TilEm USER MANUAL

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21 mars 2012

Table des matières

Chapitre 1

Introduction

1.1 What's TilEm2 ?

TilEm2 is a TI calculator emulator. It emulates all the Z80 calculators (73, 76.fr, 81, 82, 82stats, 82stats.fr, 83, 83+, 83+ SE, 84+, 84+ SE, 85, and 86) and all known ROM/OS versions.
TilEm2 is completely free, and designed for Linux (but available for Windows). We put a lot of work in this software to offer to the community the best possible product.

1.2 Some history

Some of you probably already know TilEm because a first version was released around 2000/2001 by Julien Solignac (the maintained by Benjamin Moody since 2004).
This first version was working fine but there were some issues, skins were too small and bad resolution and a lot of feature were missing.
Anyway, this software was pretty good (especially because the core emulation was very good).
We decided to rewrite this emulator from scratch, keeping the philosophy of TilEm but improving all the rest.
A new core has been developped by Benjamin Moody, and I started to work on the GTK user interface (later he helped me for this task).

We are proud to release our work for beta testing!

1.3 Features

TilEm2 has basically all the TilEm old features plus a lot of new things :

- Linking : Send and receive var (use libticalcs2).
- Screenshot.
- Animated screenshot.
- Grayscale.
- Save states.
- Use TiEmu skin file format (easy to do your own skin).
- And more...

1.4 Skins

You can use TilEm2 without skin (just uncheck the "Use skin" checkbox into the Preferences menu) but skins are more user friendly :)
We have made some officials and free to use skins (thank you to our contributors).
You can do your skins using skinedit. If you want, you can send us the skin file, maybe it could become "official".

Here are the current skins available by default :

FIGURE 1.1 – The skins

Chapitre 2

Installation

2.1 Generalities

Before installing TilEm2, you should know that no ROM is included in this software.
In order to use TilEm2, you must use your own rom (use TILP to get it).

2.2 Dependancies

TilEm2 uses the following libraries :

- GTK+ 2.6 or higher (but 3.x not supported yet).
- libticalcs2.

2.3 Install from sources

Dowload the source from the trunk like this :
svn co https ://tilem.svn.sourceforge.net/svnroot/tilem

Then install gtk+ (e.g. for debian : sudo apt-get install libgtk2.0-dev).
Then install libticalc2.

After that, simply use the configure script and the well know Linux install :
./configure make sudo make install

Usually, icons will be copied into /usr/share/tilem2/
Keybindings and configuration file will be installed into $HOME/.config/tilem2

Then you can launch TilEm2 with the command :
tilem2 -r /path/to/rom

Or simply :
tilem2

2.4 First use

If no rom is loaded, simply click right on the window and choose "Open Calculator...".
The last used rom is automatically used for the next launch of TilEm2.
You can save the current state of the calculator by using "Save Calculator".

Chapitre 3

Utilisation

3.1 Menu

As TilEm1, the menu is a popup menu (right click).
All you want to do need to use this menu.

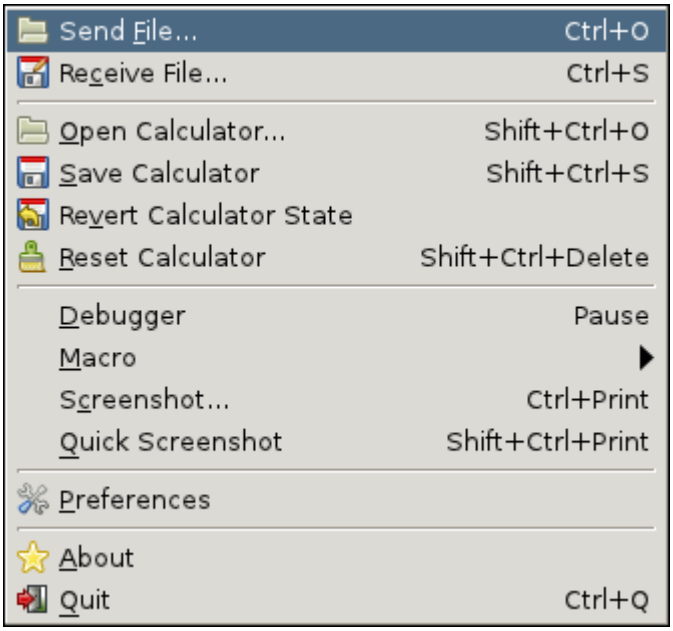

FIGURE 3.1 – The right click menu

As you can see, there's all you need, no more, no less :

– Send File... : Load a file from your computer to TilEm2.

- Receive File : Launch a menu where you can store a variable from TilEm2 to your computer.
- Open Calculator... : Load a ROM.
- Save Calculator : Save the current state of the calculator (in a separate sav file)
- Revert Calculator : Revert the state of the calculator.
- Reset Calculator : Reset the calc of course.
- Debugger : Open the debugger window.
- Macro : Record, play, open or save a macro (a kind of script to do some actions automatically).
- Screenshot : Open the screenshot menu (static and animated screenshot).
- Quick Screenshot : Grab a screenshot and save it without prompting (that's why it's "quick").
- Preferences : Open the preference window.
- About : Open the about dialog (informations on the authors and more)
- Quit : Close TilEm2 properly

3.2 Send File...

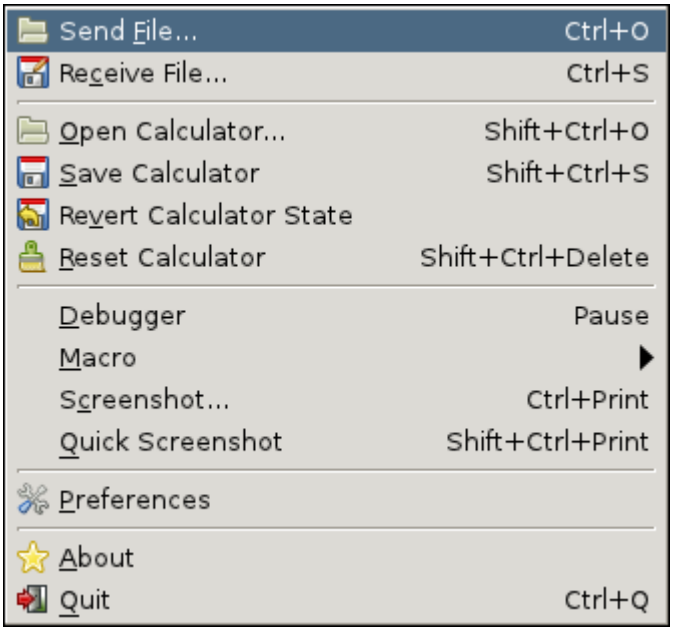

FIGURE 3.2 – The "Send File..." menu entry

This is one very important feature, because emulators are usually used to try some programs before really transferring it to real calc.

When you click on this menu entry, a file chooser dialog is opened and let you choose a file.

