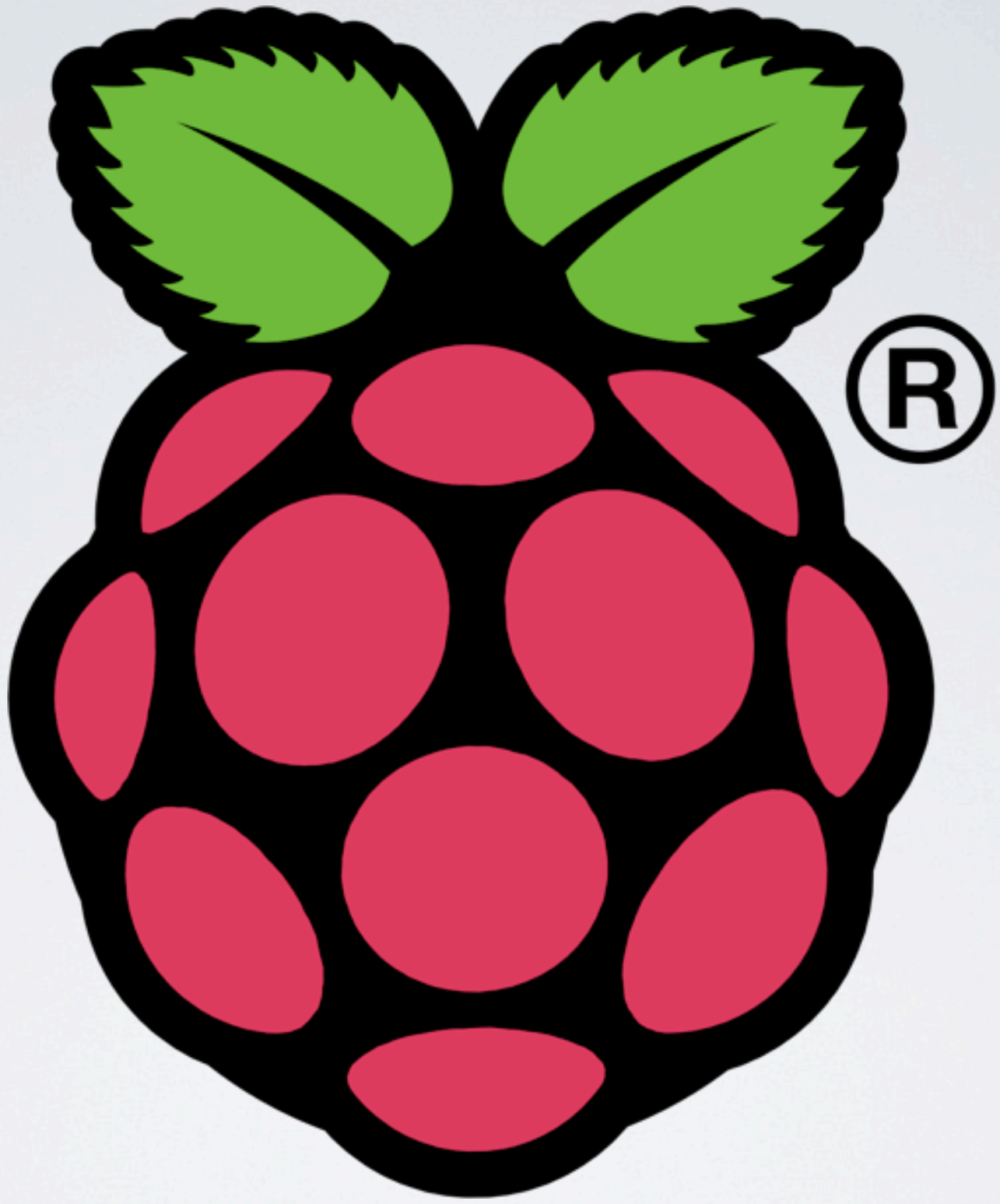


RASPBERRY PI

INTRODUCTION

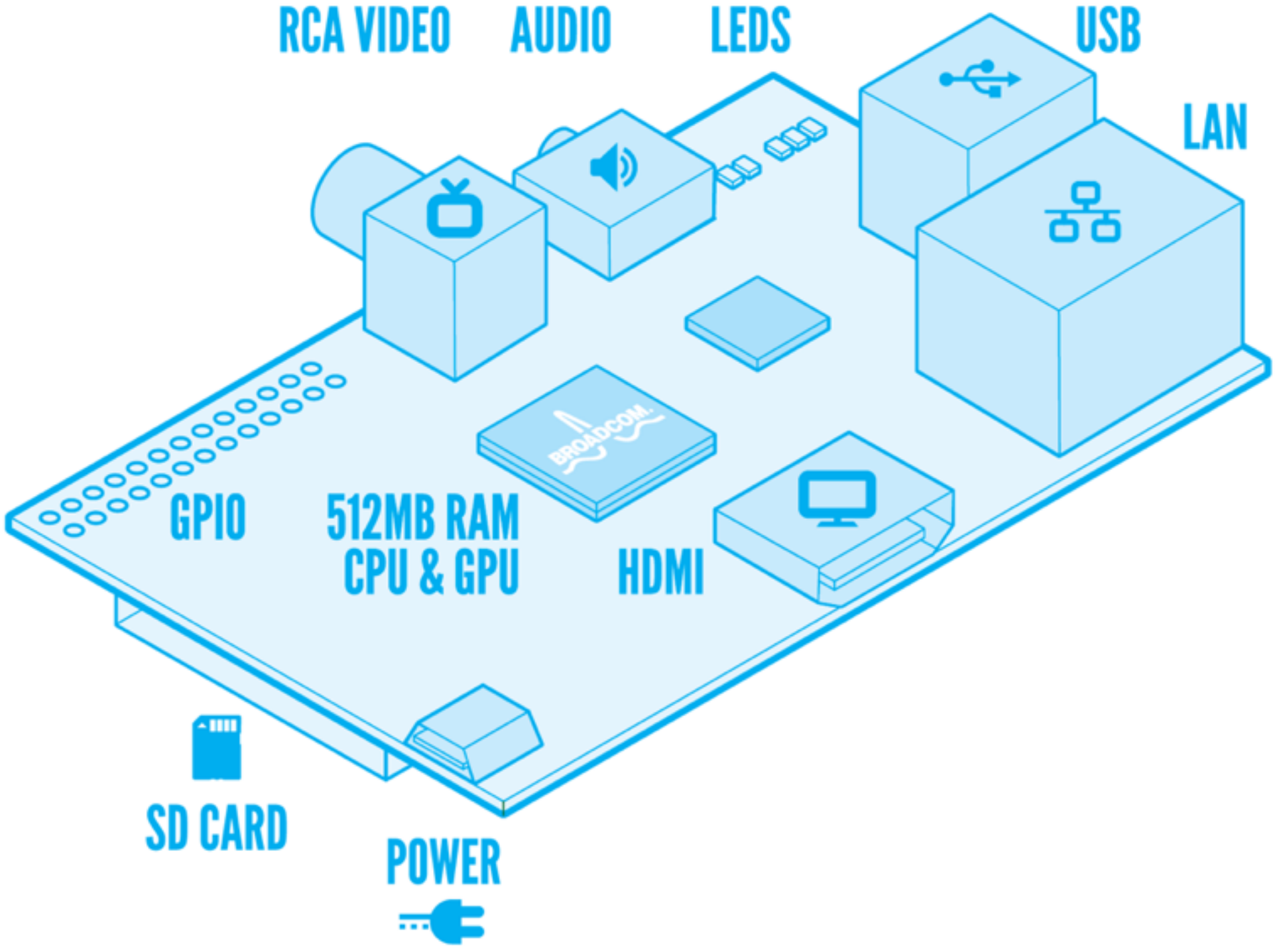
- Dr. Eben Upton had a goal of creating a small inexpensive computer to put the fun back into learning computing.
- Great way to introduce folks to programming in a non-intimidating manner.
- The Raspberry Pi Foundation exists to "promote the study of computer science and related topics".
- Easy to hack with. I saw a robot at the HackerDojo using a Raspberry Pi.

placeholder for picture of RPi in robot

THE HARDWARE

- Broadcom BMC2835 SoC (System on a Chip)
- CPU: 700 MHz ARM1176JZF-S core (ARM11 family)
- GPU: Broadcom VideoCore IV
- Memory: 512MB (256MB for older models)
- Storage: SD Card
- 3v3 logic level, not compatible with 5v Arduino!

RASPBERRY PI MODEL B



WHERE TO BUY

- MCM Electronics
- Element 14
- RS Components
- I bought my RPi's from MCM electronics and was very pleased with the transaction. MCM ships from Dayton, Ohio.

LINUX

- Many Linux distributions to choose from:
- Raspbian: http://www.raspbian.org
- Fedora: http://fedoraproject.org/wiki/Architectures/ARM
- Arch: http://archlinuxarm.org
- Gentoo: http://www.gentoo.org/
- Exhaustive list: http://elinux.org/RPi_Distributions

YOU'LL NEED

- A computer with an Ethernet port and an SD card writer
- 2GB or more SD card
- Ethernet cable
- 5v micro USB power adapter (700mA or greater)
- Screen with HDMI or composite input (optional)
- USB Keyboard and mouse (optional)

INSTALLING RASPBIAN LINUX

- Download Raspbian image (torrent is best)
- Unzip the image
- Write the image to your SD card
- sudo if=2013-02-09-wheezy-raspbian.img of=/dev/rdisk1 bs=1m

