

J80 Simulator

Documentation

Version 1.10

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2. Introduction

“My English is not so good, I hope you understand what I write here. Sorry :-) Mario Viara”

This document is a preliminary version and not all features are completely documented.

J80 is one J80 emulator written in pure JAVA 2 version 1.22 or later that implements a complete Z80 machine with a default BIOS that support console, disk , printer, banked memory manager and a ZX Spectrum emulator.

The package have 2 main class j80.J80 the Z80 emulator and j80.cpm.DiskUtil one command line based utility for read and write standard disk images of CP/M disk.

For any suggestion or bug report contact me at : cpm@m2srl.it

3. Major change

Date	Revision	Description
	1.10	Added support for Linux text console. Added support for Z80pack machine.
20 July 2005	1.0	Added support for Zenith Z19 terminal.
1 Jan 2004	0.0 Beta	First public version

4. Binary Installation

The standard distribution form is one packaged named [beta-]J80-XXX-bin.tar.gz where XXX is the version number (Es. J80-1.10-bin.tar.gz) extract the packaged in one new directory using tar or Winrar. Then execute the batch file called *initenv* (for **linux you must use . ./initenv**) to setup the running environment. Every script is present in two form the first for Linux without extension and the second for Win32 with the extension .bat. Es the main batch is called j80 for Linux and j80 for Win32.

4.1. Directory structure of installed J80

Summary directory tree relative to the installation.

PATH	Description
	Contains configuration and jar archive.
bin	Contains JNI dynamic library and batch file
images	Contains standard CP/M disk images
doc	Contain the documentation
z80	Various Z80 snapshot for spectrum emulator.
Z80pack	Directory for Z80pack disk. For default the directory is empty the disk must be downloaded from ftp://ftp.unix4fun.org/z80pack and copied in z80pack/disks/library

4.2. Running J80

After the installation you can start J80 with the default configuration just typing : **j80** if the Java environment is correctly configured the emulator start and load CP/M 3.0 with 4 disk image. **To stop the emulator in console environment use the function key F10 or F1 pressed two times.**

5. Standard configuration

J80 come with a set of standard configuration and batch file, the batch file is in the directory `bin` and the configuration in the main directory every configuration have for configuration and batch file the same name. But different extension for example the default configuration is named `j80.conf` and the two batch file `j80` (for linux) and `j80.b` at for Win32.

Name	Configuration
j80	Default configuration.
cpm2	Standard CP/M 2.2 configuration
cpm3	Standard CP/M 3.1 configuration
zpm3	Standard CP/M 3.1 configuration with from Simeon Cran
spectrum	Spectrum 48/128K configuration
Z80pack	Z80pack configuration from Udo Munk

For default all the CP/M implementation are console base but you can change the line with the option **`crt=j80.vdu.ttyCRT`** in **`crt=j80.vdu.GraphicsCRT`** to display the console in one swing window.

6. J80 configuration

J80 is configured via one text configuration file named j80.conf (also it is possible specify a different configuration file on the command line) the configuration have this format. Any line beginning with # is a remark any other line must be :

par=string[,op1,op2...,opn]

Where string is the parameter value and the op1,op2...opn are optional parameters separated by comma.

6.1. Configuration parameters

mhz=frequency

Specify the frequency in Mhz of the emulated J80.

crt=class

Specify the class used for the physical CRT emulation J80 have the following standard CRT implementation :

j80.vdu.GraphicsCRT Swing implementation. It is possible specify the number of column, the number of row and the font size used for the console. For example the configuration line crt=j80.vdu.GraphicsCrt=80,25,15 create one console with 80 rows, 25 columns and with a font of 15 pixel.

j80.vdu.ttyCRT Console implementation (require one JNI this version work for Win32 and Linux)

peripheral=class,[method,value]

The specified class , implementing the class j80.Peripheral ,is loaded from the emulator and initialized the only required class is the j80.MMU , the memory manager.

The option method,value if present are method of the class with integer or string argument. J80 have the following standard peripheral :

Class	Parameter	Description
J80.CharDevice	setDevice,DEVICE,setPort,port	Define one new character devices like one printer. The standard BIOS expect LPT: on port 3 and AUX: on port 4.
J80.vdu.SampleVDU		DUMP terminal implementation require the parameter crt=class

		present before.
J80.vdu.Hazeltine1500		Complete terminal emulation of Hazeltine1500.
J80.vdu.Z19		Zenith Z19 terminal emulator (only native mode)
J80.FDC		Standard HD/FDC controller.
j80.mmu.PlainMMU		Standard 64K memory manager unit implementation.
j80.mmu.BankMMU		Banked 1024KB Memory required for CPM3 and ZPM3
j80.z80pack.MMU		Banked MMU with 16 x 64 K bank.
J80.Spectrum48K		Complete ZX spectrum 48K peripheral.
j80.spectrum.128K		Complete ZX spectrum 128K
j80.z80pack.Timer		Timer for Z80pack emulator
j80.z80pack.Network		Network interface for MP/M and CP/M Net in z80pack machine.
j80.z80pack.FDC		FDC for the z80pack machine.

