sZ81 – Zx80 and Zx81 Emulator.

sZ81 - a ZX81 and ZX80 emulator using SDL

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*** Please see README.z81 for information about [x]z81, zx81get and the contents of games-etc and the saverom folders. Contained within this document is information specific to sz81 only ***

sZ81 – Zx80 and Zx81 Emulator.

Description

sZ81 is a Sinclair ZX80/ZX81 emulator very much based upon the work of Ian Collier's xz80 and Russell Marks's z81 but employing the highly portable SDL and including additional functionality and features for desktop computers and portable devices.

Features:

* Virtual keyboard with adjustable opacity, autohide on newline,
   sticky shift or toggle shift
* Control bar with access to several regularly used options
* Runtime options including a joystick configurator
* Joystick control remapping within the emulator
* Full keyboard, mouse and joystick support throughout
* Runtime switchable scaling up to 3x on supported platforms
* Toggling between a window and fullscreen on supported platforms
* Support for portrait orientated screens such as 240x320 and 480x640
* The ability to run centred within any resolution
* Maximum porting potential since it only requires SDL

Controls

For the PC:

Click screen	**- Toggle virtual keyboard and control bar**
Backspace	**- Rubout i.e. equivalent to using SHIFT + 0**
Comma	**- Equivalent to using SHIFT + .**
Cursors	**- Equivalent to using SHIFT + 5, 6, 7 and 8**
- / =	**- Decrease/increase the volume (if supported)**
ALT + R	**- Cycle between 960x720, 640x480 and 320x240**

F1   **- Toggle to Config/Keyboard Screen.**

F3   **- About, Help window.**

F4   **- Sound card trigger: No sound(default), QuickSilva
      Zon-x sound card.**

F8   **- invert screen color.**

F9   **- Activate the control remapper for remapping
      joystick controls to keyboard controls.**
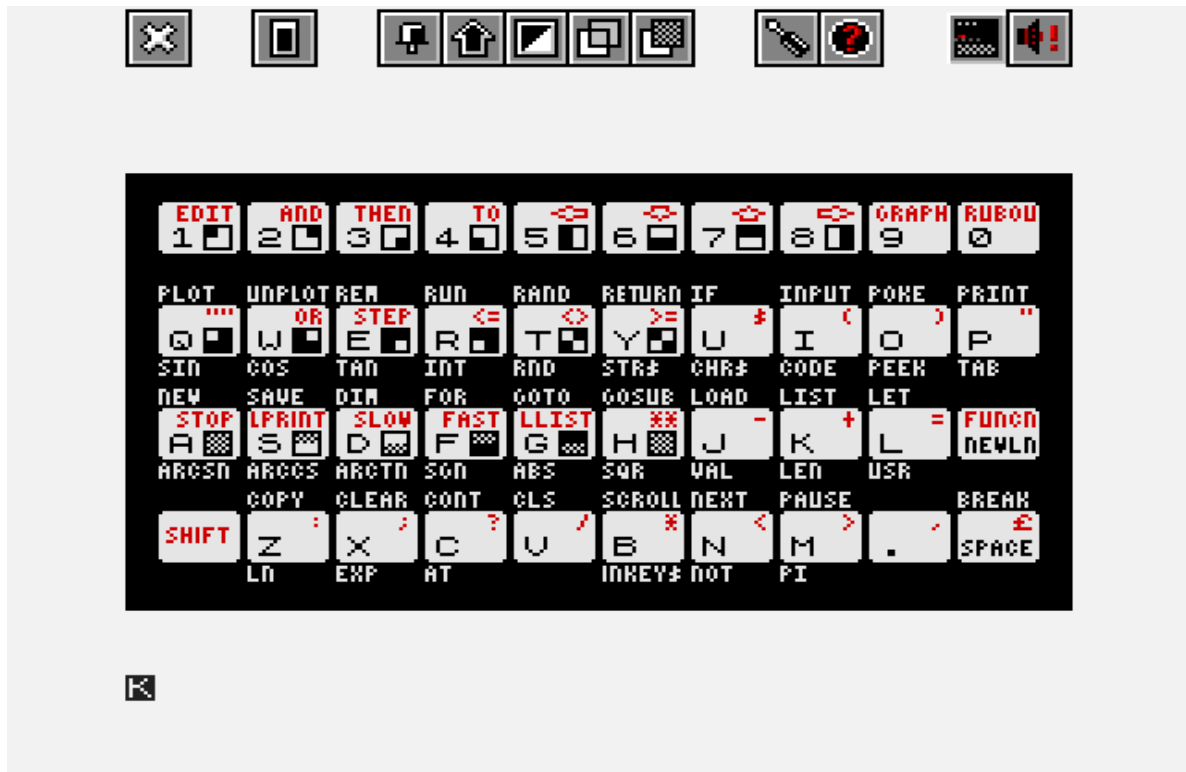
F10   **- Exit emulator.**

