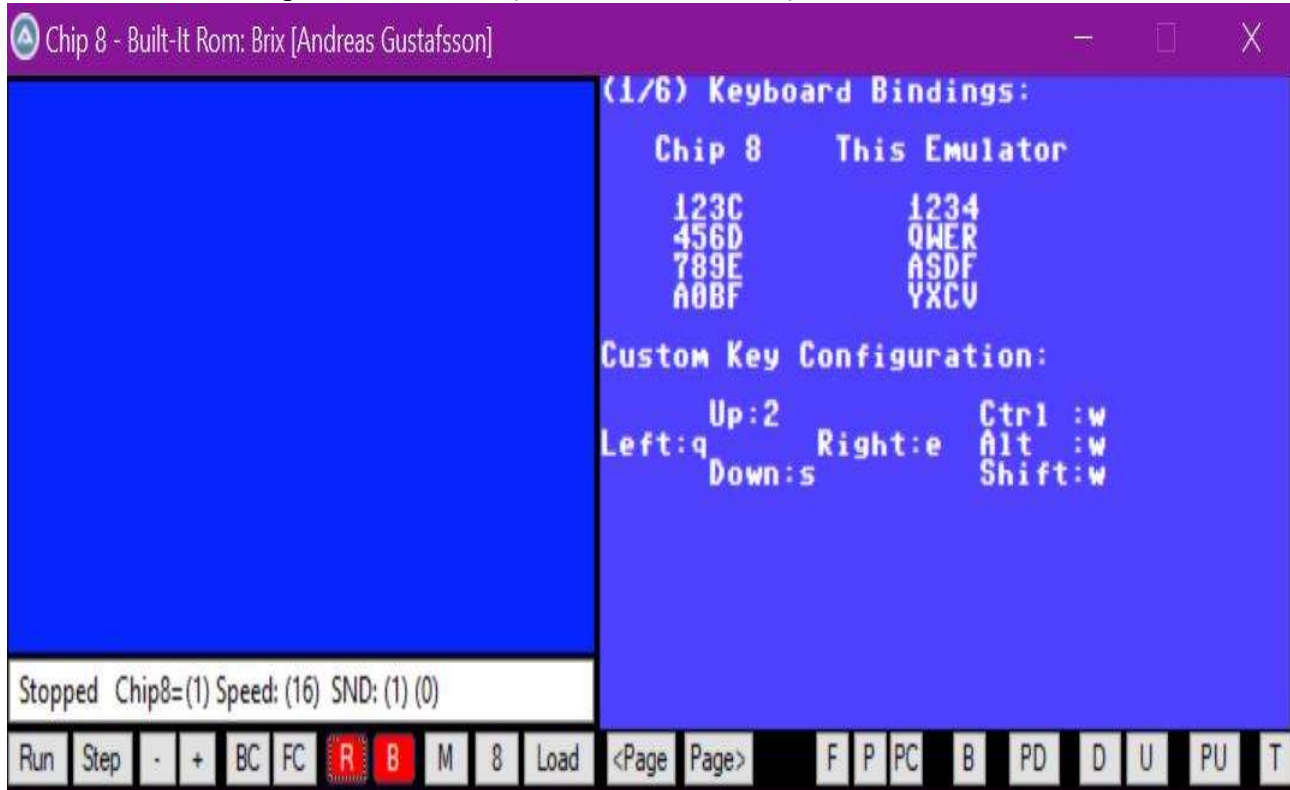


This is the AutoIt Chip8 main window (The non GDI version) :



When playing a Game click inside this box to get the focus for the keyboard.
(and to avoid the annoying windows error sounds)



Button explanations:



Run: Start/Stop the emulation

Step: When the Emulation is paused, this button advances one instruction per click.

- + Increase/Decrease speed delay

BC/FC: Background/Foreground Color chooser.

R: Resets the emulation, restarting the Current rom in the stepping mode. Click on the Run button to start the emulation again.

(this is useful if you want to use the Step function)

B: Reboot the emulation, clearing the memory and loading the built in rom.

M: Mute Sound.

8: This button may make some Games playable - for e.g. if they have graphical glitches.

Load: Loads a new Chip8 rom into the memory.

Most of the buttons below affect the right side of the AutoIt Chip emulator.

Some of these are Multi function buttons.

A Multi function button had the main purpose to steer through the Monitor view, but can be used for other things when not in monitor view.



