

Single Board Computers

“ A single-board computer (SBC) is a complete computer built on a single circuit board, with microprocessor(s), memory, input/output (I/O) and other features required of a functional computer”.

- Homebrew SBC's
- Arduino
- Picduino
- Beagle Bone
- Raspberry Pi
- Banana Pi
- The list goes on

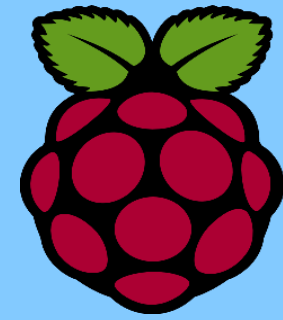
Single Board Computers

- Low Cost - “bang for buck”
- Free Software
- Free Development Environments
- Free easy to learn programming Languages
- Fantastic support – Tutorials, Blogs, code examples
- Hundreds if not thousands of Apps
- Countless add-on boards and accessories

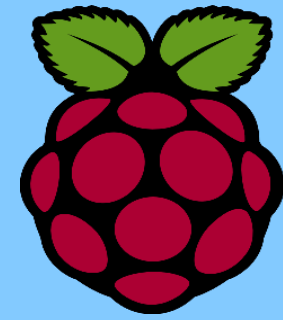
A Few Ham Radio Apps

- Auto Band Selector for Linear Amp
- Auto Antenna Switch
- Remote Antenna Switch
- CW Keyer
- Auto Antenna Tuner
- RF PWR and SWR Meter
- APRS Tracker
- Beacon Controller
- Rotator Controller
- Software Defined Radio
- Satellite Tracker
- CW Decoder
- Lightning Detecto
- Echolink for Raspberry Pi
- D-Star Access Point
- WSPR Beacon
- Packet radio
- Remote Weather Station
- Slow Scan TV
- Frequency Counter for Older Radios

Raspberry Pi



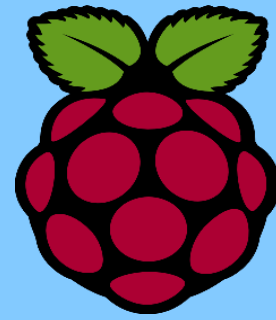
Raspberry Pi



Credit card sized single board computer

- Low cost - ~ \$50
- Powerful
- Can be used as general purpose computer or application specific
- Extensive support – Web sites, projects, hardware, software, blogs, forums, MagPi magazine, etc
- Original concept was to encourage kids to learn to code
- More than 10 million Pi's sold

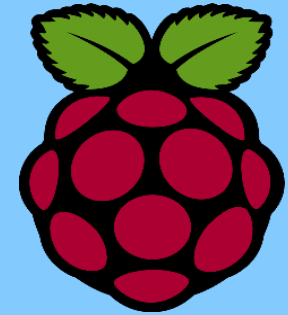
Raspberry Pi



Hardware: (Pi 3)

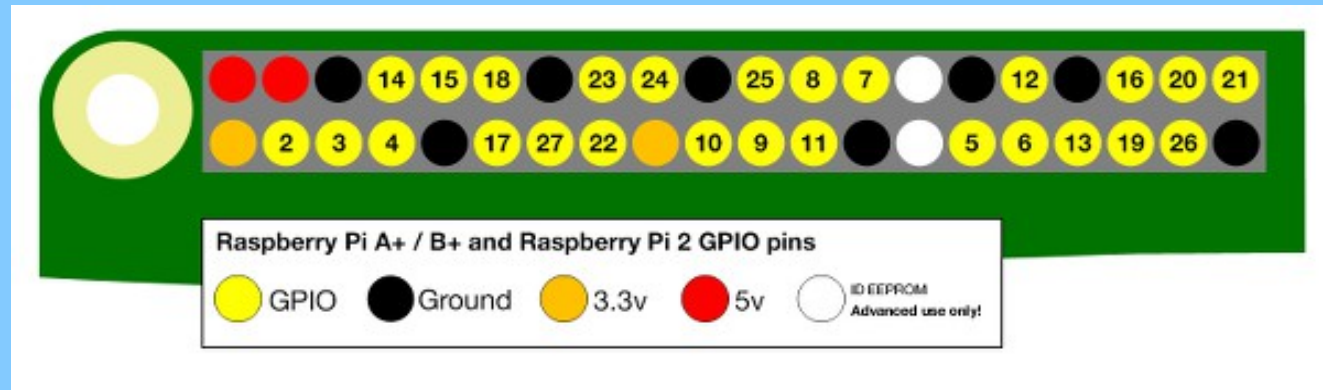
- Multi core “ARM” processor, GPU
- 1.0gb RAM
- 1.2ghz clock
- WiFi, Bluetooth, TCP/IP, USB, HDMI, analog audio, camera port, SD Card slot
- 40 pin GPIO (General Purpose Input/Output)
- 10 times power of original Pi