F11   **- Toggle between fullscreen and a window.**

F12   **- Reset Emulator.**

[PRINT SCREEN](win32 only) will save the screen in the "screen00.bmp" file.

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Clicking the screen (or F1) brings up the virtual keyboard and the control bar giving access to several very useful options. These are listed below alongside their keyboard equivalents :-

Exit	**- Exit emulator (F10)**
Reset	**- Reset emulator (F12)**
Autohide	**- Toggle vkeyb between autohide and don't hide (F6)**
Shift Type	**- Toggle between sticky shift and toggle shift (F7)**
Invert Screen	**- Toggle between not inverse and inverse video (F8)**
Opacity DN/UP	**- Reduce (HOME) or increase (END) vkeyb opacity**
Options	**- Toggle the runtime options (ESCAPE) (navigate with page up and page down, the cursor keys and enter, the mouse or the joystick)**
About	**- Display help and infos.**

Sound card selector is use to select a sound card in game.

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To access the ZX81's file selector type "J", SHIFT + "P" twice and newline from within the emulator. For the ZX80 simply type LOAD or SAVE to access the file zx80prog.p located within the current working directory.

```
       CHOOSE A PROGRAM TO LOAD

  (..)
 HELP.P
 AYDEMO.P
 MINE81.P
 TETRIS.P
 TETRIS1K.P
 TETRISHR.P




 Q=UP  A=DN  ENTER=LOAD  SPC=ABORT
```

Configuring a Joystick

If you have a digital or analogue joystick plugged in and you'd like to use it then open the runtime options (ESCAPE from within the emulator or select the rightmost icon on the control bar) and utilise the joystick configurator using either the cursor keys and enter, directly with the mouse or the joystick once configured. Select a control on the graphical joystick representation (the selector will blink) and follow the instructions configuring as many of the controls as you possibly can for optimum usability.

Joystick Control Remapping

When the virtual keyboard is visible, position the selector over the function that you would like to assign to a joystick control and press the control remapper (the selector will blink). Then press a joystick control to remap the function to the control.

Existing controls that have been remapped are active within the emulator (you cannot remap GUI controls) and new controls are universally active. It is possible to include the SHIFT modifier within the control as long as it is active before you initiate remapping. To cancel remapping press the control remapper again.

For the Amiga:

As above section "For the PC" plus:

RunTime Option (using F1)

```
 Runtime Options
Volume  ◄ 126 ►
Key Repeat:
   Delay ◄ 320ms ►
   Interval ◄ 120ms ►
Colours:
   Fore:R ◄ 20 ►   Back:R ◄ f0 ►
        G ◄ 20 ►        G ◄ f0 ►
        B ◄ 18 ►        B ◄ e8 ►



        Save    Exit    Next ►
```

Just use Keys, joystick or the mouse to change settings.