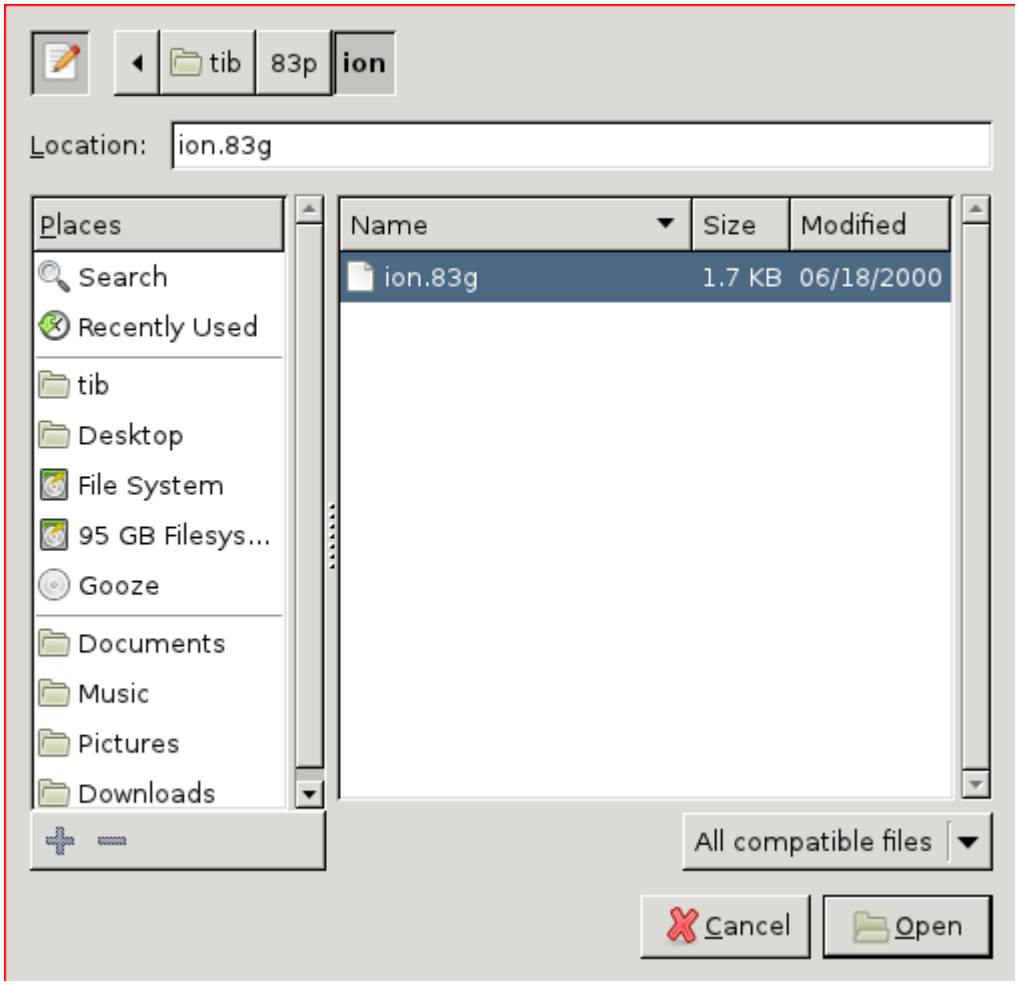

FIGURE 3.3 – The "Send File..." file chooser dialog

A lot of people don't know which file extension is associated with the emulated model...
To help them, some patterns are used to do the selection.
When you let "All compatible files", TilEm2 do the job for you, but you can choose "All files" if you know what you're doing (a file with an incorrect extension by example).

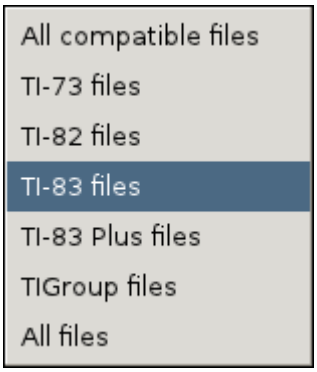

FIGURE 3.4 – The "Send File..." patterns

It could take some time to load a variable so a current progress bar is printed while loading to know what's happening.

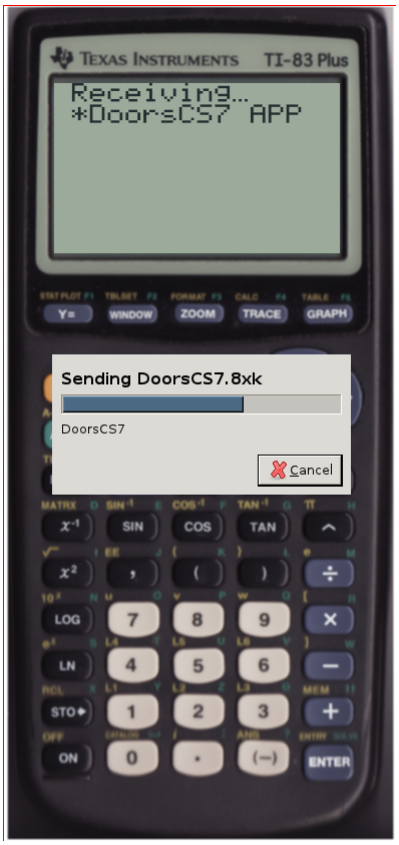

FIGURE 3.5 – The "Senf File..." progress bar update

3.3 Receive File...

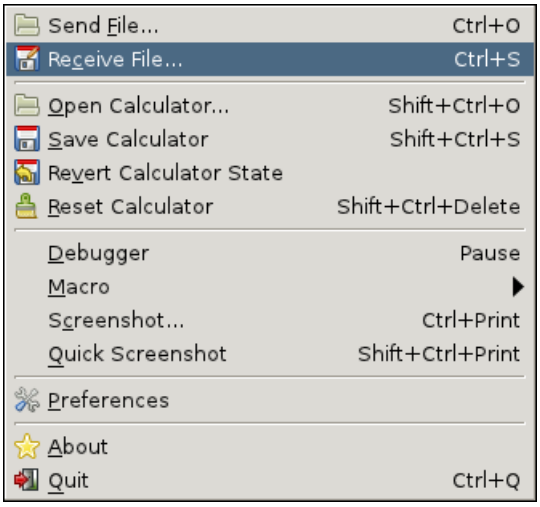

FIGURE 3.6 – The "Receive File..." menu entry

When you click on "Receive File..." menu entry, TilEm2 firstly get the vars then prints it into a listview.

FIGURE 3.7 – The "Receive File..." get the variables

After the first launch, refresh is made only on request !
If you click "Receive File..." then close the window, then create a program and click "Receive File..." you will not see your program.
The variable list let you choose the stuff you want to backup.

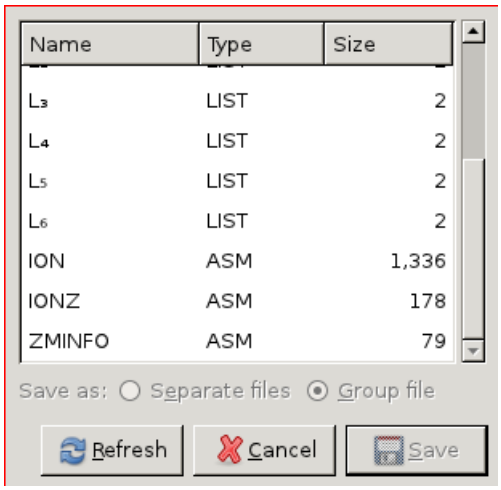

FIGURE 3.8 – The "Receive File..." window

If more than one variable is selected, you can choose between two modes of backup : "Separate files" or "Group file".
If you choose separate, each file is saved as if you have saved one by one.