Page < > switches the Info page. (See the images at the bottom)

F: **On monitor:** Jump to the Font start. **Else:** Change the display to Font #1

P: **On monitor:** Jump to the Program start. **Else:** Change the display to Font #2

PC: **On monitor:** Jump to The PC address. **Else:** Change the pixel type used on the display.

B: **On monitor:** Jump to the bottom of the memory. **Else:** Open the Activity window

PD: **On monitor:** Jump a page down. **Else:** Open the extra keys window.

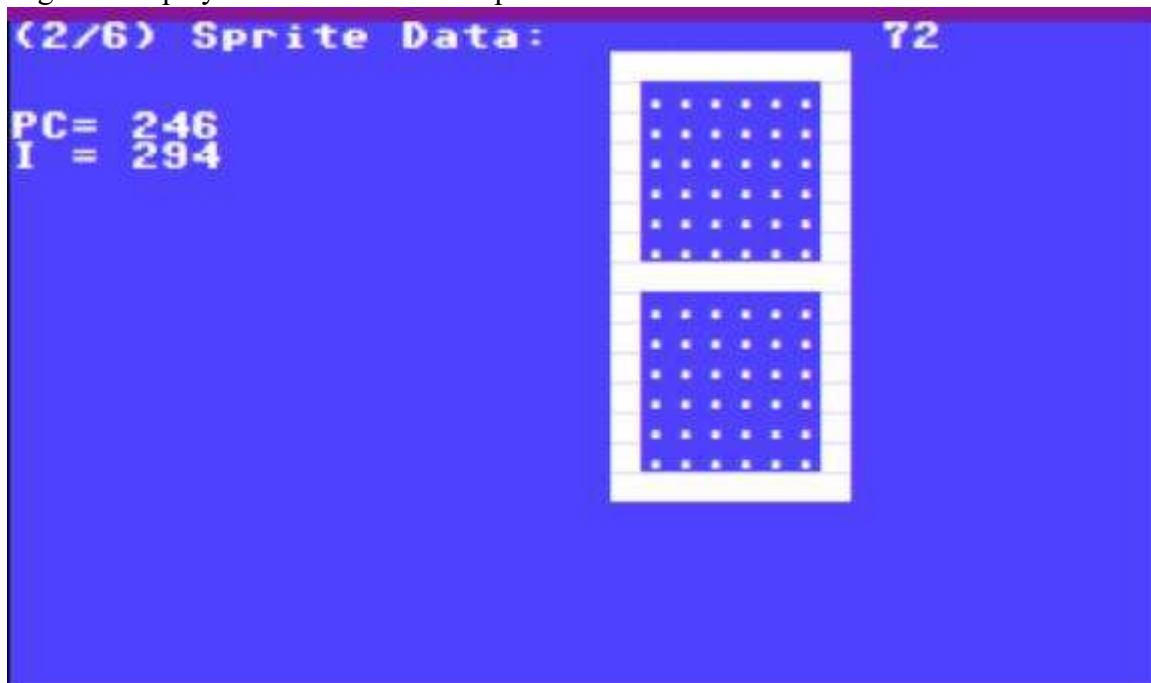
D: **On monitor:** Move the memory view down.

U: **On monitor:** Move the memory view up.

PU: **On monitor:** Jump a page Up.

T: **On monitor:** Jump to the Beginning of the memory. **Else:** Opens the config file in the Notepad.

Page 2 - Displays the Current drawn Sprite:



Page 3 - Registers and Stack

```
(3/6) V Register and Stack
V(00)=2C      S(0)=000      Cycle 72
V(01)=08      S(1)=000      PC: 246 582
V(02)=10      S(2)=000      I= 0294 660
V(03)=00      S(3)=000      SP= 0
V(04)=00      S(4)=000
V(05)=00      S(5)=000
V(06)=00      S(6)=000
V(07)=00      S(7)=000
V(08)=00      S(8)=000
V(09)=00      S(9)=000
V(0A)=00      S(A)=000
V(0B)=00      S(B)=000
V(0C)=00      S(C)=000
V(0D)=00      S(D)=000
V(0E)=00      S(E)=000
V(0F)=00      S(F)=000
```

Page 4 - Emulator State (Opcodes, Instruction, Registers and Error Messages...)

```
(4/6) Emulator state
PC: 246 cycle 72 I= 0294
Opcode:.....1246 (4678)
Instruction 1000 (4096)
Address:.....246 (582)
byte:.....46 (70)
Value.....6 (6)
Vx:.....2 (2)
Vy:.....4 (4)
Delay= 00 Sound= 00 Sound is On
1NNN Jump to address
Address = 246
ErrorMsg: Stopped: Infinite Loop 246
```

The error message will display what caused the Emulator to Stop.

