Altair 8800 simulator

Ein CP/M-Simulator von Peter Schorn, basierend auf dem SIMH-Projekt. Emuliert wird ein 8080, Z80, diverse Floppy-Controller, MMU, etc.

http://schorn.ch/altair.html

the simulator features 8 simulated hard disks with a capacity of 8MB (HDSK0 to HDSK7). Currently only CP/M supports two hard disks as devices I: and J:.

Bedienung

Start:

```
altairz80.exe <conf>
```

z.B.

```
altairz80.exe cpm22
```

Ende:

```
^E
q{uit} or by{e} or exi{t}
```

statt ^E für die SIMH-Taste (WRU genannt), kann ein anderer Steuercode gesetzt werden, z.B.

```
; SIMH Key to ^G (orig 005 ^E)
SET CONSOLE WRU=007
```

cpmtools

das dskdef-Format für die 8MByte HDISK (Standardformat 8megAltairSIM, es gibt noch andere Formate, s. Quellcode!)

HDSK (standard simulated AltairZ80 hard disk with 8’192 kB capacity) 8 MByte HD Format:

```
# ALTAIRZ80 SIMH *dsk 8MB Harddisk (Type AZ80 HDSK)
diskdef 8megAltairSIMH
  seclen 128
  tracks 2048
  sectrk 32
  blocksize 4096
  maxdir 1024
  skew 0
```

```
  boottrk 6
  os 2.2
end

# ALTAIRZ80 SIMH *dsk MITS 88-DISK 137 Byte/Sektor
# speedball (copylib) skewtable
diskdef simh
  seclen 128
  tracks 254
  sectrk 32
  blocksize 2048
  maxdir 256
  skew 17
  boottrk 6
  os 2.2
  libdsk:type simh
end
```

Image file format

The file format is that of SimH: a file image is just a stream of blocks.

d tracks[0-7] 254

The 88-DISK controller The MITS 88-DISK is a simple programmed I/O interface to the MITS 8-inch floppy drive, which was basically a Pertec FD-400 with a power supply and buffer board built-in. The controller supports neither interrupts nor DMA, so floppy access required the sustained attention of the CPU. The standard I/O addresses were 8, 9, and 0A (hex), and we follow the standard. Details on controlling this hardware are in the altairz80_dsk.c source file. The only difference is that the simulated disks may be larger than the original ones: The original disk had 77 tracks while the simulated disks support up to 254 tracks (only relevant for CP/M). You can change the number of tracks per disk by setting the appropriate value in TRACKS[..]. For example „D TRACKS[0] 77“ sets the number of tracks for disk 0 to the original number of 77. The command „D TRACKS[0-7] 77“ changes the highest track number for all disks to 77.

The 88_DISK is a 8-inch floppy controller which can control up to 16 daisy-chained Pertec FD-400 hard-sectored floppy drives. Each diskette has physically 77 tracks of 32 137-byte sectors each.

CPM 3 Byte Header + 128 Byte Daten + 6 Byte Trailer

1113536 = 2^6*127*137

libdsk unterstützt das Format mit Type „simh“

```
/* The SIMH disc image is assumed to be in a single fixed format, like the
 * MYZ80 disc image.
 *
 * Geometry:
 *  254 tracks (presumed to be 127 cylinders, 2 heads)
 *   32 sectors / track
```

```
 *      137 bytes/sector: 3 bytes header, 128 bytes data, 6 bytes Trailer
```

```
d:\user\pohlers\AltairSIMH>dskid.exe -type simh cpm2.dsk
cpm2.dsk:
  Driver:      SIMH disc image driver
  Sidedness:      0
  Cylinders:     127
  Heads:          2
  Sectors:       32
  First sector:   0
  Sector size:  128
  Data rate:      1
  Record mode:  MFM
  R/W gap:     0x2a
  Format gap:  0x52

  Drive status:  0x28

  Filesystem parameters:
  CP/M:BSH:      0x04
  CP/M:BLM:      0x0f
  CP/M:EXM:      0x00
  CP/M:DSM:      0x1ef
  CP/M:DRM:      0xff
  CP/M:AL0:      0xf0
  CP/M:AL1:      0x00
  CP/M:CKS:      0x40
  CP/M:OFF:      0x06

d:\user\pohlers\AltairSIMH>dskutil.exe -type simh cpm2.dsk
LibDsk Disk Utility v1.3.5

:#
Statistics for cpm2.dsk:
Cylinders:       127      7f
Heads:             2      02
Tracks:          254      fe
Sec/cyl:          32      20
Sec/track:        64      40
1st sec:           0      00
Sec size:        128    0080
Data rate:       300
Encoding:        MFM

:$
sides=0
cylinders=127
heads=2
sectors=32
secbase=0
secsize=128
```

```
datarate=DD (300 kbit)
rwgap=2a
fmtgap=52
fm=N
nomulti=N
noskip=N


cpmtools: libdsk-Type "simh" ist wichtig!

cpmls -f simh -T simh cpm22.dsk
```