

Raspberry Pi



A cheap tool for education outreach

A multi-level approach to teaching about
programming/controls

Introduction

- Raspberry Pi is a \$35 computer
 - Can be used experimentally with no major concerns (cost, etc.)
 - Can see the components of a computer and how they work together
 - Great tool for learning about computers, how they work, and programming
 - Many online resources for answers to questions or new project ideas and tutorials



Outline

- Progressive curriculum on programming centered around the Raspberry Pi
 - Elementary (Scratch)
 - Middle (Advanced Scratch, Intro to Python)
 - High (Board IO, Analog, Digital, Differences)
- Scope adjusted for each level, time permitted, etc.
- Open source community developed, plenty of free resources online



Picture from

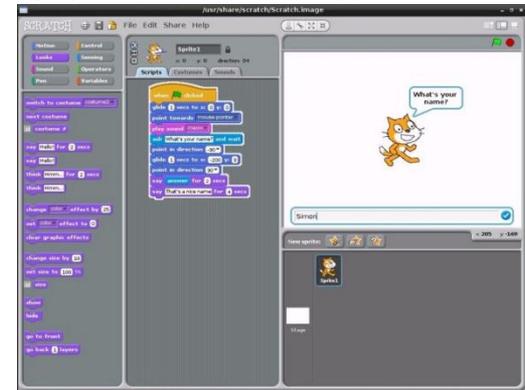
<http://www.v3.co.uk/v3-uk/review/2184065/raspberry-pi-review>

Elementary (3~5 grd)

- Scratch
 - Introduction to programming
 - Focuses on the logic, not syntax
- Designing cases

Picture from

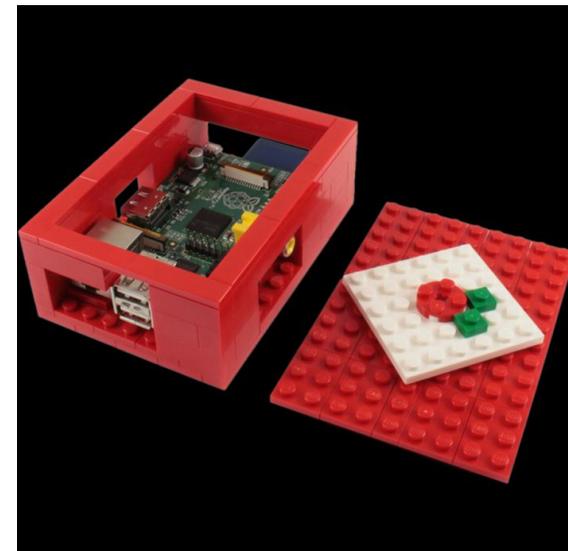
<http://www.expertreviews.co.uk/gadgets/1292536/the-raspberry-pi-foundation-raspberry-pi/2>



Scratch comes pre-installed



Picture from <http://www.raspberrypi.org/archives/date/2012/05>



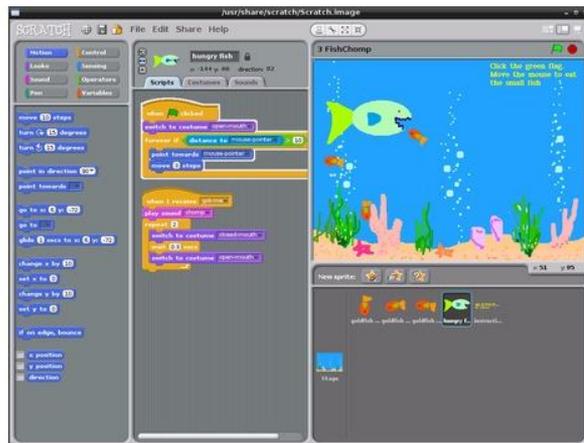
Picture from <http://www.raspberrypi.org/archives/1515>

Middle Levels (6-9 grd)

- Introduction to Linux Machine
 - Easy access to a terminal window
- Programming/Game development
 - Many tutorials on how to create simple games using Raspberry Pi (using Scratch and Python)