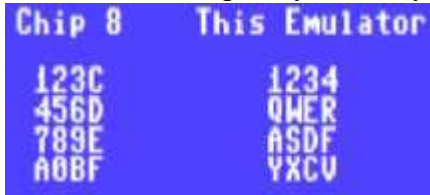
Page 5 - the Monitor View:

```
(5/6) Monitor - Rom Data582:512
200: 00E0A2486000611E6200D202D2127208
210: 3240120A6000613E6202A24AD02ED12E
220: 720ED02ED12EA258600B6108D01F700A
230: A267D01F700AA276D01F7003A285D01F
240: 700AA294D01F1246FFFFC0C0C0C0C0C0
250: C0C0C0C0C0C0C0C0C0C0FF808080808080
260: 808080808080FF81818181818181FF81
270: 81818181818180808080808080808080
280: 8080808080FF818181818181FF808080
290: 80808080FF818181818181FF81818181
2A0: 8181FFFFFF0000000000000000000000
2B0: 00000000000000000000000000000000
2C0: 00000000000000000000000000000000
2D0: 00000000000000000000000000000000
2E0: 00000000000000000000000000000000
2F0: 00000000000000000000000000000000
```

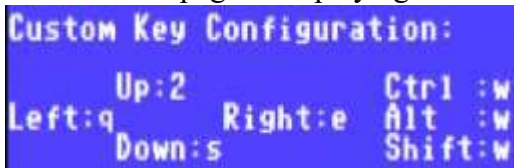
Page 6 - Current fontset. Only the first 16 chars (which is default font) are displayed:

```
(6/6) Fontset:
0 1 2 3 4 5
6 7 8 9 A B
C D E F
```

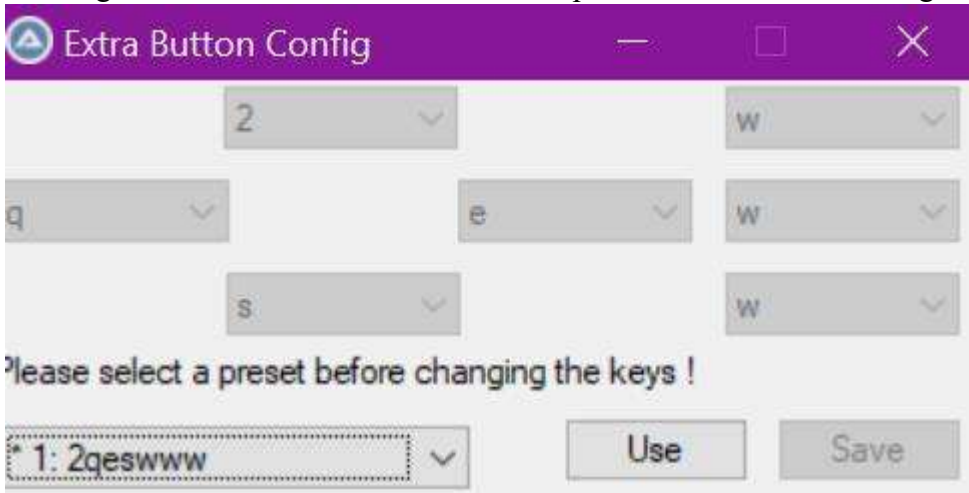

The standard Chip8 keyboard layout is assigned to the following windows keys:



However, you can assign 7 of these keys to Arrow (Up, Left, Right, Down) Ctrl, Alt and Shift keys. The first info page is displaying the currently used custom keys:



Pressing the Multi function button PD will open the Extra Button Configurator:



Currently the first 2 presets are already defined and can not be changed. (bottom left side)
The non changeable presets have a * in front of the number and all other buttons are disabled.

To change the keys, first select a Preset (2 to 9). Then choose the Keys from the boxes above.

The "Use" button will choose the Current settings (but will not save it to the Ini file) and the window will be closed.

The Save button will save the Current settings to the Ini file, overwriting the existing preset !

This is the Activity Log window. It displays the Current instruction data (before calculations).

