Micro micros

M. Simon

Atmel has some very neat microprocessors in a 6-pin SOT package. Sixteen-bit processors with eight-bit internal buses. About sixty-eight cents in onesies for the high-end version. It operates on 1.8 to 5.5 volts using milliamps to microamps depending. And up to 8MHz clock speed at full crank. Not too shabby for a micro that would have taken up several boards and have been the envy of the neighborhood (well some of them) back in the day. Reminds me of when my boss demanded I build a one bit computer (Thanks Motorola [1]) to run a machine. And BTW use FLASH memory. FLASH back then required three precisely timed voltages. Or else smoke. Fun stuff. Especially when you consider that the project cost was well beyond $50,000 back when a KIM1 with printer [2] came in at only $400. I could have saved him a lot of money. But then I wouldn't have a story to tell. And BTW the one bit computer business never really took off. Except in FPGAs.

So yeah. The Atmel has a lot of resources for a little speck of sand, metal, and plastic. So I downloaded their latest suite of goodies [3] after designing boards, ordering parts, and also ordering a programmer [4] and I find out it does not support assembly language for the chip I plan to use (the ATTiny10 [5]). Probably the best way to go for a chip with 1,000 bytes of FLASH memory. Well needless to say a panic set in. With no tool chain I'm dead in the water.

Time for a look at what the Internet has to offer. It turns out - a lot. There is AVR Freaks [6] which seems to be a semi-official adjunct to Atmel. The message board is busy. Unfortunately I seem to have a problem with my registration. A problem that will no doubt get sorted in a few days. In the mean time there is plenty of good reading. One especially good tip [7] was to avoid using the reset pin as an output unless you have a specialized programmer for resetting it. You have to put +12 volts on the Reset Pin during programming. Wayne ran into that problem and he designed a programmer [8] to solve it. For a cost of about $2.60 in parts. Amazing. [9]

Bicycle Lighting [9] has a nice description of how to get started with the AVR Programming tool and the ATTiny10. It is full of good links. And for those of you

lacking the joy of assembly language here is a tutorial [10] with a focus on AVR micros.

If you are more interested in a professional grade tool the IAR AVR Suite [11] has gotten good reviews. You can use it for no charge if you keep the program size under 4K. I have downloaded it and intend to give it a try.

You will also want to look at AVRDUDE [12]. A tutorial and command line programmer and assembler. You know. The way real men used to program but now only fossils and those with a retro fit do. Take us back to those thrilling days of yesteryear...and no. I don't have any punched card deck stories. Dang. Paper tape is as close as I come. In fact I think I still have some of my old TDL tapes [13] back in the garage. If I could buy or build a reader and a CPM machine to run it on. Gone are the days.

So are we done with the ATTiny10 resources? Nope. You can make your own programming interface [14] which works with AVRDUDE. And you can put it all in a nice case or do the engineering thing...at $22 for the kit, it seems like a very good deal. If you like building things. Here is the AVR **D**ownloader/**U**ploa**DE**r [15] (aka DUDE) page if you want to go right to the source.

I will have more to say when I have built some things.

M. Simon's e-mail can be found on the sidebar at Space-Time Productions [16].

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[8] https://sites.google.com/site/wayneholder/attiny-4-5-9-10-assembly-ide-and-programmer
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[15] http://savannah.nongnu.org/projects/avrdude/
[16] http://spacetimepro.blogspot.com/