Alcuin

Stephan Schupfer

COLLABORATORS			
	TITLE : Alcuin		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY	Stephan Schupfer	January 18, 2023	

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME

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Alcuin

1.1 Alcuin Usage Guide

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                                ALCUIN
                       Version 1.1

          A Saturn CPU emulator for Amiga computers
         used to emulate HP 48 S/SX/G/GX calculators

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1.2 Overview

```
Alcuin is a multitasking HP48 CPU emulator for the Amiga.
The emulation runs as a normal task under the Amiga operating system, so
that Amiga and Alcuin can be used concurrently. If you get a rom dump
from a HP 48 (S/SX/G/GX) calculator, you be able to emulate these
calculators on your amiga.

Attention
---------
This emulator is capable of providing a faithful replication of the
HP48. In order to do so, it requires a copy of the ROM software
from YOUR calculator. In order to avoid breaking copyright laws,
and upsetting HP, you MUST BE THE PROUD OWNER OF AN HP48 before
running this program.
```

1.3 Registration

```
                  Alcuin is SHAREWARE. To ease your decision wheather to pay the
unregistered version has some limitiations:

  · No filetransfer is supported
  · The emulator is not loading or saving its state – so everytime you
    startup the emulator is doing a reset, which takes some time.
  (with state-file the emulator is immediately ready to use, to continue
     work where you stopped last time)
  · Plug-in modules won't be loaded.

The shareware fee is ATS 200.– or DM 30.– or US$ 20.– for users in europe.
Outside europe the fee is US$25.–.
Registered users receive a personal keyfile, which enables the missing functions.
This keyfile will work with all future versions of Alcuin, so as a registered
user you can always download the most recent freely distributable version.
```

How to become a registered user ?

The simple way is to fill in the file "OrderForm", to print it out,
sign it (in this order, if possible), put it in an envelope together
with the registration fee and send it to
                  me
                  . I won't accept order
forms which are not signed.

The keyfile will be sent to you either uuencoded via EMail (prefered) or on floppy
disk (as you like it).

1.4 Support

The newest version of Alcuin is on AMINET in the Directory: misc/emu

I also think about adding a page to my homepage in the www.

http://www.sbox.tu-graz.ac.at/home/schupfer/

1.5 Installation

                  First take a look what is
                  needed
                  , to see if your Amiga is
able to run Alcuin.

To Install the Progamm on your Harddisk use the supplied Installerprogramm.
Then
                   make a copy of the ROM of your HP
                   .
The created file is called rom.dump.
Rename it to Alcuin_ROM and copy it in the directory created by the
installer called Alcuin:.
Now are you ready to start the emulator.

1.6 How to download a copy ot the ROM

HOW TO DOWNLOAD A COPY OF THE ROM
=================================

The emulator works by executing an image of the HP48 ROM. In order
to run the emulator you must have a version of your ROM on the system.

****
* This includes the HIDDEN ROM. Please don't use DUMP programs, that *
* don't dump the HIDDEN ROM. The emulator won't run.   *
****

To get a memory dump you need to do the following:

- Download the file 'romdump/ROMDump' to your HP.

- To capture a complete ROM, start kermit, or any other terminal programm
  which is capable to emulate the kermit protocol, on your computer, connect
  your calculator with your computer, set the speed to 9600 baud and enable
  'log session' to save the received data, then 'connect'.

- On a HP48 S/SX type '#0h #7FFF0h ROMDump',
  on a HP48 G/GX type '#0h #FFFF0h ROMDump'.
  This will take about 15 minutes on the S/SX, 30 minutes on the G/GX.

- When done, save if necessary the 'log-file' and quit your terminal
  programm.

Your ROM should now be in a file called 'session.log' or simmilar.

Now you have a file containing lines like

#00000:2369B108DADF1008
...

This has to be converted to a binary ROM for Alcuin.

Run the command: 'dump2rom session.log`
This will convert your dump into a rom file readable by the emulator
called 'rom.dump'.

CHECK the file with the program 'checkrom'.
Type: 'checkrom rom.dump`. It should say:

  ROM Version is HP48-A
  ROM CRC reads 0xcb76 (for Rev. A, will be different for other ROMs)
  IROM OK: ROM CRC test passed.

or

  ROM Version is HP48-R
  ROM CRC 1 reads 0xdfed (for Rev. R, will be different for other ROMs)
  ROM CRC 2 reads 0xf0b1 (--- " ---   )
  IROM OK: ROM CRC test passed.