BOOTING RASPBIAN LINUX WITH A SCREEN

- Connect screen, keyboard, and mouse
- Optionally connect ethernet cable to switch
- Power on Raspberry Pi
- Login with pi / raspberry

BOOTING RASPBIAN USING DHCP WITH NO SCREEN

- Connect Raspberry Pi to ethernet (switch or crossover)
- Ensure DHCP server is enabled on your computer (crossover) or router (network)
- Power on Raspberry Pi and watch DHCP logs for a new entry to appear.
- SSH to the new IP address and login using pi / raspberry
- ssh pi@192.168.1.XXX

UPDATE RASPBIAN (REQUIRES INTERNET)

- Updating Raspbian is just like updating a standard Debian system.

- apt-get update

- apt-get dist-upgrade

RASPI-CONFIG

- expand_rootfs - expand the root fs (/) to the size of your SD card. I've had this go bad in the past.

- change_pass - change the password of the pi user.

- update - update Raspbian to the latest version

PROGRAMMING

- Python - install the GPIO module to control the general purpose I/O pins.
- Ruby - install the wiringpi gem.
- Scratch - WYSIWYG game editor for children.
- C / C++
- LED blinker examples in repository for Python, Ruby, C and Bash

Scratch

animate

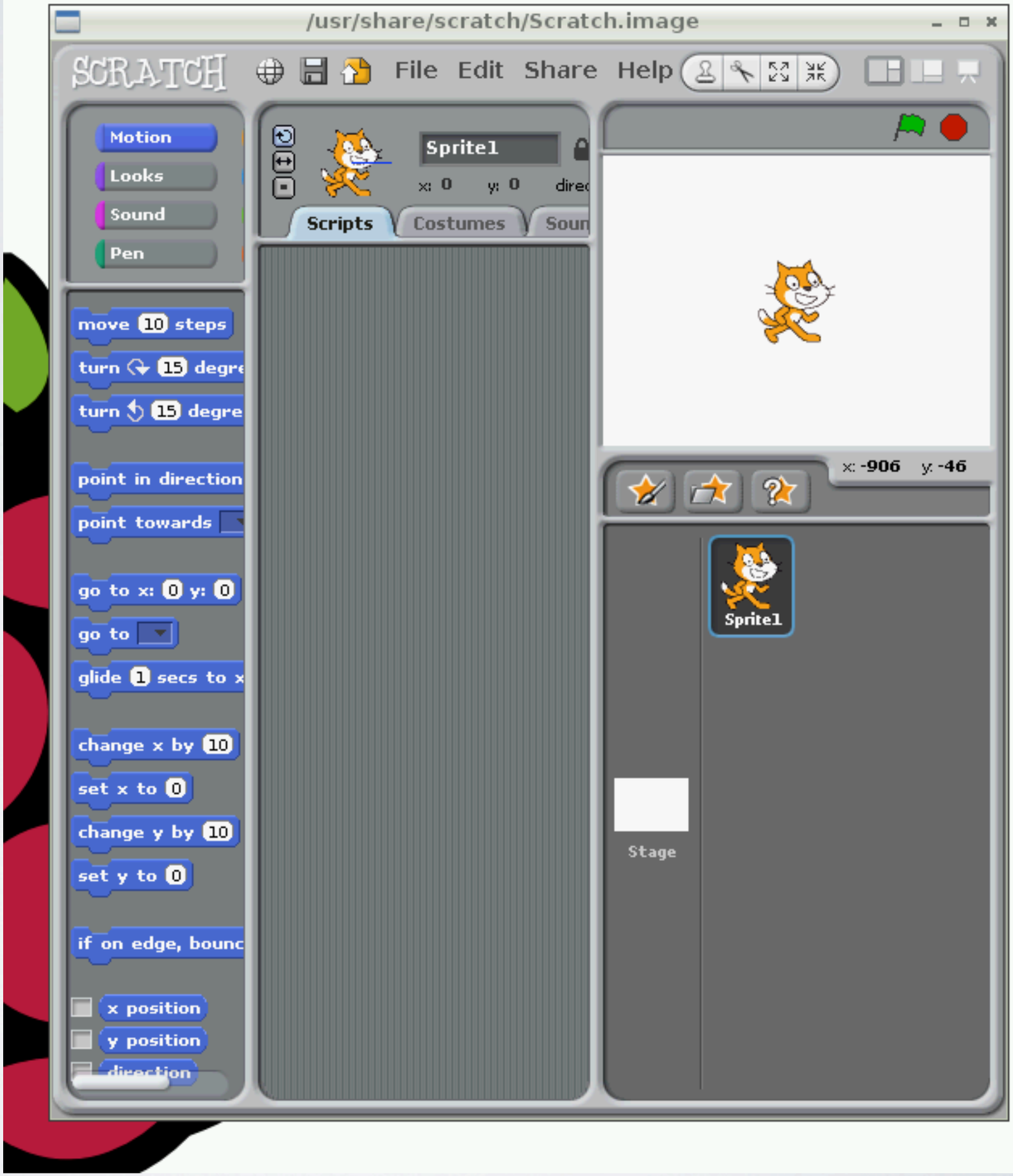
interact

easy language

basics of

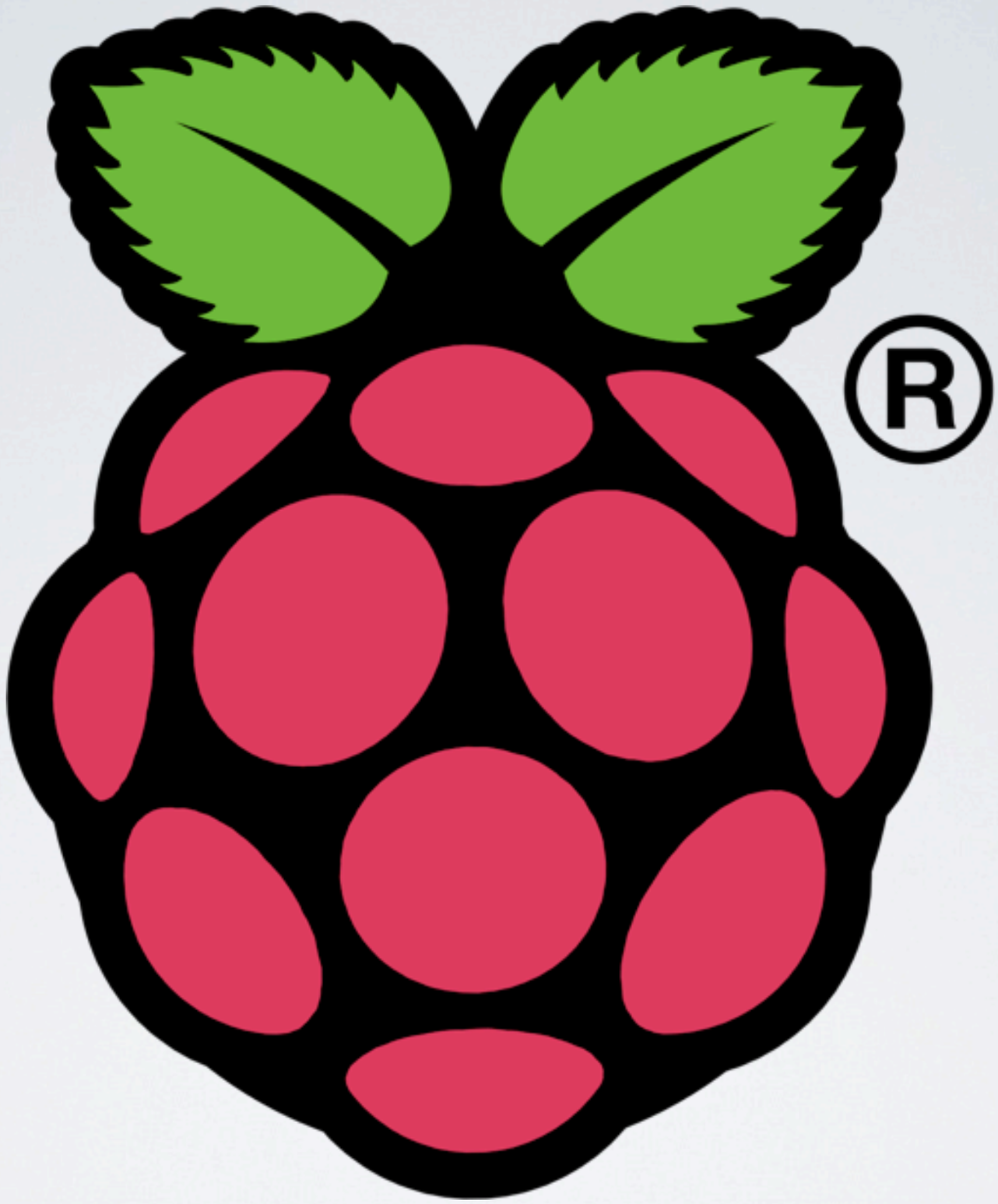
algorithm

creation



XBOX MEDIA CENTER (XBMC)

- Installation is very similar to Raspbian
- Demonstration



QUESTIONS?

LINKS

- Raspberry Pi Downloads: http://www.raspberrypi.org/downloads
- Raspbian Linux: http://www.raspbian.org/
- RPi Wikipedia Entry: http://en.wikipedia.org/wiki/Raspberry_Pi
- Raspberry Pi FAQs: http://www.raspberrypi.org/faqs