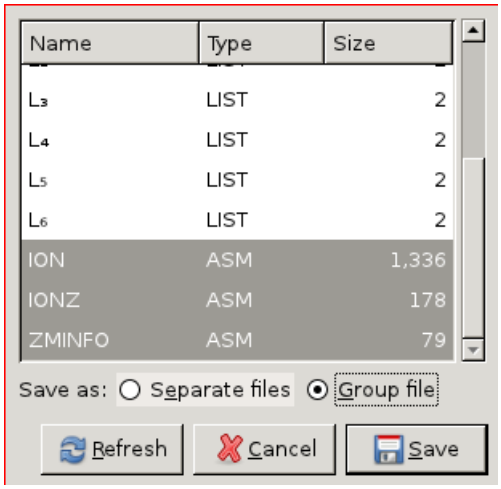

FIGURE 3.9 – The two modes of backup (multiple files only)

If you save grouped, a group file will be created on disk.
When you finally click on "Save" button, a file save dialog is opened.
Choose a directory and a name and click "Save".

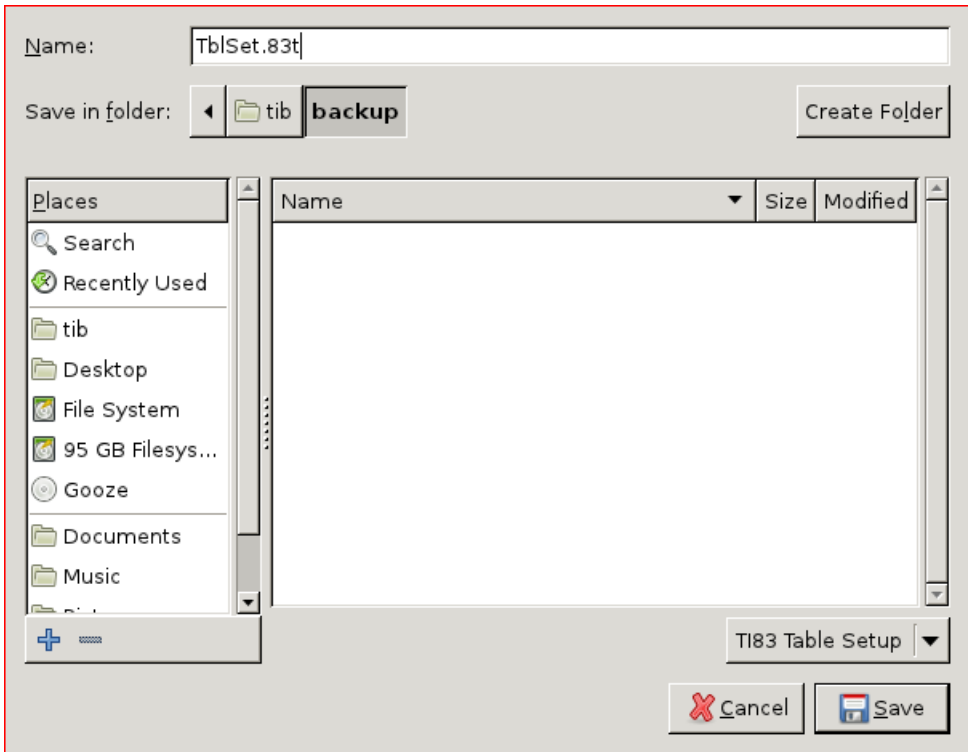

FIGURE 3.10 – The "Receive File..." file save

3.4 Open Calculator...

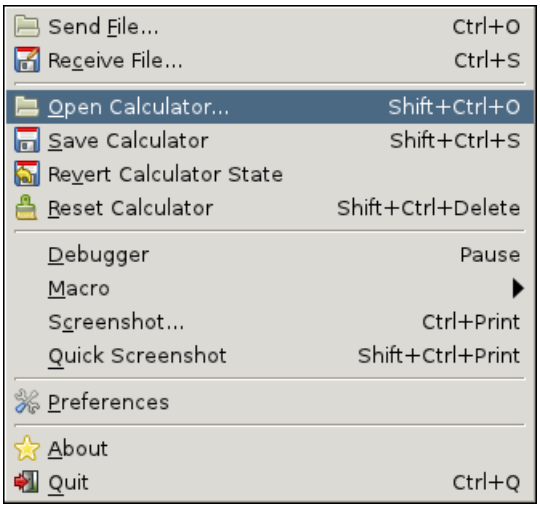

FIGURE 3.11 – The "Open Calculator..." menu entry

When you click on "Open Calculator...", a file chooser dialog pop up and let you choose a rom to load.
So in fact even if you already emulates a calculator, you can switch to another just by opening a new rom file.
Another way to do that is to quit TilEm2 and restart it using another rom file (option -r).

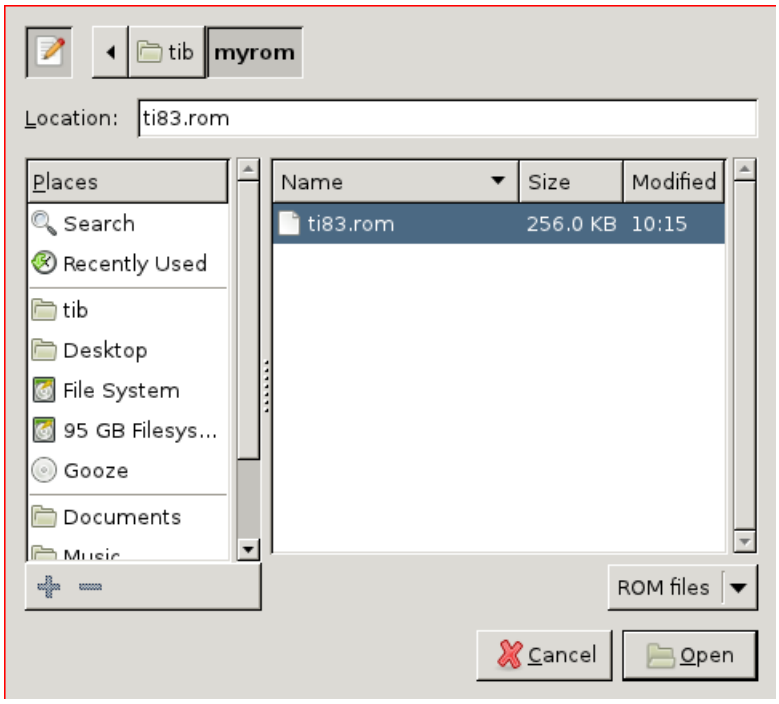

FIGURE 3.12 – The "Open Calculator..." file chooser

Rom files usually finish by .rom as extension but you can use "All files" pattern if you have a rom with a odd extension.