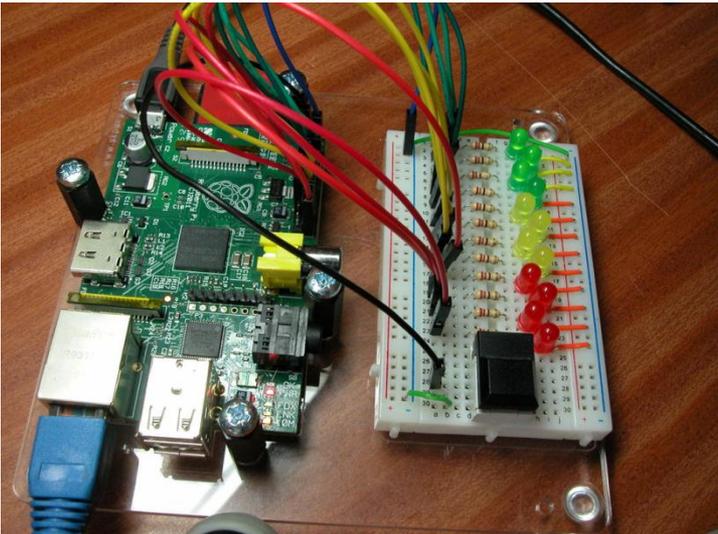
Linux terminal



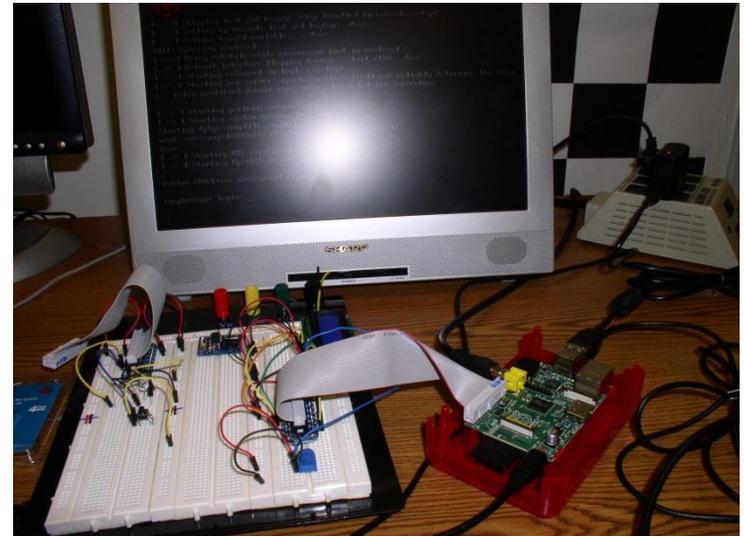
Game designed using Scratch

Higher Levels (9-12 grd)

- General Purpose Input/Output interfacing
 - Blinking lights, writing to LCD screen
 - Robotics



Picture from <http://www.raspberrypi.org/archives/tag/games>



Look at Further Resources for tutorials on interfacing (Adafruit, MagPi, Hackaday)

Conclusion

- Cheap – affordable by schools
- Educational
- Multiple applications across different levels
- Something a parent could buy for a child
- Many resources for project ideas and further or independent research



Further Resources

- <http://www.raspberrypi.org/>
 - Main website for the Raspberry Pi
- <http://www.themagpi.com/>
 - Monthly online magazine
- <http://www.youtube.com/user/RaspberryPiTutorials>
 - Video tutorials for the Raspberry Pi (other videos sources are available)
- <http://hackaday.com/tag/raspberry-pi/>
 - Site that shows interesting things to do with a Raspberry Pi (mostly for experienced users, but has a lot of tutorials)
- <https://www.adafruit.com/>
 - Online store with peripherals and tutorials for the Raspberry Pi
- <http://elinux.org/RaspberryPiBoard>
 - Wiki created for the Raspberry Pi



Raspberry Pi Wiki | Hub