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Tooltypes

sZ81 can be configured using tooltypes, which correspond directly to command-line options. Full details of options can be obtained with "sz81 -h". A list of tooltype equivalents follows:

-a[q;z;s]   **AYSOUND=QUICKSILVA|ZONX|STEREO**

-d   **SHOWDEVICES**

-i   **INVERT video characters.**

-l   **AUTOLIST (launch a file selector at boot, LOAD"" in Basic.)**

-L   **NOLOADHOOK (don't install the LOAD rom patch)**

-f   **Select "Tree Forth" Rom (by Tree System company)**

     Set the emulator refresh to the NTSC standard on a ZX81.

-o   **Select ZX80 "old Rom" system.**

-p   **ZXPRINTER=<pbm ouput file> [DEFAULT="ZxPrinter.bmp/pbm"]**

-P   **Select: P0=BMP1bit ; P1=BMP24bits ; P2=PBM format.**

-r   **SDL Video REFRESH=<1-50>**

-s   **SOUND ("Screen Sound" while saving)**

-S   **NOSAVEHOOK (don't install the SAVE rom patch)**

-T   **TAGULA**

-u   **UNEXPANDED**

-V   **VSYNC**

Additional tooltypes:

  RESOURCEFILE=<"sz81rc" or "sz81rc.txt" file>

File Selector

The Amiga build uses standard ASL requesters instead of sZ81's built-in file selector. It will also allow choosing a ZX80 file instead of being hard-coded to zx80prog.o

For the Sharp Zaurus:

Click screen - Toggle virtual keyboard and control bar

Backspace   - Rubout i.e. equivalent to using SHIFT + 0

Comma   - Equivalent to using SHIFT + .

Cursors   - Equivalent to using SHIFT + 5, 6, 7 and 8

-/=   - Decrease/increase the volume (if supported)

See PC controls for an explanation of the control bar and how to access the file selector.

For the GPH GP2X:

Within the emulator (remappable)		Within the GUI
Joystick :	Computer KEYS ;	ZX KEYS:
LTrigger	SHIFT	SHIFT/Page up
RTrigger	-	Page down
Joy Left	O	Selector left
Joy Right	P	Selector right
Joy Up	Q	Selector up
Joy Down	A	Selector down
Select	Runtime options	Control remapper
Start	Virtual keyboard	-
Button A	Newline	Select (selector hit)
Button B	Newline	Newline
Button Y	Rubout (SHIFT + 0)	Rubout (SHIFT + 0)
Button X	Space	Space

See PC controls for an explanation of the control bar, how to access the file selector and joystick control remapping.

Installation

To function correctly sz81 expects to find the zx80.rom and zx81.rom ROMs which are not included within the source package.

You might find them at ftp://ftp.nvg.ntnu.no/pub/sinclair/roms, or perhaps through searching the internet for "zx80.rom" and "zx81.rom".

Extract the sZ81 source package, copy the zx80.rom and zx81.rom ROMs into the data folder and change into the extracted directory.

For the PC:

Installation:

Just unzipp the binary package in a directory, all files are required to run sZ81 and never directly double-click on the executable file in a zipped file !

Don't use specifics language (non DOS) symbols in roots or previous directory ! (In case of "c:/émulateurs/sZ81_Win32/", prefer "c:/emulateurs/sZ81_Win32".)

Download and install Dev-C++ front-end (including the mingw32 GCC compiler) on your Hard disk.

It allow to generate a project ("DEV" attribute).

The "SDL.DLL" library had to be installed in the executable path.

Download and install the SDL SDK in the WinDev path.(include and headers)

If this SDL library is in the wrong directoy, many compilation errors will be displayed after process!

To avoid any problems, I move all files in the main "inclued"/"Lib" folders.

Launch "sZ81.dev", to edit and compile the project

Dev-C++ will generate his own "Make File" batch file and will generate an executable file. Just click on the compile button to create the executable file.

It must display a "Done" message !

If not, plenty of errors will be displayed, but don't bother this log...

Just check "orphelins" headers files, usually the SDL header files.

