

Re: Req: (Free) Embedded Platforms for Education

Source: <http://coding.derkeiler.com/Archive/General/comp.arch.embedded/2007-07/msg00625.html>

- *From:* Glenn Møller-Holst <nomail@xxxxx>
 - *Date:* Fri, 20 Jul 2007 23:58:57 +0200
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gouaich wrote:

....

Obviously, free and open source platforms are privileged since this is an education purpose in a university that cannot afford paying money for licences; or even managing a complex relation with an industrial partner with some 'discounts' on licences.

So if anyone has a suggestion I would be happy to know about it. At the end of the process, I'll send a table summarising all the suggestions so other people/teachers could benefit from it.

Kind regards,

Hi,

First of all some course examples:

CTEC1630 Computer Systems Design Home Page:
<http://www.technology.niagarac.on.ca/courses/comp630/>

ECE 476, Designing with Microcontrollers, Spring 2007:
<http://instruct1.cit.cornell.edu/courses/ee476/>
Advanced Microcontroller Systems on a Programmable Chip:
<http://instruct1.cit.cornell.edu/Courses/ece576/>

Microcomputer Project Laboratory – Spring 2007:
<http://web.mit.edu/6.115/www/index.shtml>

Autonomous Robotics
EECS/BIOL 375/475:
<http://www.eecs.case.edu/courses/lego375/>

EENG 350 Robot Details:
<http://www.eng.yale.edu/ee-labs/morse/courses/EE350/>

EE 227 Mobile Robot Details
<http://www.eng.yale.edu/EE-labs/morse/courses/ee226TP/robot/default.htm>

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Please do not encourage use of PIC16F84(A) – it is outdated and costs more than better chips according to <http://www.microchip.com/> .

Use PIC18f1220 or 18F4550(has USB possibility) instead – or at least PIC16f628A, PIC16f648A, PIC16f684A or PIC16F877A.

Starting with PICmicro controllers

intro, first steps, tips, links, etc.

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<http://www.voti.nl/swp/>

PIClist:

<http://www.piclist.com/techref/piclist/>

PICList Projects:

<http://www.piclist.com/techref/piclist/projects.htm>

Open source language JAL (GPL):

"...Jal is a high-level language for a number of Microchip (TM) PIC microcontrollers (16c84, 16f84, 12c508, 12c509, 16F877 [and 18f452, 252, 242] – found in codegen.c)...":

<http://jal.sourceforge.net/>

<http://www.geocities.com/vsurducan/electro/PIC/f877.html>

Open source (dis)assemblers:

<http://gputils.sourceforge.net/>

<http://www.gnupic.org/>

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ARM processors has a long it history and are very used and most ARMs are supported by Linux:

http://en.wikipedia.org/wiki/ARM_architecture

Quote: "...The ARM design was started in 1983 as a development project at Acorn Computers Ltd.

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The core has remained largely the same size throughout these changes. ARM2 had 30,000 transistors, while the ARM6 grew to only 35,000.

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Welcome to the ARM microcontroller Wiki!

<http://www.open-research.org.uk/ARMuC/>

http://www.open-research.org.uk/ARMuC/Compiler_Suites.html

ARM controller overview:

http://www.gnuarm.com/ArmDevices_frame.html

<http://www.gnuarm.org/>

<http://www.gnuarm.com/>

<http://www.arm.com/>

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<http://www.eg3.com/WebID/embedded/arm/>

<http://www.debian.org/ports/arm/>

http://docwiki.gumstix.org/Customer_projects

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Microcontroller independent:

<http://www.freertos.org/>

<http://www.uclinux.org/>

<http://www.emdebian.org/>

<http://www.emdebian.org/twiki/bin/view>

<http://en.wikipedia.org/wiki/Category:Microcontrollers>

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Evaluation/development boards & links:

Please look at OpenMoko. The software is called OpenMoko – and the it runs among others on the open hardware; Neo1973:

http://wiki.openmoko.org/wiki/Neo1973_Hardware

From october 2007 is a newer version available:

http://wiki.openmoko.org/wiki/GTA02#.22Phase_2.22_.28GTA02.2C_.22Mass_Market.22.29

<http://www.openmoko.com/products-index.html>

<http://www.openmoko.org/>

http://wiki.openmoko.org/wiki/Main_Page

ARMs:

<http://www.gumstix.com/>

<http://en.wikipedia.org/wiki/Gumstix>

<http://www.mikrocontroller.net/>

<http://www.embedded-control-europe.com/>

<http://www.littlechips.com/products.htm>

<http://microcontrollershop.com/>

Samsung S3C2440A (ARM9) Board, RS232, USB, Ethernet, IDE, SD/MMC:

http://microcontrollershop.com/product_info.php?products_id=2042

Atmel Introduces the World's Lowest Power 32-bit Flash MCU With Ethernet and USB On-the-Go

<http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/04-02-2007/0004557568&EDAT>
citat: "...

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The AT32UC3A0512 and AT32UC3A1512, the first devices available, deliver 80 Dhrystone MIPS (DMIPS) at 66 MHz and consume only 40 mA at 3.3V.

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The EVK1100 evaluation kit provides Ethernet and USB interfaces, along with many other serial communications ports such as SPI, TWI and USARTS. A 20x4 character LCD and the expansion connector allow advanced product evaluation and prototyping activities. Availability and Pricing. The AT32UC3A0512, with EBI, is available in a 144-pin QFP package and the AT32UC3A1512, without EBI, is available in a 100-pin QFP package. Pricing starts at US \$8.16 and US \$7.43 for 10,000 unit quantities, respectively.

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The SR4 Autonomous Mobile Robot:

<http://www.smartrobots.com/>

Citat: "...As an Educational Platform...The SR4 features the Linux operating system, Java, the Medallion single board computer with an ARM microprocessor..."

Glenn

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