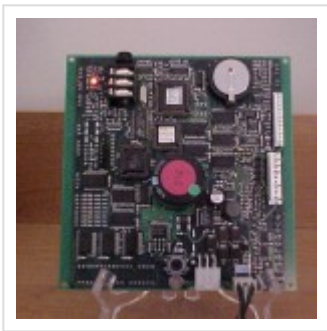


Teuthida Technologies Home

All about embedded systems engineering.

Embedded Systems

Posted on [February 4, 2015](#)



A comparatively new medium for social interaction is the idea of a “meetup”. A gathering of like minded people to a public event, usually moderated by a web service like [meetup.com](#) or it’s equivalent. I attend these as a way to relax and meet interesting people.

There is however a sort of downside; Most of the people attending are 30 years younger than me. The result is this rather odd snippet of conversation:

Young Person: What do you do?

Old Guy: I’m a programmer.

Young Person: What kind of web programming do you do?

Old Guy: I do embedded systems programming.

Young Person: Huh?

From there the conversations diverge a lot, but the problem is answering the difficult question always follows: *What is an embedded system?*

While [Wikipedia](#) has an excellent article on this subject, I’ll give you my answer to this question:

An embedded (computer) system is a computer that is part of a product, device, or system that is not itself considered to be a computer.

Here are a few examples:

- Cars: cars contain many embedded systems from fuel control, anti-lock braking, transmission control, dashboard display, ignition timing and many many more. I once read that the average car contains more than a dozen embedded systems.
- Dumb cell phones: The cell phone needs a computer to interact with the over-the-air digital data network used to make phone calls. I exclude Smart cell phones because these are so powerful and flexible (with applications) that they are closer to hand held computers than to the dumb cell phones of old.
- Vending machines: Like the car above, these are actually a number of embedded systems in one package. The devices that accept coins, bills, and credit cards for payment are little embedded modules within the whole, and the vending machine controller is an embedded system too. I can say that I have personally worked on each of these components over the years. A prototype of the controller is pictured above.
- Computer components: Many storage sub-systems are in fact embedded systems that work to make mass storage devices work. Hard drives and memory “sticks” contain their own computers hidden away in them. They can even be [hacked](#) for good or ill.

This web site is devoted to the joys and frustrations of programming these embedded systems. Very often, programmers must deal with complex protocols, demanding real-time performance requirements, difficult debugging, and limited or non-existent user interfaces. Yet, it is precisely these challenges that make this type of programming so interesting. It was fun (?) yes, but maybe not so relevant any more.

Embedded systems used to use a lot of 4 bit microcontrollers. These are all gone now. The poor performance, lack of features, and high cost of programming those relics has long since overshadowed any cost savings. So too, lower end, more primitive systems are being pushed into smaller and smaller niches. When those niches dry up, so will the sales of those parts.

In the pages of this blog, we have reviewed the chips, their defects, the math behind how things work, the crazy things that the vendors do, and the many other things that affect programming at the bare metal level. Yet embedded programming IS changing. New products like the [Arduino](#), [Raspberry Pi](#) and the [Beagle](#) are bringing a new level of power, integration and ease of use to the embedded world.

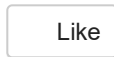
The world is changing, and so must this blog. I have taken the plunge and obtained a number of these new embeddable systems and plan to focus on this new direction. This will mean a new emphasis on Linux, higher level languages and protocols, and yes even some web programming. I have a great deal of learning and exploring to do and I hope I can share this with you, my readers.

As always, your comments and suggestions are most welcome:

Best regards;

Peter Camilleri (aka Squidly Jones)

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