FIGURE 3.13 – The file chooser patterns

3.5 Save Calculator...

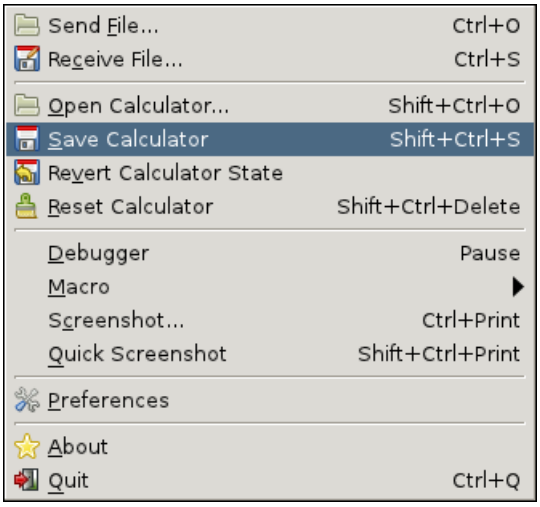

FIGURE 3.14 – The "Save Calculator" menu entry

This option just save the current state of the calculator in a .sav file.
The file is created in the same directory as the rom file and with the same name.

3.6 Revert Calculator State

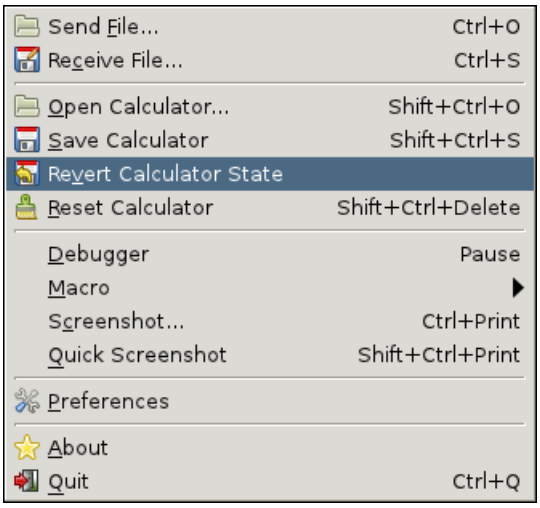

FIGURE 3.15 – The "Revert Calculator State" menu entry

No surprise, this option just revert the calculator state (if possible).

3.7 Reset Calculator

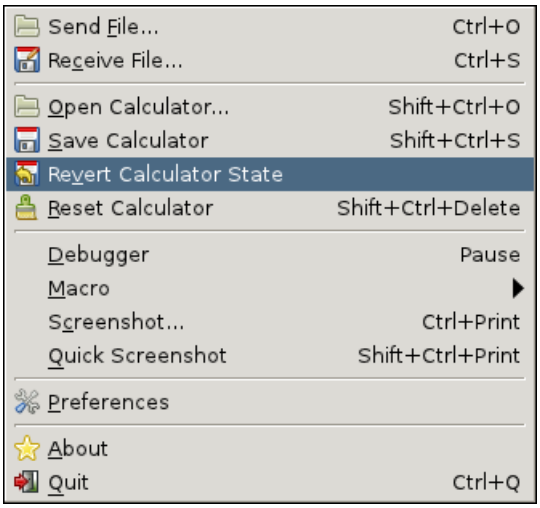

FIGURE 3.16 – The "Reset Calculator" menu entry

Guess what does this option :)

3.8 Debugger

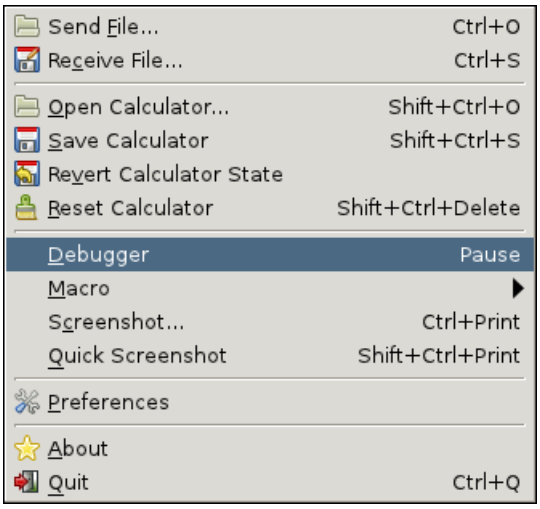

FIGURE 3.17 – The "Debugger" menu entry

When you click on this option, the debugger window will appear.

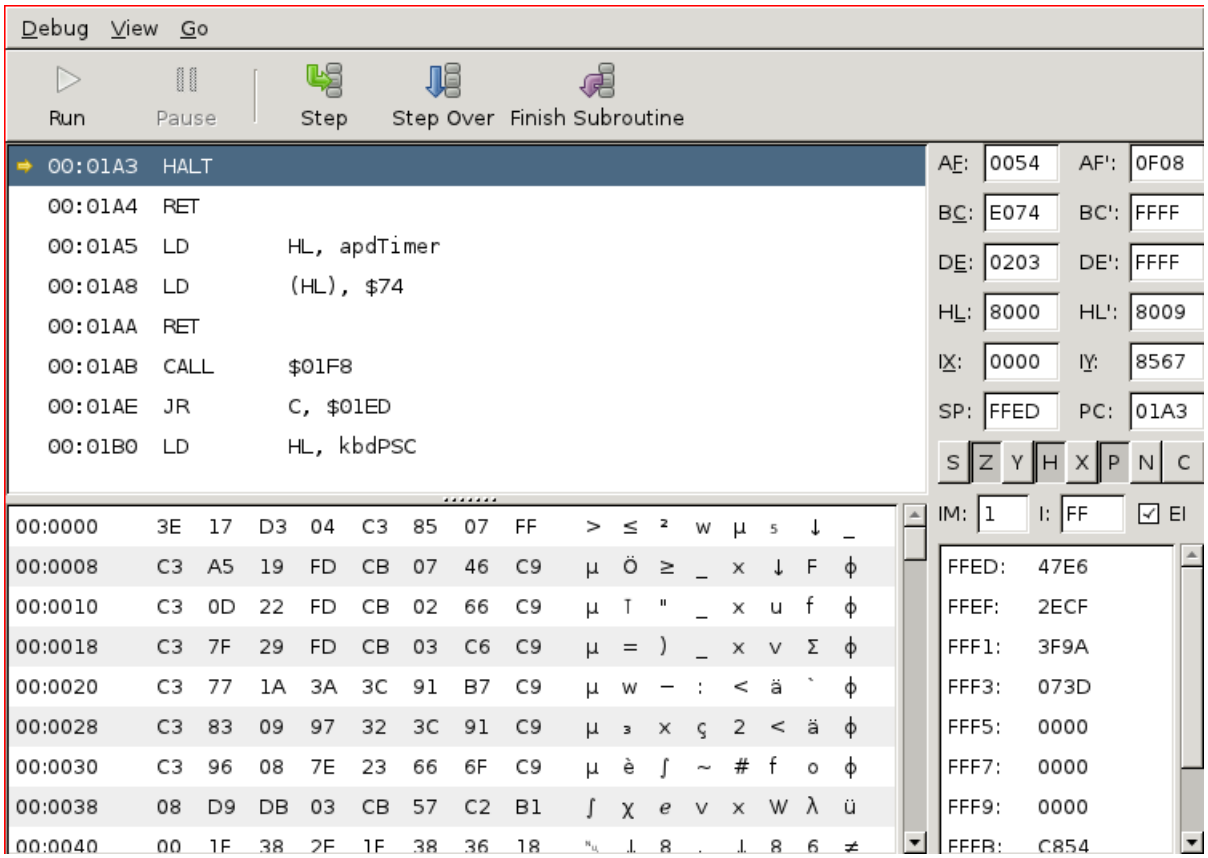

FIGURE 3.18 – A nice and powerful debugger

There's a lot of things to say about debugger.
When you launch it, calculator is automatically paused.
As you can see there are 5 big buttons : Run, Pause, Step, Step Over, Finish Subroutine.
Step just execute one instruction.
As you can see, all the instructions are not the same length, that's why it doesn't step one byte per one byte.
Step over do the same job than step but do not follow call.
Finish subroutine just do basically the same job but stop after a ret.

