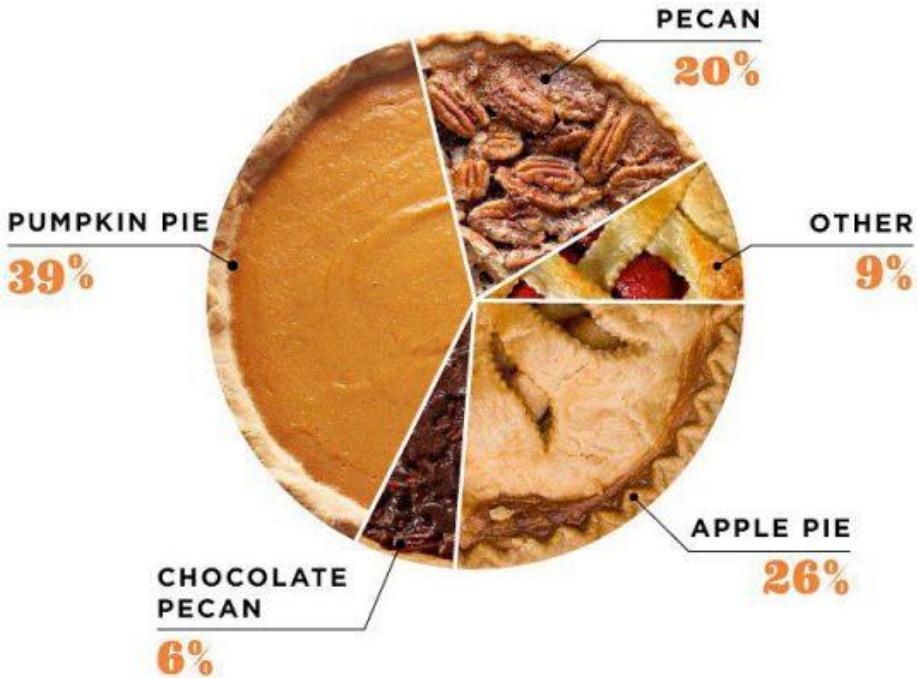
Musical Floppy Drives!!



A M E R I C A ' S .

Favorite Pies

Questions?



Live Pi Demo and Workshop

