Pi On Your Face
Take a look at the Raspberry Pi

Presented by
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The history of the RasPi

- Early 2006 concept based on Atmel ATmega644
- Designed for educational use
- Intended for Python (but of course is friendly to all)
Pop quiz!
The BBC Microcomputer Is Here!

A WONDER FOR THE MONEY. Even before its introduction in the U.S., the BBC microcomputer was acclaimed as a "no-nonsense computer" (BYTE magazine); "a remarkably friendly machine" the "will set the standard for home computers for quite some time" (POPULAR COMPUTING); and "the most versatile, small general-purpose computer I've seen ... a wonder for the money" (COMPUTERS & ELECTRONICS).

EDUCATIONAL USES. The BBC micro was designed as part of a national computer literacy project, one portion of which is "The Computer Programme" TV series being shown in the U.S. on more than 220 PBS stations. BBC micros now account for more than 75% of the computers being ordered by British schools under a government plan to put a computer into every primary and secondary school.

THE SYSTEM. The BBC micro is based on a 2MHz 6502 main microprocessor with a combined RAM/ROM address capability of 64K.

HIGH RESOLUTION GRAPHICS. The system features very high resolution color graphics in modes up to 640 x 256 (163,840 pixels). Text display can be 80, 40 or 20 characters by 32 or 25 lines.

EXPANDABILITY. The computer includes built-in serial and parallel interfaces, a floppy disc interface, a 1MHz expansion bus, analog-digital interfaces, eiconet interface which allows schools and businesses to link economically up to 254 computers in a low cost local area network, and a unique high-speed data channel called the Tubex for adding a second processor.

SECOND PROCESSORS. An additional 6502 microprocessor provides increased processing speed and an extra 64K of RAM. Alternatively, a Z-80B Second Processor can be joined to add 64K of RAM and allow running of CP/M programs, which are extensively used for business applications. A third choice is a UNIX based 16032 16-bit processor with 32-bit architecture that provides 256K RAM.

CONTACT
FOURTH DIMENSION SYSTEMS
for details and name of your local dealer.
Dealer inquiries invited.

FOURTH DIMENSION SYSTEMS
1101 South Grand Ave., Suite A
Santa Ana, California 92705
(714) 835-6202

CIRCLE NO. 50 ON INQUIRY CARD
*Registered trademark of Digital Research, Inc.
Mmmm. Pi.
Slicing up the Pi
by Paul Beech
Getting it all together

- Raspberry Pi: $35
- SD card: $10
- Display: $100
- Power: $5
- Keyboard: $20
- Mouse: $10

Total: $180+
Where's my camera?
Let's go to the mall!

- Element14 (newark.com)
- Adafruit.com
- MakerShed.com
- Sparkfun.com (for parts)
- Amazon
- And in a pinch... Radio Shack
Getting started

1. Get the right SD card
2. Get the right distro
3. Don't break off C6
4. ???
5. Profit!
1. Get the right SD card

- Most quality cards are OK
- Micro with adapter?
- elinux.org/RPi_SD_cards
Display options

- HDMI 1.3 and 1.4 supported; audio and video output, does not support HDMI input
- PAL and NTSC supported through RCA with audio through 3.5 mm to red/white RCA connector
- DSI
- No VGA
Touchscreens

- Ooh, look! DSI connector!
- Mimo 720
  - USB DisplayLink Framebuffer Driver
    CONFIG_FB_UDL/udlfb.ko
  - USB DisplayLink Kernel Mode Setting (KMS) driver
    CONFIG_DRM_UDL/udl.ko
- Won't work with OpenELEC without rebuilding the kernel
Couture kernel

- rpi-3.2.27
- rpi-3.6.y

$ git clone
git://github.com/raspberrypi/linux.git

$ tar xvfz rpi-3.6.y.tar.gz

$ make mrproper
2. Get the right distro

- Fedora (of course)
- Raspbian
  - Moebius
- RaspBMC
- Occidentalis
2.14 Or get brave

Android    Arch ARM    AROS
Chromium OS  Debian Squeeze
Firefox OS   FreeBSD   Gentoo
Haiku IPFire  NetBSD   PiBang
Plan 9 from Bell Labs  QtonPi
RISC    Slackware ARM   Squeezed
ARM Puppy   WebOS
Bootloader! BerryBoot

BerryWebserver
Berryterminal
Debian Wheezy Raspbian
Debian Wheezy Raspbian 2012.09
Memtester
OpenELEC r11659
OpenELEC r11791
Puppy alpha 4
RaspRazor 2012.09
Sugar
Installing it

- Fedora ARM installer
  - fedoraproject.org/wiki/Fedora_ARM_Installer
  - `yum install fedora-arm-installer`
Installing it