Now just see what's the differents view of the debugger dialog.
There's a big frame for disassembly view.
In this frame, you can see the adress and the disassembly instruction.
On right click, you can do some useful actions : Breakpoint here, Go to adress, go to PC.

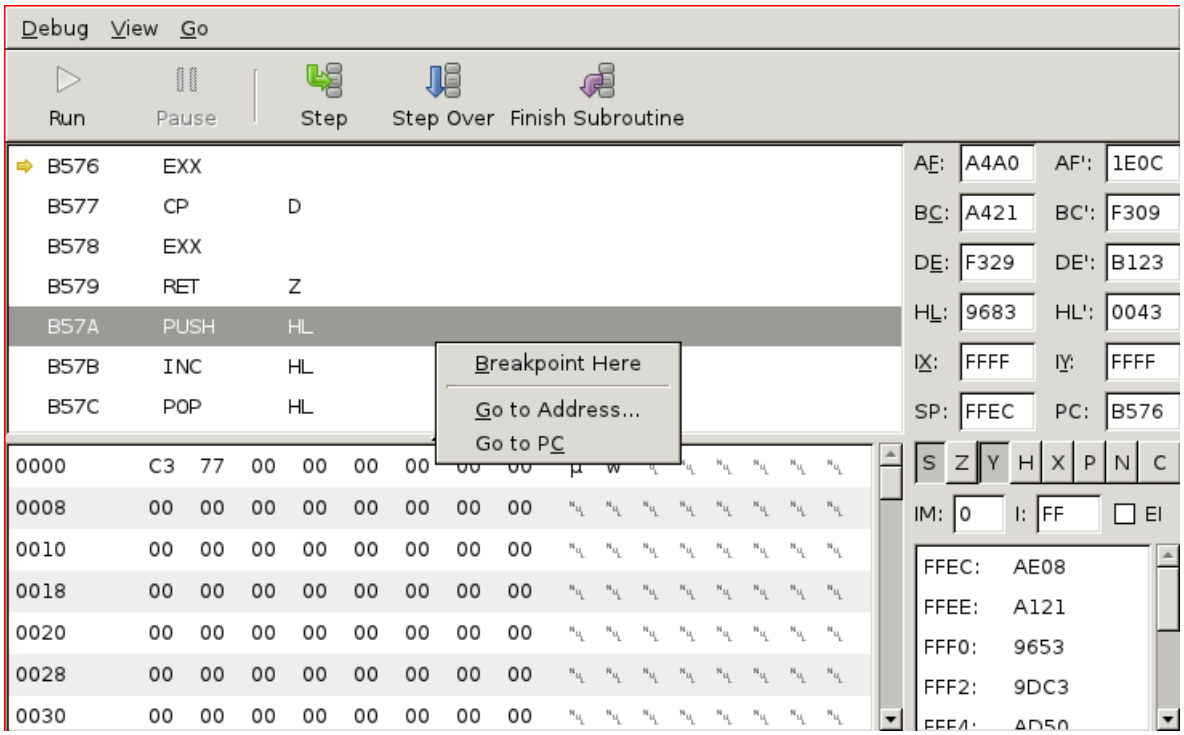

FIGURE 3.19 – The right click menu on disasm view

There's 2 kind of adress notation for this view : Logical and Absolute.
You can switch it into the "View" menu.

FIGURE 3.20 – Switch between logical and absolute adresses

The second big frame is the memory view.
For this view you can switch the adresses representation if you want.
In this view you can see what your calculator contains.
You can also edit the memory and change some values by your own.

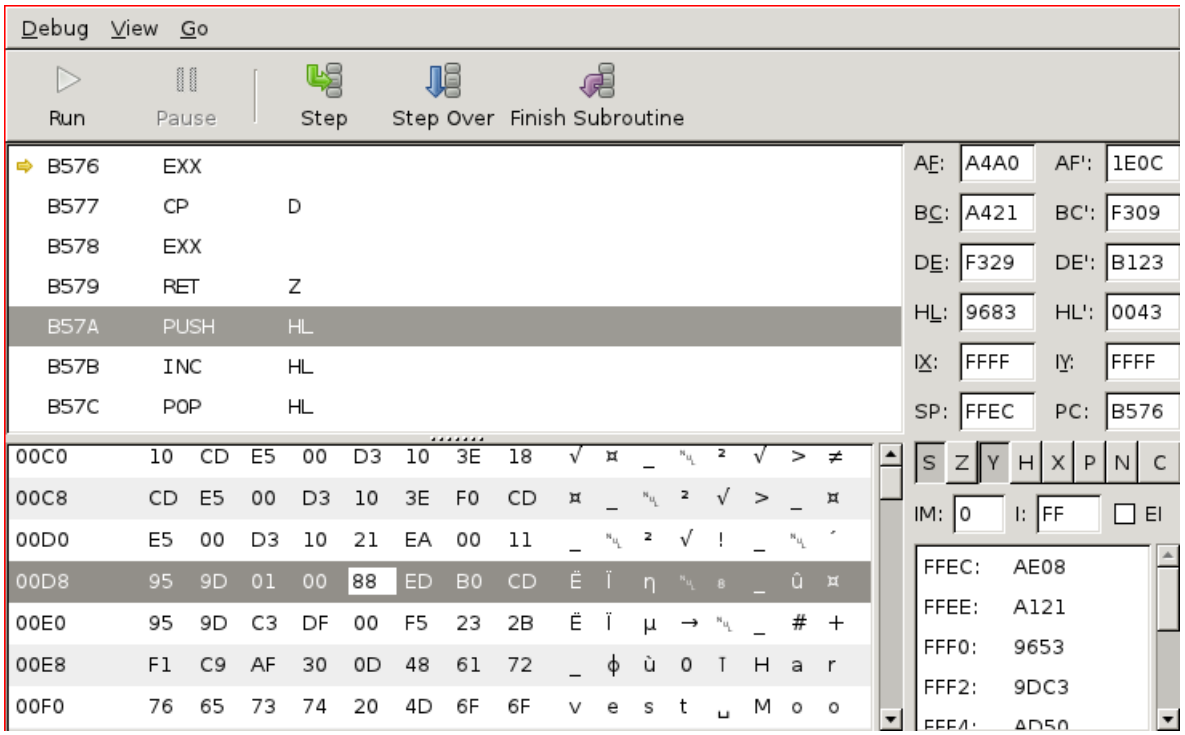

FIGURE 3.21 – Edit the memory

A third view represents the registers.
You can edit them too.
Below registers there is a bunch of toggle button to represent the flags (you can change it).
Then Interruption Mode IM, I, and Enable Interrupt (checkbox).
The finally the stack.