The codes are a multi-platforms release.

The "Win32" tag is used to parse and add windows codes.

We had to use " #ifdef " (if the variable is defined) or " #ifndef " (if the variable is not defined).

Where "#" is the compiler directive.

To set/declare this variable, We use the "-D" command in the "make.exe" compiler.

In Dev-C++, click on the "*Project options*" in the "*Poject*" pop-up menu.

Select the setup strip, in "*compiler*", this variables are displayed :

-Dmain=SDL_main (set the Main "C" file)

-DSZ81=1 (active the sZ81 update)

-DOSS_SOUND_SUPPORT=TRUE (active sound support)

-Dwin32=TRUE (add all Windows feature)

-DbmpFormat=TRUE (was used to select the bmp format, instead of bpm)

We use the "-I" (i) command in the "make.exe" compiler to edit the "*links editor*":

-Imingw32 (Set the "mingw32" include path)

-ISDLmain (Set the "SDLmain" include path)

-ISDL(Set the "SDL" include path)

(check your own SDL installation, but the compiler usually set default path is case of files errors.)

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Notes :

All of this project was distributed in "C" code.
Previous authors never distribute any executable files.

   This projet was a "Ghost" emulator... a codes-kit for programmers.

   Users had to learn to use a GCC compiler first, and had to "debug"/make his own program.

   I decided to compile this emulator to allow you to try it on Windows systems!

   sZ81 is an opened project, and I make its compiling more easy by using Dev-C++. You're encourage to change and update codes...

   Just report all changed or comments to Thunor or XavSnap (W32 release).

   Although, compile this project will be a good way to learn "C" language, a good practice to understand the "C" structure.

[XavSnap]

For the Amiga (requires SDK):

gmake -f Makefile.amigaos4

To get all the required files together in RAM:sz81:
gmake -f Makefile.amigaos4 install

The directory can then be dragged to final location.

[Chris Young]

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For the Sharp Zaurus (requires SDK):

    make clean
    make -f Makefile.zaurus

    Install sz81_2.1.x_zaurus.ipk using Add/Remove Software.

                                                                        [Thunor]

For the GPH GP2X (requires SDK):

    make clean
    make -f Makefile.gp2x

    Extract sz81_2.1.x_gp2x.tar.gz and copy the contents onto your SD card. Note that for Open2x there's Makefile.open2x if you prefer a statically linked makefile for this more up-to-date toolchain.

                                                                        [Thunor]

Notes on running certain games.

* QS Defender

    The version of QS Defender on both WoS and NVG just dumps some Dutch text at you when you run it. What you have to do to get a runnable version is delete lines 3 to 18 inclusive - you'll probably want to save it before running, to save having to do this every time.

    And don't forget to run the emulator with `-a q' for sound. :-)

* Rock Crush and Dan's Revenge

    These load in a slightly odd way, using multiple .p files. Make sure you have *all* of them in the directory you're loading e.g. crush.p from, or it won't work.

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Contacting Us

Please visit the project's support page at
http://sourceforge.net/projects/sz81/support

> **Ian Collier <imc_at_comlab.ox.ac.uk> ©1994**
> **Z80 emulation and much X code from xz80.**

> **Russell Marks <russell.marks_at_ntlworld.com> ©1995-2004**
> **[x]z81: ZX81/ZX80 support and svgalib front-end.**

> **Thunor <thunorsif_at_hotmail.com> ©2007-2010**
> **sZ81: SDL conversion, new artwork and features, GP2X and**
> **Sharp Zaurus builds.**

> **Chris Young <cdyoung_at_unsatisfactorysoftware.co.uk> ©2010**
> **sZ81: AmigaOS4 code and build.**

> **XavSnap <dskcenter_at_free.fr> (released 2010-05-7)**
> **sZ81: W32 build.**
>
> **Win32 Dev-C++/GCC/Win32 SDL libs version By Gilles & XavSnap.**

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