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  - fedoraproject.org/wiki/Fedora_ARM_Installer
  - yum install fedora-arm-installer
- On a Mac, Rpi-sd card builder or RasPiWrite
  - Google “Rpi-sd builder”
  - github.com/exaviorn/RasPiWrite
- BerryBoot
1 + 2 – worrying = Buy pre-loaded
Power

- 5V. 5V. 5V.
- Why you shouldn't use iPhones
- Your laptop's USB port is not the droid you're looking for
- Put a power brick on your shopping list
- Did I mention C6?
Write down these words

- 220 uF 16v electrolytic capacitor
Decode the LEDs

- **D5 OK (Rev 1.0) ACT (Rev 2.0) Green** SD card access, connected to GPIO 16
- **D6 PWR Red** 3.3 V Power, connected to 3V3
- **D7 FDX Green** Full Duplex LAN
- **D8 LNK Green** Link/Activity LAN
- **D9 10M (Rev 1.0) 100 (Rev 2.0) Yellow** 10/100Mbit LAN
Why didn't it start?

- Red light off = No power
- Red light on, green light off = The Pi can't read the image on the card. The voltage is below 5V.
- Green light blinks 3 times = start.elf was not found
- Green light blinks 4 times = start.elf did not launch
- Green light blinks 7 times = kernel.img was not found
GPIO

- http://elinux.org/RPi_Low-level_peripherals
Raspberry Leaf

http://www.doctormonk.com/2013/02/raspberry-pi-and-breadboard-raspberry.html
Building a cross-compiler

- You *could* use an existing one... or you could DIY with crosstool-ng (crosstool-ng.org)
- Get kernel source: github.com/raspberrypi/linux
Blah blah blah. Stop saying words and show us pretty pictures of cool things people made.
Not bigger on the inside.

Flickr: ferret boy
Case closed.

- Buy one
- 3D print one
- Make one
Lego my Pi-go...?
Or just buy it.

http://www.thedailybrick.co.uk/lego-sets/custom/lego-custom-raspberry-pi-case.html
PiBoy
Emulating your childhood
**Chapter Focus**

Learn to control sprites with the mouse, program objects to bounce back, and start a game by pressing the spacebar.

**The Game**

Hib Scratchy attack flying viruses and stop them from touching the server at the bottom of the screen. If you successfully block 30 viruses, you win the game!

First, go to the **Stage** and import a sparkly nighttime picture of Hong Kong!

Did you know you can add programs to the Stage, too? We can add this program to make our city glow!

**HACK ATTACK**

**STAGE 4**

**Mission Completed!**

**Fabu's Free Again!**

**Sniff**

Foil again... Aww... don't be upset! I just think that arts meant to be shared!

Do you think the cosmic defenders would take me back or just forgive me if I apologized?

Probably but be careful. Now news has it that the dark wizard is planning to launch a virus attack on Hong Kong!

Oh no! But if that happens, the whole digital world could be destroyed!

Fabu's right we have to destroy the virus right away!

**Hong Kong**

Stand back. I know kung fu!

**Here it comes!**
Pi, meet ET. ET, meet Pi.

- SETI@home
  - Not the screensaver of your (my) college years
  - Berkeley Open Infrastructure for Network Computing (BOINC)

```
$ su -c 'yum install boinc-manager boinc-client'

$ systemctl enable boinc-client.service
```
PiFM

- Go to bit.ly/TMgytl from the Pi (and download to home folder)

- `sudo python
  >> import PiFM
  >> PiFm.play_sound(“sound.wav”)

- Tune a nearby radio to 103.3
PiFM

- System Clock = 500Mhz
- Divider Register = 5.000
- FM radio clock frequency = \( \frac{500}{5} = 100 \text{Mhz} \)
Tux Photobooth

http://fedoraproject.org/wiki/Raspberry_Pi_photobooth
Tux Photobooth

Get Your Photo!

http://tuxphotobooth.com

Visit the url, or scan the QR-Code to download your personal penguin pic.
Aren't you a little small for an HTPC?

- RaspBMC/XBMC
  - 1080p
  - Share over NFS, SMB, FTP, HTTP, USB, XYZ, and other acronyms
  - Install to SD, USB, or run off NFS Embedded Samba TVHeadend FTP SSH
Can you do it?

Anton Hvornum - 5 months ago

Within 3 minutes, i’ve:

* Opened a package containing a Raspberry Pi
* Found a SD card in a drawer
* Googled "Raspberry pi xbmc"
* Installed Raspbmc onto the SD card
* Booted it and it works...

I haven’t even figured out who’s behind raspbmc or anything, but whoever you are... i love you!

72 replies · Share »
Android on your Pi

http://androidpi.wikia.com/wiki/Android_Pi_Wiki
Ice cream with your Pi
Ice cream with your Pi
Best Valentine EVER
Resources

- learn.adafruit.com
- elinux.org
- instructables.com
- Beginner's Guide to Raspberry Pi
- Raspberry Pi Hacks

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