At the top of the debugger window, you can see a menu "Debug".

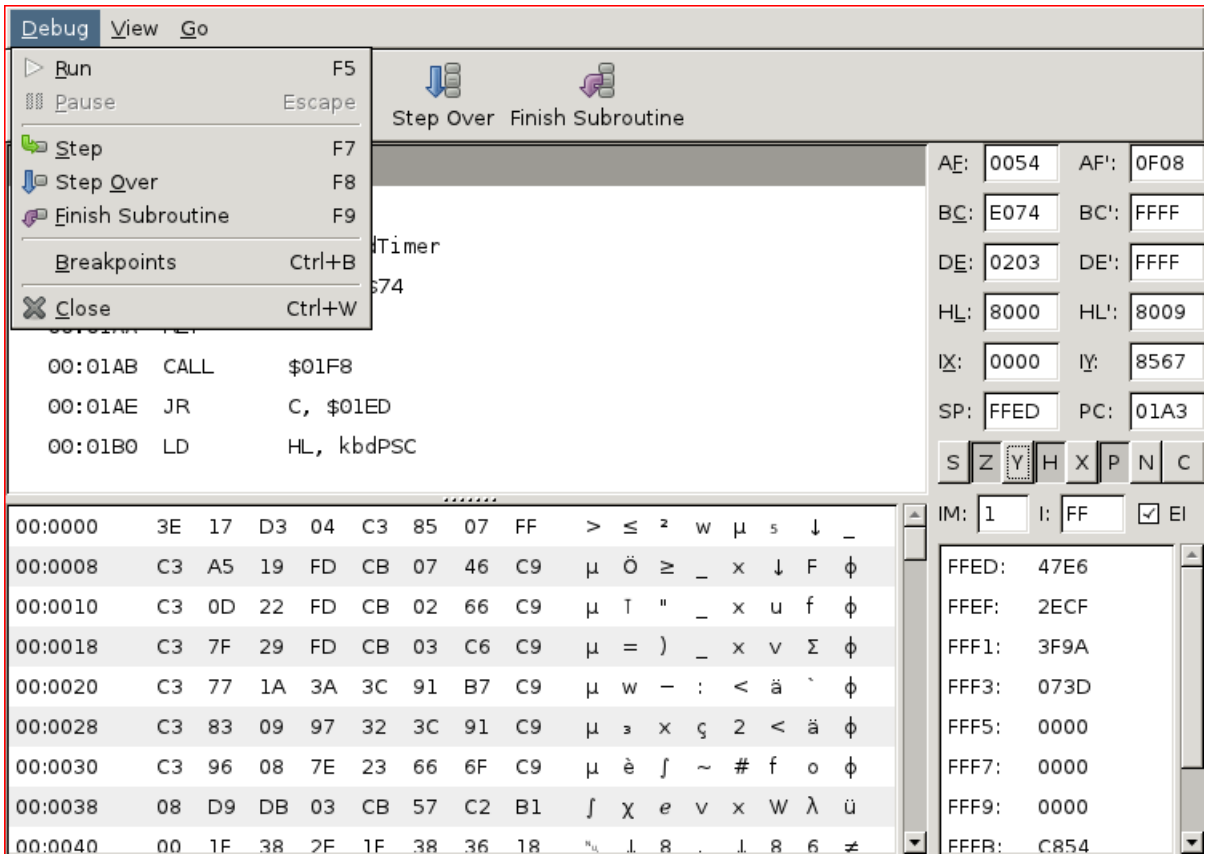

FIGURE 3.22 – The "Debug" menu entry

The options are the same than buttons but there is a big news : breakpoints. Breakpoints are a big part of the life of a assembly developpers.
This option opens the Breakpoint menu when you can "Add", "Remove", "Edit", "Clear" or some special action like "Break on invalid instructions" or "Break on undocumented instructions".

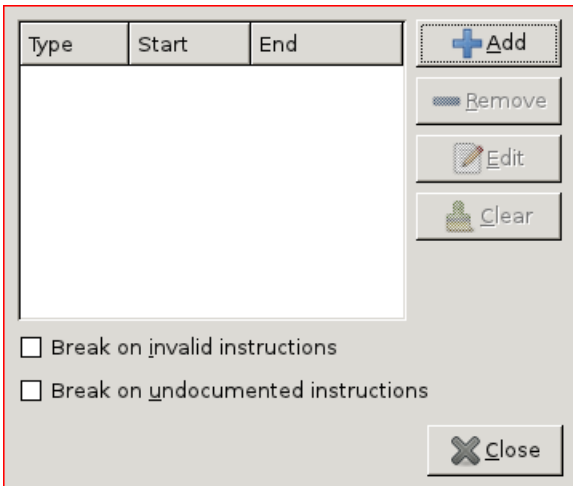

FIGURE 3.23 – The "Breakpoints" menu

The easiest way to add a breakpoint is to right click on the disasm view and click on "Breakpoint here" but you can also set a breakpoint using its adress (logical or absolute).

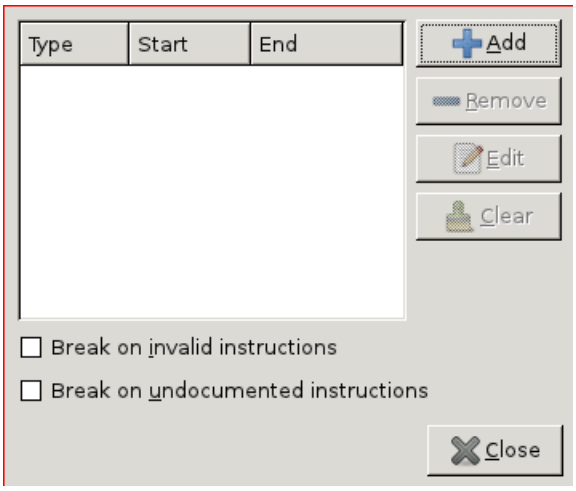

FIGURE 3.24 – Adding a breakpoint

The "Go" menu basically provide and easy way to navigate into the disasm view and th e stack.

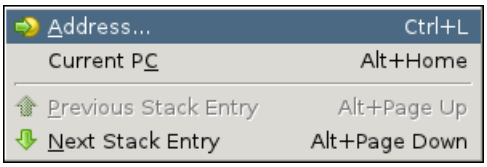

FIGURE 3.25 – The "Go" menu entry

Now I must talk about a nice tool called Keypad (into View menu).