If the test failed, something went wrong transfering the ROM. Don't
start thinking about the size or the nibbles in 'rom.dump'. That's
all correct. Do the Transfer again.

If you know how to do it, you could of course only transfer the
'broken' part of the dump, using e.g. '#60000h #60080h ROMDump'
and fix these lines in 'session.log'.

1.7 Needed

To use Alcuin you need :

 · The Amiga must have at least a 68020 processor.
   (All programms are compiled for 68020-40 CPUs)
     I think with a CPU less powerful than a 68020 the emulator is
     too slow to be useable.
     I don't know if Alcuin works with 68060 CPU, so drop me a note
     if you do - especially some speed informations)

 · The Amiga must be running under at least OS 2.1 .

 · A HP 48 (S/SX/G/GX) caculator to get a legal copy of the ROM.

 · A serial cable to connect your HP 48 to your computer to get a rom-dump

OS 3.1 and a graphics board are recommended for best performance !

1.8 Using Alcuin

              Using Alcuin

                Start from Worbench

                Start from CLI

                How to download a copy of the ROM

                The Keyboard

                The Menu

                Transfer files

                Using RAM and ROM cards

1.9 Start from Workbench

Workbench :

Set the Tooltypes according your desired configuration
and just doubleclick the Alcuin icon

ATTENTION ! If you change the configuration of the RAM or ROM modules,
            you have to quit the emulator first in switched OFF state,
            otherwise the memory content of the emulated HP48 can get
            lost.

Following Tooltypes are supported

· DOUBLE_SIZE

   If this Tooltype is set you get everything in double size
   This is especially for users with graphic-cards which use big
   Workbenchscreens like 1024x768 or 1280x1024 or more.
   Otherwise you get a normal size display, which is more usable
   for screensizes like 640x400.

· COMPACT

   This is for a compacter keyboard layout, to make Alcuin also
   useable for a 640x200 screensize. If someone likes this layout
   more it can also be used for the double resolution.

· RESET

   The Emulator is doing a reset on startup.

· INITIALIZE

   The Emulator is trying to read the Alcuin_STATE and Alcuin_RAM files
   from disk.

· PORT1=RAM (or ROM)

   The Emulator is simulating a card plugged in in port1 and
   is reading the Alcuin_PORT1 file from disk.
   You can select if the plugged in card is RAM or ROM.

· PORT2=RAM (or ROM)

   The Emulator is simulating a card plugged in in port2 and
   is reading the Alcuin_PORT2 file from disk.
   You can select if the plugged in card is RAM or ROM.

· SERIAL=serial.device

   Select your favourite serial.device like SERIAL=serial.device for
   the serial device.
   If not set the emulator uses the serial.device.

· UNIT=0

   Select the unit of your serial device like UNIT=0 or UNIT=1.
   If not set the emulator is using unit 0 as default.
   The maximum unit number is 3.

· XPOS=100

   The x-position of the Alcuin window at startup (e.g. 100)

· YPOS=100

   The y-position of the Alcuin window at startup (e.g. 100)

- FASTGRAPH

  This option replaces the display routines with the faster function
  WriteChunkyPixels(). This function needs graphics.library version 40
  and is only useful if the Workbench screen is in chunky format (like
  the Workbenchemulation of most graphic boards do).
  Only this Tooltypes enables you also to change the contrast of the
  display.

1.10   Start from CLI

                   CLI :

Alcuin [DOUBLE/S,COMPACT/S,RESET/S,INIT/S,P1=PORT1/K,P2=PORT2/K,
       SER=SERIAL/K,U=UNIT/N,X=XPOS/N,Y=YPOS/N,FGRAPH/S,HELP/S]

The options are equal to the
                 Tooltypes
                  at start
from the workbench.

- HELP   With this option you will get an overview about all options

1.11   The Keyboard

You can use the emulator via mouse or keyboard.
The keys A-Z are similar to those keys, where you get A-Z in the
alpha mode. I also think you will have no problems to find the
most other keys. But here are some special:

HP 48 G/GX/S/SX

   HP   Amiga

- alpha .... Ctrl
- shift left ...... Shift
- shift right ..... Alt
- ON .... ESC

I also have added some special functions on the function keys

- ON A F ....F1   Reset
- ON B ....F2   Oops (Break an ON- command)
- ON C ....F3   Warmstart
- ON D ....F4   Testmode
- ON E ....F5   Looping selftest
- ON 4 ....F6   Cancel Alarm
- ON 1 ....F7   Screen dump
- ON + ...F8   More contrast
- ON - ....F9   Less contrast
- ON SPC ....F10   Coma mode

A change of contrast is only with aktivated FASTGRAPH tooltype possible !