diskimage=unit,filename,sector

Define one FD/HD unit (the peripheral j80.FDC must be loaded)

Unit is the unit 0 to 15, filename is the image filename and sector is the number of 128 byte sector for track.

diskdir=unit,directory

Define one FD/HD unit from one existing directory the disk is mounted RW but any modification made from CP/M will be lost when the emulator terminate.

Unit is the unit 0 to 15, directory is the directory that will be mounted on the first access.

load=filename,offset

The binary file filename will be loaded at the offset specified of the emulator, the peripheral j80.MMU must be loaded. Normally this is the last parameters and load the Eprom loader for the operating system.

snapshot=filename

Load a snapshot in to the Z80 memory, one snapshot peripheral is required. Es.
j80.spectrum.Spectrum.

lootload

The program is loaded from trak 0, sector 1 of the first drive.

7. J80 Microcomputer emulator

The J80 in the default configuration emulate one complete Z80 microcomputer compatible with the BIOS of the YAZE emulator (see <http://www.mathematik.uni-ulm.de/users/ag/yaze-ag/>)

7.1. BIOS Configuration

The standard is configured in this WAY :

Hard Disk

Unit	Type	Size	Remark
0	IBM3270	253 KB	Default boot disk
1	IBM3270	253 KB	
2	Hard disk	4 MB	Image disk or directory
3	Hard disk	4 MB	Image disk or directory

7.2. Z80 input output port map

Port	Dir	Class	Description
0	R	j80.vdu..SampleVDU	Read the console status 00 – No keyboard char available FF – Keyboard char available
1	R	J80.vdu.SampleVDU	Read next keyboard char
1	W	J80.vdu.SampleVDU	Write one character to the console
3	W	J80.CharDevice	Write one character to the printer (LST: device)
4	W	J80.CharDevice	Write one character to the auxiliary device (AUX:)
10	W	j80.FDU	Select drive 0 – 15
11	W	j80.FDU	Track low byte
12	W	j80.FDU	Track hi byte
13	W	j80.FDU	Sector 1-255
14	W	j80.FDU	FDC Command (0 READ , 1 WRITE)
15	R	j80.FDU	The first read after one write on port 14 return the status of the command (0 SUCCESS, 1 ERROR) any other ready return 0 if the disk is ready.
16	W	j80.FDU	Dma low byte
17	W	j80.FDU	Dma hi byte
20	W	j80.mmu.BankMMU	Page low byte
21	W	j80.mmu.BankMMU	Page hi byte
22	W	j80.mmu.BankMMU	Page frame
255	W	j80.vdu.SampleVDU	Terminate the emulator

8. J80 ZX Spectrum emulator

8.1. Start the ZX Spectrum

To start the Spectrum emulator is necessary start-up j80 using spectrum.conf configuration file.

java J80.j80 spectrum.conf the emulator can emulate Spectrum 48K or 128K for more details see the configuration file.

In this version the sound emulation is not correct and use the deprecated class sun.audio.*

9. ,Z80Pack emulation

J80 emulate the Z80 machine implemented from Udo Munk for more technical detail please see <http://www.unix4fun.org/z80pack/> . J80 do not have any z80pack disk in the distribution archive, the disk must be downloaded from <ftp://ftp.unix4fun.org/z80pack> before start the z80pack emulator and must be copied in the directory **z80pack/disks/archive** of J80. The batch file *z80pack.conf* can be edited to use different path if z80pack is already installed.

10. The CP/M Disk utility

The j80.CpmUtil implements a sample program for transfer file from and to the host file system and CP/M disk image. The tools is like a ftp client program and permit to get/put/delete file and format new CP/M disk. The documentation at moment is not completed please try online help, the program don't make any check on input use it carefully.

11. Source installation

11.1. Requirement

Java JDK 1.2 or better

Make and other Linux style utility for Win32.

11.2. Installation and configuration

The source distribution j80-XXX-src.tar.gz contains all the source and batch file necessary to rebuild or modify J80. Extract the archive in one new directory edit the file named go (for Linux environment) or go.bat (for Win32 environment) to reflect your Java JDK installation. Initialize the environment with `./go` for Linux be carefully `./go` and not only `./go` or `go.bat` for Win32. Try make and good luck.