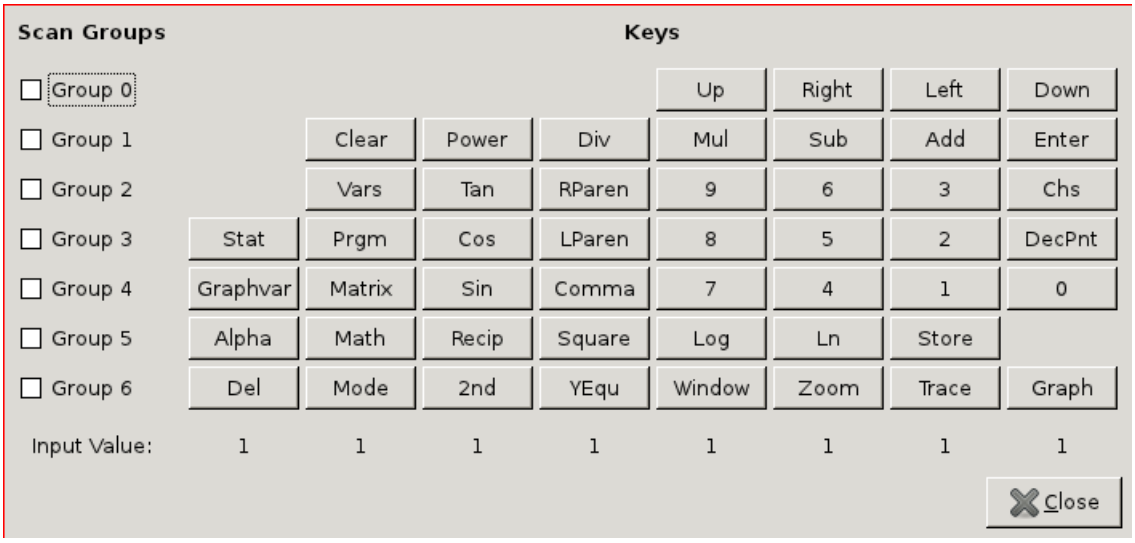

FIGURE 3.26 – The keypad

3.9 Macro

Macros are an easy way to simulates key press, file loading, reset automatically.
It means that you could record a macro then click on some keys, then stop.
If you play it, tilem will press the same keys for you.
Have you never think too lazy to press always "2nd catalog asm(" each time you want to test your new asm production.
Simply use a macro to load and launch your program automatically!

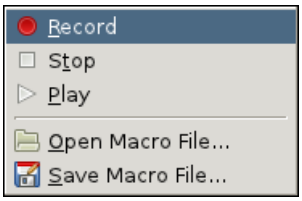

FIGURE 3.27 – The "Macro" submenu

About the options, you can play an already loaded macro or a macro you just have recorded.
You can also open a macro and save the current macro (which one you just have recorded).

3.10 Screenshot...

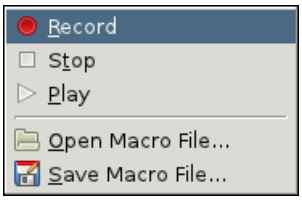

FIGURE 3.28 – The "Screenshot..." submenu

By clicking on this option, you launch a screenshot dialog.

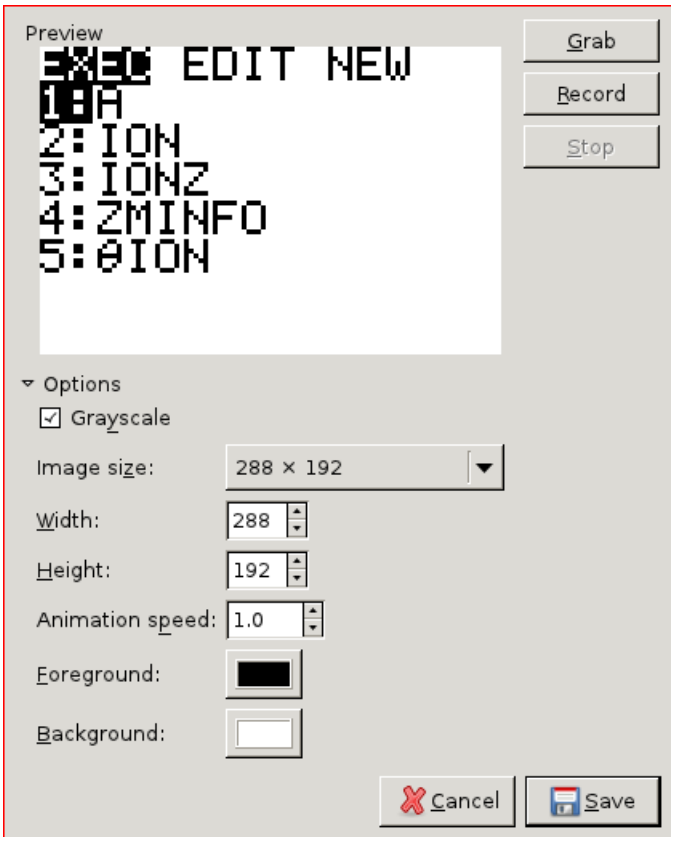

FIGURE 3.29 – The screenshot dialog

You can grab static screenshot (multiple format) or animated screenshot (will be saved as gif).
As you can see TilEm2 has a lot of screenshot configuration.
So you can change the size, change the foreground and background colors.
Use or not grayscale.

3.11 Preferences

This is where you can set the skin (or disable using it) and some important other stuff.

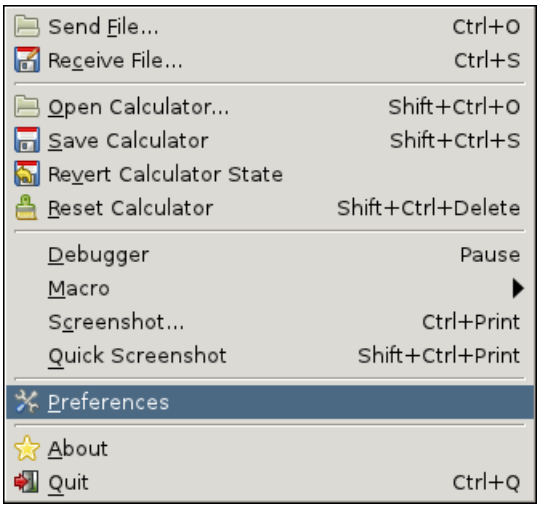

FIGURE 3.30 – The "Preferences" menu entry

You can limit speed or not.
Emulate grayscale (if you don't know just let it checked by default).
Use smooth scrolling.

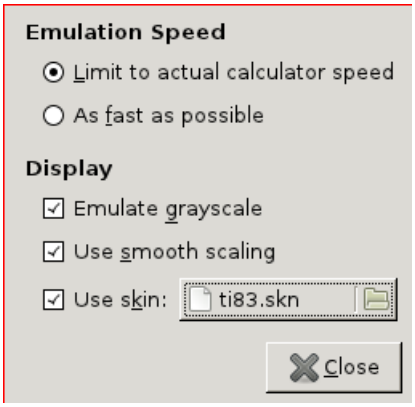

FIGURE 3.31 – The preferences dialog

And an important user friendly feature...
Set skin!
When you click on the button, a file choose will popup and lt you choose the skin.

