PREFACE

This software is an emulator for the Alpha-Micro AM-100 computer. It is copyright by Michael Noel and licensed for non-commercial hobbyist use under terms of the "Q public license", an open source certified license.

There exist known serious discrepancies between this software's internal functioning and that of a real AM-100, as well as between it and the WD-1600 manual describing the functionality of a real AM-100, and even between it and the comments in the code describing what it is intended to do! Use it at your own risk!

Reliability aside, it is not the intent of the copyright holder to use this software to compete with current or future Alpha-Micro products, and no such competing application of the software will be supported.

Alpha-Micro and other software that may be run on this emulator are not covered by the above copyright or license and must be legally obtained from an authorized source.

As this is written I have permission from Alpha-Micro to distribute AMOS 5.0 with the emulator so you can get that from me too - but it is subject to their terms and conditions.

INSTALLATION

Preferred installation is to compile the source on the target machine.

Tested targets include Red Hat Linux (6.1 thru 9.0, FC1-9), Microsoft Windows 95 thru Vista using Cygwin 1.3.12-2 thru 1.5.9-1, and Macintosh OSX 10.3 (Jaguar). All at least 'sort of' work. I normally run in XP with Cygwin 1.5.9. Newer version of Cygwin and OSX are expected to work but untested.

Step Zero. You have at least 16 megs free disk space - right?

We will assume you have downloaded the source and AMOS into a directory on your (running, known good) Linux, OSX or cygwin system; those files being

./am100-0. 904.tgz
./amos50f.tgz

One a Macintosh OSX system you will need to have installed the developer tools (on your Panther CD) and you should be in the Terminal application.

Step One. Create a sub directory and untar the source.

```
mkdir am
cd am
mv ../am100-0.904.tgz .
mv ../amos50f.tgz .
tar -xzf am100-0. 904.tgz
tar -xzf amos50f.tgz
```

Step Two. Compile the source.

```
make
```

Step Three. Run it!

```
./am100
```

Step Four. What's this message...

"boot failed! Problem with 'dsk0-container' ?"

dsk0-container is the name of the file that represents DSK0 in the emulator. Similarly, dsk1-container represents DSK1, and dsk2-container and dsk3-container do the obvious. Each container is 10 megs (19980 blocks).

Since you might already have a dsk0-container, I've packaged the AMOS release as amos50-container. You can either copy it, rename it, or create a link...

Then run it again!

```
ln -s amos50-container dsk0-container
./am100
```

Step Five. It booted - right?

If not contact me & I'll try to help you figure out why...

One new feature that may help is the POST (Power On Self Test) option. Specify it like this

```
./am100 -P
```

Step Six: Shutdown

Press ALT H to get a list of ALT commands. Note that ALT F will get you to the front panel. At the front panel you can use tab or arrow keys to select the reset or power switches. Press enter with one selected and the indicated operation will be performed (after a confirming dialog).

So to shutdown press ALT-F, enter, Y

Note: ALT does not work on Macintosh OSX. For any ALT key you will need to press ESCAPE then (quickly, within a second) the other key. So ALT-F would be ESCAPE, then (quickly) F.

OPERATION

The window you run this in (msdos? cygwin? xterm?) needs to have relatively good NCURSES support. The cygwin console window, OSX terminal and the linux console meet this requirement, but some xterms do not. The recommended solution is to run the emulator in a "rxvt" window instead of the console or an xterm. To do this use something like

```
rxvt +sb -rv -fn 10x20 -e ./am100
```

where +sb mean no scrollback buffer, -rv means white text on black background, -fn 10x20 specifies font size, and the -e says to start up rxvt running the am100 emulator.

Alternately fix your xterms (termcap, terminfo, and various X resources). An excellent resource for this is http://www.mi.uib.no/doc/packages/bitchx/fixkeys.html

If you've other containers (dsk1-container, etal) you can mount and unmount them as you like, on the fly. Use ALT-M to reach the mount dialog.

All the control keys should work. Esc should work. The Arrow keys, Insert, Delete, Home, End, PgUp, and PgDn should work - at least as I would want them to!!

Watch out for ALT keys. ALT T toggles instruction tracing. ALT S toggles instruction stepping. ALT R resumes from stepping. ALT 0 (zero) shows the "front panel". ALT 1 shows the first terminal screen, ALT 2 the second terminal screens, ... Up to 9 terminal screens can be defined. ALT Z repaints the screen if it gets messed up (like with trace/step info). ALT M means mount (or unmount) files associated with the DSK, LPR and MTU devices.

