PICAXE Apps: Radio or Not!

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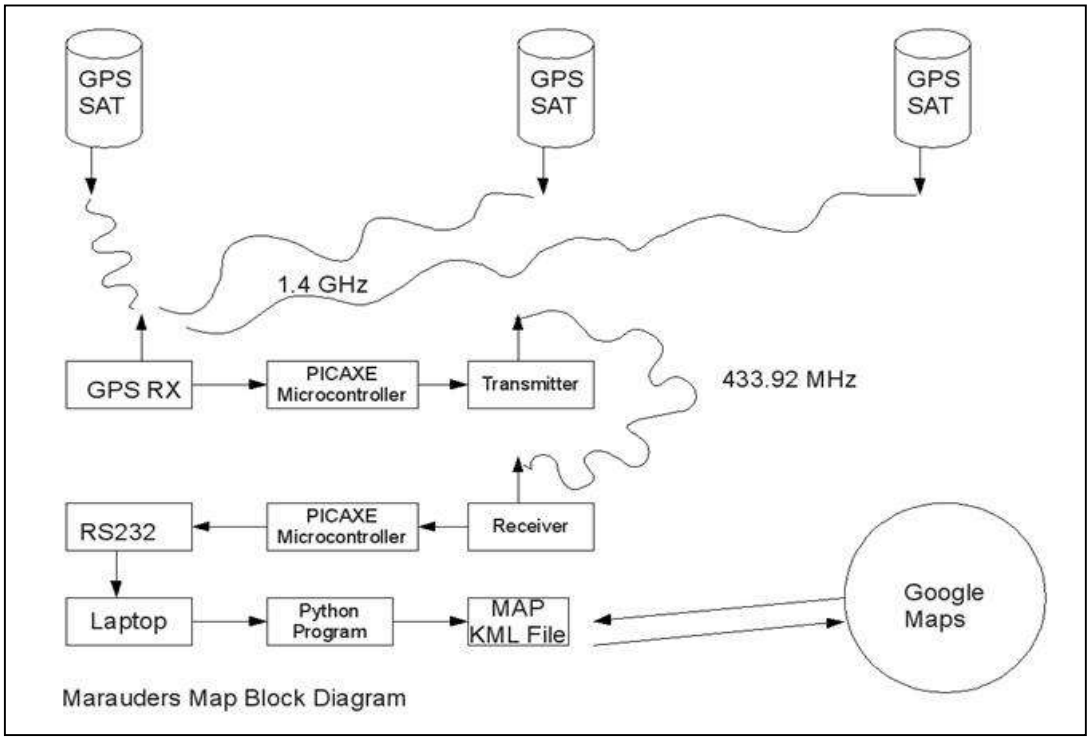
PICAXE APRS

Here's a novel approach by Leigh, WA5ZNU, that combines PICAXE programming, wireless, APRS (Automatic Packet [Position] Reporting System), GPS and a bit of role playing. See: http://wa5znu.org/2009/05/marauders-map. The project enables you to send radio position reports (posits) to a central station using low-power 433 MHz transmitters, such as those used in wireless weather stations. I hooked up with Leigh and he provided some extra help in understanding his system (it's not that hard).

The largest cost would be for the GPS units but if you have fixed stations, you can preprogram the PICAXE with those coordinates and not worry about having to change them.