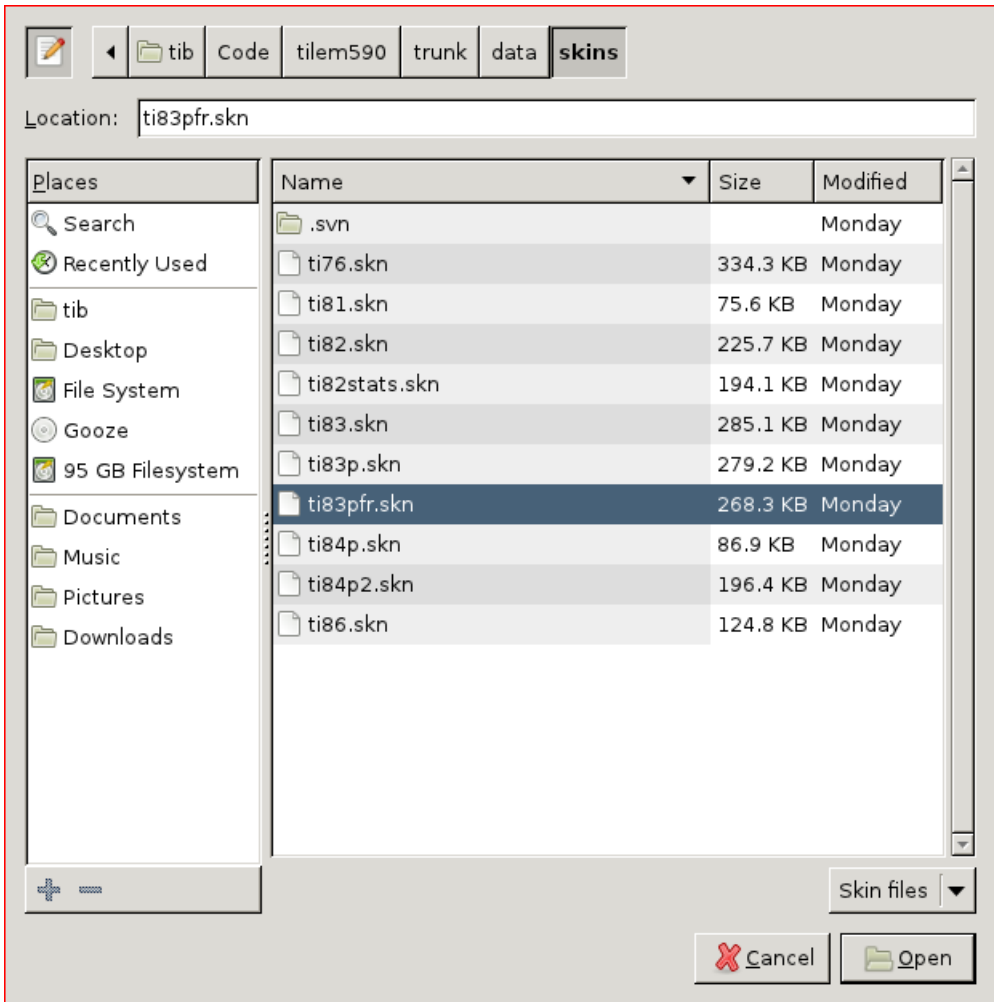

FIGURE 3.32 – The skin file chooser

3.12 About

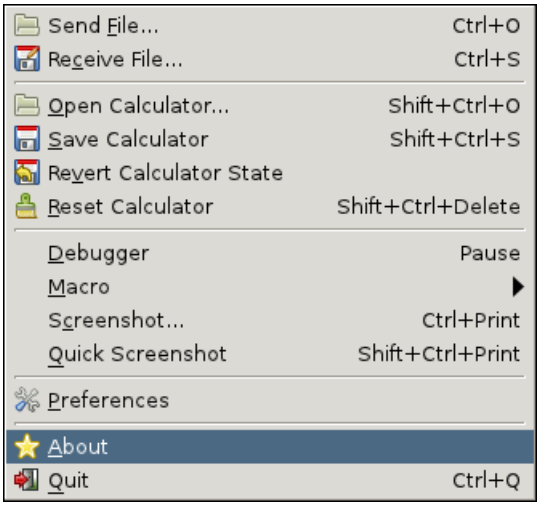

FIGURE 3.33 – The "About" menu entry

No more than an about dialog :)

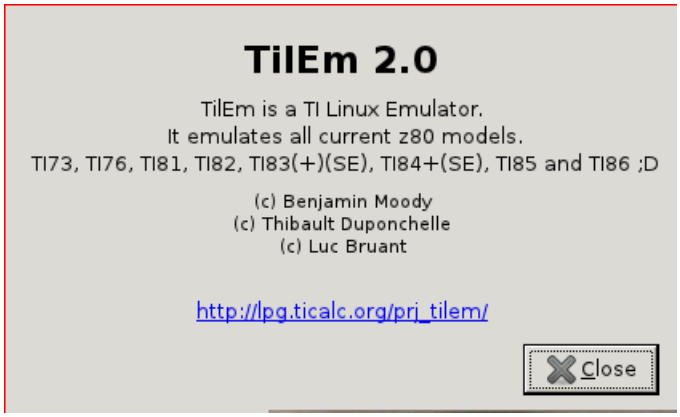

FIGURE 3.34 – The about dialog

3.13 Quit

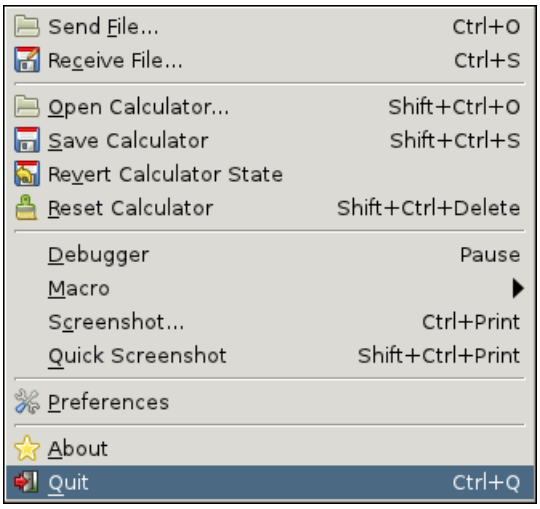

FIGURE 3.35 – The "Quit" menu entry

Bye Bye ;)

Chapitre 4

Command line usage

TilEm2 is basically made for Linux and command line is our first love :)
Here the options at launch.

- -r, –rom=FILE The rom file to run
- -k, –skin=FILE The skin file to use
- -m, –model=NAME The model to use
- -f, –file=FILE The file to load
- -s, –state-file=FILE The state-file to use
- -l, –without-skin Start in skinless mode
- –reset Reset the calc at startup
- –get-var=FILE Get a var at startup
- -p, –play-macro=FILE Run this macro at startup
- -d, –debug Launch debugger

You should usually use something like :
tilem2 -r /path/to/my/rom

But as you can see you can specify the skin with -k.
If you usually use more than one model, you can try -m and it will load the rom associated with this model (if you already start a rom from this model).
You can specify a different save state (by default it uses the one which is called as the rom file).
You can start skinless.
You can load a file and even launch a macro at startup (in this case loading a file is done before macro playing).
You can reset too, get a var (if possible) and launch debugger.
Something is missing ?

Chapitre 5

Configuration files

5.1 General configuration

5.2 Keybindings