1.12 The Menu

- About   ... open window with infotext about the author
- Reset   ... perform a reset of the emulator
- Iconify   ... iconify Alcuin
- Exit   ... exit Alcuin withot saving the state-file
- Save & Exit ... exit Alcuin and save the Alcuin state-file

1.13 Transfer files

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Transfer files
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The HP 48 has two ports:

- wire (a serial port)
- IR (the built-in infrared port)

The Amiga has no infrared port as far as i know, therefore if you
transfer files via wire or IR you always thransfer the files via
the selected serial port of the Amiga.
If there is a need for a second serial port, leave me a note and
i will think about a implementation in the next version.

To transfer files, connect your hp to the serial port of your Amiga
and you can transfer files from the emulator to your HP 48 and vice
versa.

Because the emulator is slow it is better to use the kermit protocol
than the xmodem protocol.

1.14 Using cards

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Using cards
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Emulating a HP48S or HP48G, you can not use RAM or ROM cards !
For the HP48SX or HP48GX you can create empty RAM cards with the
supplied program mkcard.

Using cards you need the right entry in the Tooltypes or the rigth
commandline specifying the card.

ATTENTION ! On a real HP48 it is only allowed to change plug-in
            modules on a switched-OFF calculator. Using Alcuin
            you will rarely switch of the calculator, but if you
            want to change the settings of your plug-in-modules,

```
              you have to save and quit the emulator in switched-OFF
              state first.
```

HP48GX

Emulating a HP48GX you have 2 Ports.
Port 1 has a maximum capacity of 128 KB and Port 2 has a maximum
capacity of 4 MB.
Via the tooltypes you can select if the card is a RAM or a ROM card.
I don't have ROM cards, therefore i don't know how to make a image
and use it with the emulator, but i think it's no problem to change
the supplied program dump2rom.
If there is a RAM card in port 1 you can add the RAM to the system RAM.

HP48SX

2 - 128kB RAM cards

1.15   About the emulation

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              What happens at startup

              Speed

              Tested on ...

              Limitations
```

1.16   What happens at startup ...

If Alcuin is started, a reset is performed in the unregistered version. You
can hear a beep and then you will see the well known "TRY TO RECOVER MEMORY?"
message on the display, which is prefered answered with NO (F), since there is
nothing in the memory to recover.
This reset is performed on every startup in the unregistered version.
With the registered version you can load a state file, which was saved the
last time you used Alcuin, and with this file you are enabled to continue
work where you stopped it last time.

1.17   Speed

Alcuin is slower than a real HP :-(. (I'm still working on that)
A HP 48 S/SX ROM is much faster than a G/GX ROM but offers less
functions.

The speed-display in the systemtest of the HP 48, tells you nothing about
real speed of emulation.

1.18   Tested on ...

Alcuin is tested on following Amigas:

```
Amiga 2000, OS 3.1 , 1MB ChipRAM, 4 MB FastRAM
+ Derringer 40Mhz 68030, 66MHz 68882, 16 MB 32BitRAM
+ Picasso II with CybergraphX WB emulation
tested with both ECS and CyberGraphX WB-screens.
```

If Alcuin is running on your system, which is slightly different from
mine, then please send me an email with your configuration.

1.19   Limitations

If you are using Alcuin on a System with graphics.library less than V40,
you are not able to use FASTGRAPH, which is only useful in conjunction with
graphics boards.
Without FASTGRAPH display routines the display is black and white only and you
are not able to change the contrast.

1.20   Known bugs

· Systemtest shows a bug in the ROM.

· Starting Alcuin, there might be a stop and nothing happens. -
  A keypress will fix this.
  This error happens not on my Amiga, and seems to be a timing problem.

· Because of the lack of betatesters, ther can be bugs due to different
  systems or system-configurations.

1.21   Legal

                  The program "Alcuin", the "hp48.font" and this manual are © ←
                     Copyright 1995
Stephan Schupfer.
The distribution of the programs is free as long as following rules are
repected:

- All programs and documentation files remain unchanged.
- The package is always distributed in its complete form.
- No profit must be made by distributing Alcuin, especially the price of a
  disk containing Alcuin may not exceed US$ 5,- (or equivalent amounts in
  other currencies).
- It is free to distribute Alcuin over bulletin board systems and networks.
- It is not allowed to distribute the program in any commercial product
  without a written consent of the author.

All rights for commercial use remain at the

                        author
                        .

The programs "checkrom", "dump2rom", mkcard" and "ROMDump" are © Copyright
1994 Eddie C. Dost and are free software under the terms of the GNU General
Public License as published by the Free Software Foundation.

The keyfile that registered users will receive, must only be installed
one one computer and in no case passed on to others. Offences will
result in penal prosecution by me. With your signature on the order form,
you accept these conditions.

The program is presented to the users as it is, without any warranty
of any kind, be it expressed or implicit. Anyone using this programs
agrees to incur the risk of using it for himself. In no way
can the author be made responsible for any damage directly or indirectly
caused by the use or misuse of the program.

The HP ROM files useable for running Alcuin are not part of Alcuin and
copyrighted by HP. The author will not take upon himself
the responsibility for the legal consequences, an illegal use of such a ROM
file can have.

"Amiga" and "Commodore" are registered trademarks of Escom AG, Bochum.

"HP" is a registered trademark of Hewlett-Packard Co.

Names of other hardware and software items mentioned in this manual and
in program texts are in most cases registered trade marks of the respective
companies and not marked as such. So the lack of such a note may not be
used as an indication that these names are free.

1.22   bugreports

                        ATTENTION ! Please do not send me questions about how the HP48 ↩
                            works or
                    using the HP48. Please read the manual you got with your HP,
                    and/or the FAQ of the HP48 newsgroups.

If you find a bug or a misfeature in Alcuin, or have an idea how
to make things better, then pelase drop me a note so I'll be able
to improve Alcuin in the future.
My address con be found
                    here
                        .

Important for a bug report is the following information:

 · Version of Alcuin (can be found by doing "version Alcuin" from Shell)
 · Used Amiga configuration (e.g. 68030,..,2MB Chip,., OS 3.0,.,serial.device,)
 · Used graphicsmode of the Workbench (e.q. ECS 4 Bit, .., CyberGraphX 8 Bit, ..)
 · Used HP48 ROM version (e.g. GX : P etc.)
 · Information about installed startup programs on the Amiga
 · Information about installed programms on Alcuin

· Alcuin settings
· Detailed decription what programm or command produces the bug and how
   it can be reproduced.

But first please look, if it's a
                   known bug
                       .

1.23 Thanks

I would like to thank

· Eddie C. Dost <edc@POOL.Informatik.RWTH-Aachen.DE>
    for x48 (a hp48 emulator for unix)
    and for his powerful utilities to make a ROM
    and also for his help when i had problems !
· Paul Fox <fox@demon.co.uk>
    for em48 (a hp48 emulator for unix)
    on which x48 is based on
· Mika Heiskanen mheiskan@vipunen.hut.fi
    for his document about the HP48 and saturn CPU
· Sebastien Carlier <sebc@cybera.anet.fr>
    for Emu48 - what a speed ;-(
· Hewlett Packard for their powerful calculators
· Amiga Technologies for keeping Amiga alive.

1.24 The Author

                  Software development is a way to keep the Amiga alive !

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Questions, criticism, suggestions and
              bugreports
                are always welcome.
Email is prefered !
Please understand that I can't answer every letter/mail personally.

Under no circumstance will I send you ROM files, not even "under

```
friends"! No chance!
```

1.25 FAQ

```
Frequently Asked Questions
--------------------------
```

1.26 History

```
History
-------
V1.0     25.April.96
  - first public release

V1.01    03.May.96
  - code cleanup in CPU functions (major speed improvement)
  - code cleanup in display functions
  - new memory handler (bug in ROM)
  - fixed openlib version stuff - only kickstart 3.0+ supported anymore !
  - removed subtask structure
  - changed the delays in shutdown - multitasking friendlier.
  - new sound routine

V1.1     15.Mai.96
  - code cleanup in CPU functions
  - code cleanup in memory functions
  - new faster display handler
    ( supports now OS 2.1 and should run on all graphic boards !!)
  - fixed openlib version stuff.
    now OS 2.1 supported !
  - Added new Tooltype FASTGRAPH
    for faster display routines on graphicboards
  - ROM is not saved anymore
```

1.27 Future

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Future
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I will contionue work on this product and support it where I have
the time, and would therefore appreciate any bug-reports, ideas,
gifts, etc.

i think about of implementing next:

 · Get rid of all bugs ;-)
 · More speed is still wanted !
 · Load and save files direct to the emulator.
```

· Support for more languages