Things are defined in the am100.ini file. See that file for further instructions. Also note am100.ini is only the default initialization file, if you want to use another (for example if you have several different configurations you want to be able to start) you use the -f statup flag: for example to startup using a warm boot configuration (that you create) you could type

```
./am100 -f warm.ini
```

Console output is to one of the NCURSES panels associated with a terminal (ie, the ALT 0-9 screens discussed above). Traces go to STDERR. So if you want to try a trace but don't want it mixed with your screen, start the emulator with

```
./am100 2>am100.log
```

Then all the trace output goes into a file. Watch out - it gets huge very very fast. Actually it "wraps" at a certain point but that’s an "undocumented" feature. Actually there is also a "user" trace facility, but I'm not ready to try and document that yet either.

CUT and PASTE works with the console windows iff the console or xterm the emulator is running in supports it. rxvt does not.

NEW FEATURES (0.4)

Power on self test option. am-320 printer support. pretty good am-600 tape support. multiple terminal consoles via NCURSES interface. am100.ini file to specify hardware configuration. Stepping now works. Shutdown and reset (reboot) moved to front panel.

AM300 support in addition to PS3 terminal io.

A word on tapes; the file used to emulate a tape are not just byte steams, they are structured. In fact they use the "AWS" format developed by IBM to simulate tape drives. References to the format can be found here http://www.cbttape.org/awstape.htm

Host system (linux/windows) versions of tapdir, tapfil, and filtap are provided to allow exchange of large number of files from the host system to/from the emulator.

NEW FEATURES (0.45)

Telnet server. Available for fnums 2-9 (see sample am100.ini file for doc)

NEW FEATURES (0.901)

Macintosh OSX support. Minor fixes to telnet and floating point.

NEW FEATURES (0.903)

Final floating point fixes. Added file “CPU test exception excuses.txt” documenting the issues that will be seen if you run the diagnostic, why they occur, and why I felt it more appropriate to not try to ‘fix’ those issues. The diagnostic program is available in [100,0] of the amos46 disk image.

NEW FEATURES (0.904)

Just fixes to enable clean make in newer (FC4 especially) version of GCC.

PERFORMANCE

Performance has not been a design consideration. There are dozens of places it could be dramatically improved. My judgment is that's not worth the effort. But judge for yourself. On a Pentium 166 laptop with linux 6.2 it seems pretty close to what I remember my AM-100 being able to do. The ways that AMOS loops when it doesn't have work are converted into sleeps, so it's pretty low impact even on an old slow box.

WHAT IS CHANGED/ADDED TO AMOS 5.0?

Not much. The system.mon is a standard mongen of sysbsw.mon and my own disk driver vdk.dvr[1,6]. I patched ps3.idv[1,6] to create ps3new.idv[1,6]. Ansi.tdv[1,6] is a hack of a vt100 driver I wrote years ago. System.ini[1,4] is a demonstration of bank switched memory. Spoolr.ini[1,4] is setup to send output to the LPR device. Date.prg[1,4] has been patched to preface the 2 digit date with "20" instead of "19".

Source for vdk.dvr, ps3new.idv and ansi.tdv are provided in [1,6]

WHAT DO I KNOW DOES NOT WORK?

As far as I know everything works. Basic, Pascal, Lisp, Sort, Isam - everything.

All 1400+ known diagnostics run as expected with the five exceptions noted and explained in the “CPU test exception excuses.txt” file.

HOW TO REPORT A NEW BUG

Send me an email (mike@otterway.com) telling me what you did, what happened, and why you don't think that should have happened. For example: "I compiled and ran xyz.bas and it crashed saying it couldn't open file aaa.bbb, but aaa.bbb was there like it was supposed to be and this program and file work on my real AM-100". So far I'm pretty prompt getting back to people who tell me about problems, hopefully that will continue...

SOFTWARE DONATIONS

Were you a software developer in the AM-100 heydays? Still have a copy of your pride and joy laying around? Why not let others remember with you! Let me post a copy for use with the emulator. All donations welcome!

CREDITS

Special thanks to Alex Begin at Alpha-Micro who provided permission to distribute AMOS to users of this emulator.