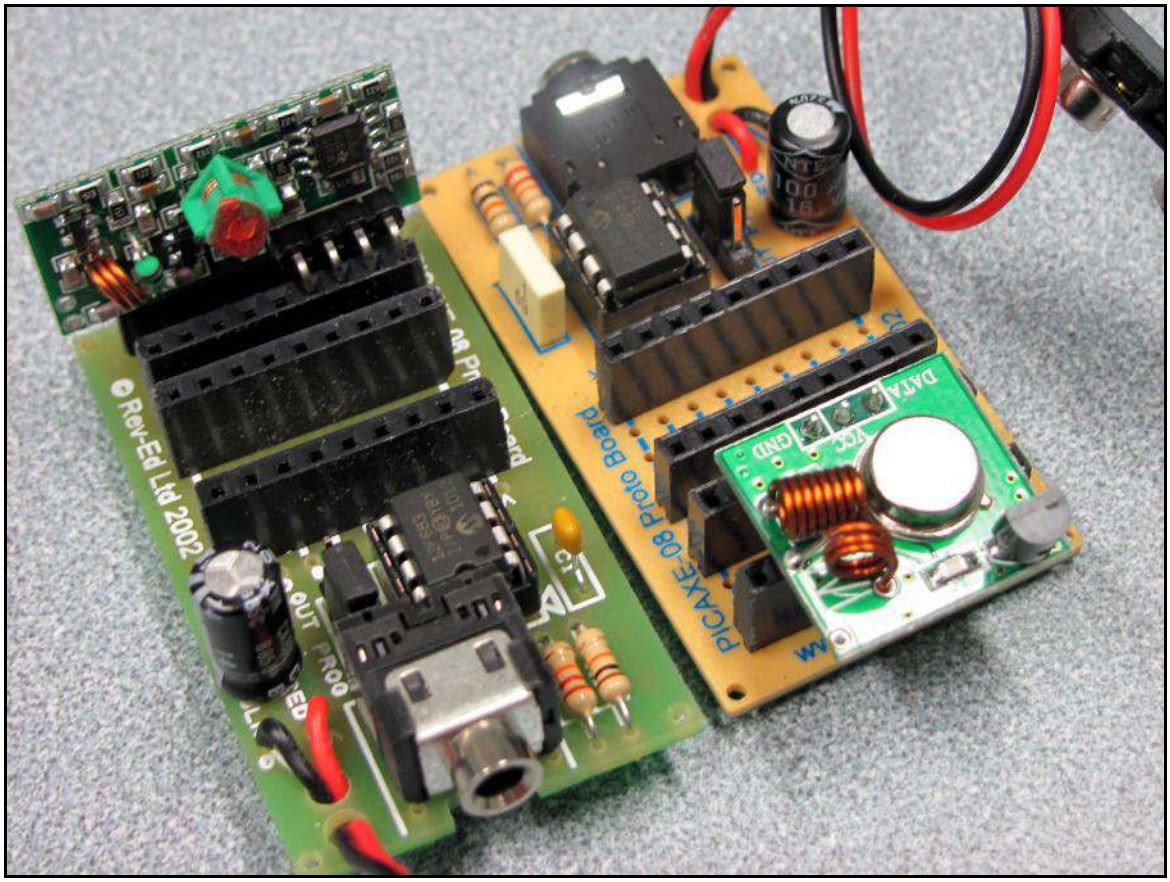
Leigh's block diagram breaks it down into small chunks and he provides all the program code on his website. The PICAXE can feed data to a RS232 device it's easy to collect real-time data with a free program from Eltima GmbH: www.eltima.com/products/rs232-data-logger. You can use this program in place of data recording module.



Marauders Map Block Diagram

The 433 MHz transmitter uses ASK (amplitude shift keying) controlled by a PICAXE-08M that reads the GPS' RS232 output and sends it, bit by bit, to the transmitter. The receiver feeds the data to another PICAXE-08M that converts the ASK bits into text and outputs that to the serial port. You need two separate circuit boards for each transmitter/receiver pair. The data is sent blindly into the ether so there's no way of knowing if you have been received or not.

Below is my transmitter/receiver pair built on a PICAXE-08 proto-board. The transmitter/receiver pair was bought on eBay; these wireless devices are commonly used in UHF radio home weather stations, and other telemetry devices.



More Applications

I could go on and on about what this little 8-pin chip can do and I've only just started to scratch the surface. The next few links will provide you with examples of more PICAXE radio applications.

Steve, VK6HV
http://members.westnet.com.au/page3/picaxe-08m_mimi_28mhz_beacon.htm

Steve's beacon can be easily modified to key any transceiver using an opto-coupler or transistor switch (to ground the PTT line). He's an ex-US Amateur Radio Operator who has moved "Down Under". It's a very easy circuit to build on a PICAXE-08M proto-board. You can put your own programmable propagation beacon on the air!

Inkless Press
http://inklesspress.com/picaxe_projects.htm

Herein are many PICAXE-08 projects and I especially like the "Rainbow Voltmeter". A simplified version can be built with the Rev Ed Schools Experimenter Board. PICAXE chips have many features already built in to them so your circuits require very few ancillary components to interface with the real world.

Gavin, M1BXF
http://geekhouse.weebly.com/projects.html

Various projects using the many available PICAXE chips; a bit more advanced so newbies may want to pass on this site.

Jeremy Leach: "My PICAXE™ Projects"
http://home.btconnect.com/PicAxe_Projects/Home.htm

Again, more advanced but check out his *PICAXE Weather Monitor* article!

David Lincoln: *Programming & Customizing the PICAXE™ Microcontroller, 2nd Ed.*
www.lincsoft.com

David's site has all the downloadable program code for the various PICAXE book projects. An entire section is devoted to the Rev Ed Schools Experimenter Board. I highly recommended that if you are just starting out get Schools Experimenter Board and this book. It covers the PICAXE ABC's, the Experimenter Board (construction and sample programs) and includes a basic electronics tutorial.

Ron Hackett: *PICAXE® Microcontroller Projects for the EVIL GENIUS™*
http://www.jrhackett.net

I also have Ron's book and ordered a few "goodies" from this web store. He covers the new M2 series and is really into robotics and building a lot of the ancillary PICAXE components (programming cables, power supply, logic probe, etc.). Less radio orientated but you could build radio controlled robots, right? How about building and programming one with an onboard webcam and GPS tracking? In fact, a GPS tracker can be constructed with a GPS + PICAXE + transmitter and customized for you own specific needs.

Well, that should be enough to get you started. Looking back on my own experience, I should have bought Lincoln's book (first) along with the Schools Experimenter Board. That keeps you under $100. If radio clubs or other interested groups make bulk purchases of the kit it would be a great way to promote PICAXE interest and activity.