Raspberry Pi

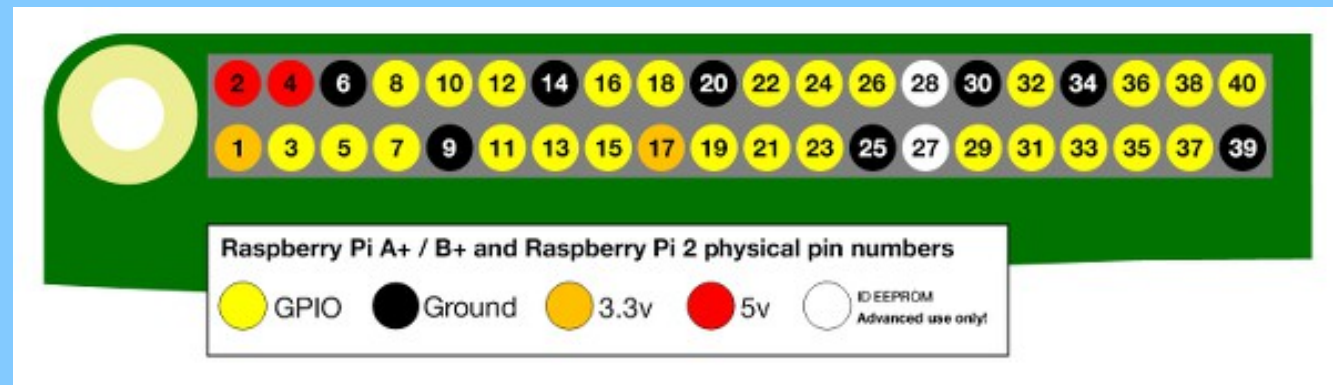


The GPIO (General Purpose Input/Output)

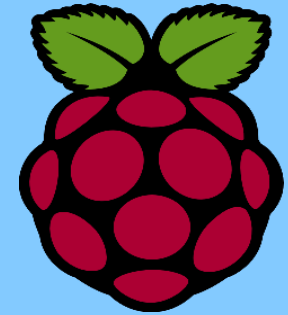
Actual



Virtual



Raspberry Pi

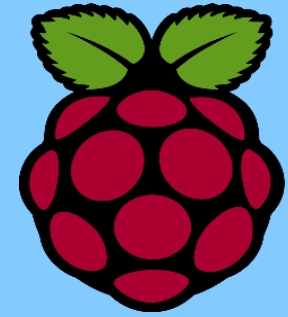


Software includes:

- PIXEL (Pi Improved Xwindows Environment, Lite)
- Raspbian OS (Debian 8 Linux)
- NOOBS – New Out Of Box Software
- Ubuntu
- Windows 10 Core (IOT)
- OSMC Merdia Centre
- OpenElec Entertainment Centre
- PiNet Classroom Management

RISC OS – Non Linux

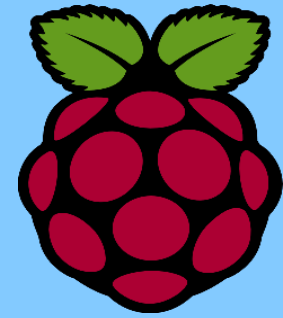
Raspberry Pi



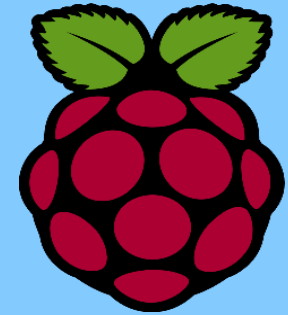
Which is better – Raspberry Pi or Arduino ?