Chip 8 Activity Log (before calculation)

| Cycle Nr. | Opcode | Instruction | Address | Vy | Vx | Byte | Value | Content of Vy | Content of Vx | I |
|-----------|--------|-------------|---------|----|----|------|-------|---------------|---------------|-------|
| 7: | D212 | D000 | 212 | 2 | 1 | 12 | 2 | U(2)=0 | U(1)=30 | I=248 |
| 8: | 7208 | 7000 | 208 | 2 | 0 | 08 | 8 | U(2)=0 | U(0)=0 | I=248 |
| 9: | 3240 | 3000 | 240 | 2 | 4 | 40 | 0 | U(2)=8 | U(4)=0 | I=248 |
| 10: | 120A | 1000 | 20A | 2 | 0 | 0A | A | U(2)=8 | U(0)=0 | I=248 |
| 11: | D202 | D000 | 202 | 2 | 0 | 02 | 2 | U(2)=8 | U(0)=0 | I=248 |
| 12: | D212 | D000 | 212 | 2 | 1 | 12 | 2 | U(2)=8 | U(1)=30 | I=248 |
| 13: | 7208 | 7000 | 208 | 2 | 0 | 08 | 8 | U(2)=8 | U(0)=0 | I=248 |
| 14: | 3240 | 3000 | 240 | 2 | 4 | 40 | 0 | U(2)=16 | U(4)=0 | I=248 |
| 15: | 120A | 1000 | 20A | 2 | 0 | 0A | A | U(2)=16 | U(0)=0 | I=248 |
| 16: | D202 | D000 | 202 | 2 | 0 | 02 | 2 | U(2)=16 | U(0)=0 | I=248 |
| 17: | D212 | D000 | 212 | 2 | 1 | 12 | 2 | U(2)=16 | U(1)=30 | I=248 |
| 18: | 7208 | 7000 | 208 | 2 | 0 | 08 | 8 | U(2)=16 | U(0)=0 | I=248 |
| 19: | 3240 | 3000 | 240 | 2 | 4 | 40 | 0 | U(2)=24 | U(4)=0 | I=248 |
| 20: | 120A | 1000 | 20A | 2 | 0 | 0A | A | U(2)=24 | U(0)=0 | I=248 |
| 21: | D202 | D000 | 202 | 2 | 0 | 02 | 2 | U(2)=24 | U(0)=0 | I=248 |
| 22: | D212 | D000 | 212 | 2 | 1 | 12 | 2 | U(2)=24 | U(1)=30 | I=248 |
| 23: | 7208 | 7000 | 208 | 2 | 0 | 08 | 8 | U(2)=24 | U(0)=0 | I=248 |

PC Cycle Vreg Instruction I Stack Use 0 CLS

0 1000 Active Run 0 Hide

The displayed String format means:

Cycle Nr. Opcode Instruction Address Vy Vx Byte Value Content of Vy Content of Vx and I

The CLS button clears the Output.

The Hide button stops the Data collection and hides the window.

The 2 Input boxes are used for Decimal/Hexadecimal conversion. The above is decimal (0-10). The below is for the Hexadecimal numbers (0-F).

The Use button will place the Decimal number to the Input box to the left side.

The Run button will start/stop the emulation from here.

The Active checkbox activates the debugging functions. The emulation can be stopped whenever a PC, Cycle, Vreg, Instruction, I or Stack contains a number.

For PC, Cycle, Vreg, I and Stack, enter the desired number into the Bottom Left box.

Vreg needs, additionally a number from the box below it.

Instruction will stop the emulation whenever the selected instruction is executed.

This emulator was written in December 2024 (first in Blizbasic then converted to AutoIt) while watching the following video series:

<https://www.youtube.com/watch?v=AsukaPLuTsU>

Some of the bug fixing was done with the help of :

<https://www.youtube.com/watch?v=YvZ3LGaNiS0>

and with the help of <https://github.com/Timendus/chip8-test-suite> and <https://chip8.dotslashdan.com/> and <https://tobiasvl.github.io/blog/write-a-chip-8-emulator/#instructions>

The roms are from the following sites:

<https://github.com/kripod/chip8-emulator>

<https://github.com/Timendus/chip8-test-suite>

<https://www.zophar.net/chip8/00schip8.html>

<https://chip8.dotslashdan.com/>

<https://github.com/loktar00/chip8>

Additional notes:

The beeping Sound can be changed through the ini file. At the start, the beep.wav is loaded by default (and the entry in the ini file is made).

You can change the ini file to point at any wav file. (eventually mp3 as well).

In the ini file, you can set up 2 sound drivers (functions to play the sound)

0 - Using the _WinApi functions

1 - Using the AutoIt's _PlaySound() function

The Sound driver changes are active only upon restarting the emulator.

The second font used here is the C64 Pro mono, which can be downloaded from here

<https://style64.org/c64-truetype/>