- Neither – They are different
- Raspberry Pi is general purpose or application specific – Linux OS, multiple programming languages
- Arduino has no OS
- Program Arduino via IDE and Arduino language (similar to “C”)
- Arduino is application specific

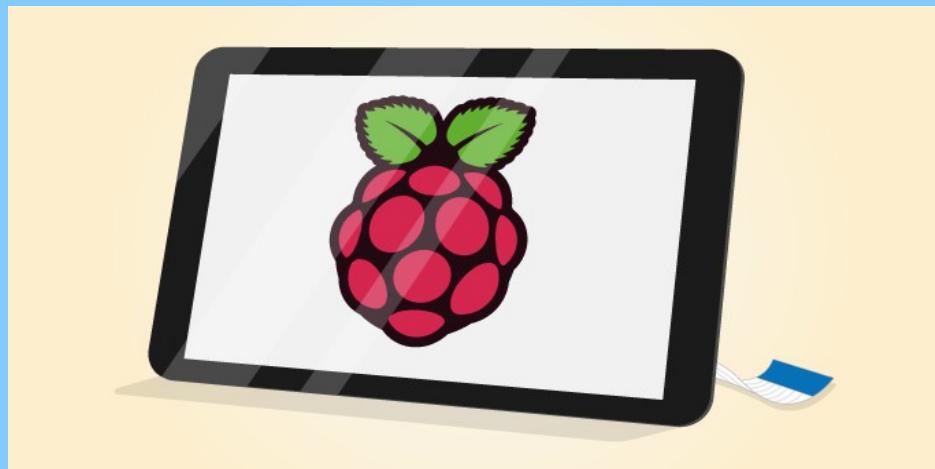
Which Model Pi ?



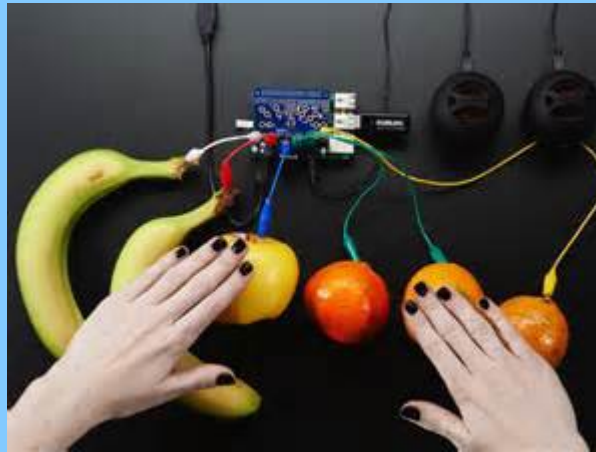
Pi Models



- Pi 3 Model B ~ \$55 (1.2ghz, quad core, 1,0gb, faster GPU)
- Pi 2 Model B ~ \$50 (900mhz, quad core, 1.0gb)
- Pi 1 Model A ~ \$35 (700mhz, single core, 256kb)
- Pi Zero (\$5 – if you can get one) (1.0ghz, 512kb)
- Pi 7” Touch Screen ~ \$100



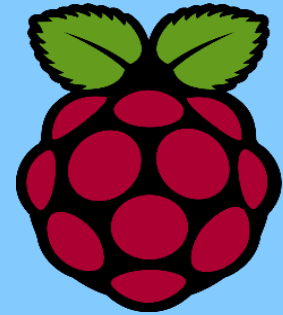
A “Hat” by any other name...



Need more storage?



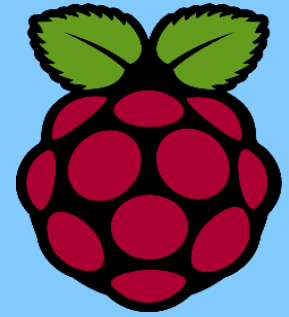
Raspberry Pi



Some Pi Projects:

- Robotics
- Drones
- Weather Stations
- Home Automation – Turning on light switches
- Ham Radio
- Home entertainment
- Web Server
- Computer Games

Raspberry Pi



Thank You!
Questions?