# QPSI on the m4

**using-spi-flash Adafruit_SPIFlash tinygo issue 655 board support: adafruit feather m4 express**

## The approach that worked was to forget about file systems and just write files directly to flash using the tinygo flash package.

The steps:

1. Using bossac transfer to the Adafruit m4 the compiled main.go program in ~/code/flash. All this program does is run a simple console application called **console_example.go** that is package console_example. The modifications include:
```
 1. replace tinygo.org/x/drivers v0.20.0 => /home/slzatz/drivers
 1. Added *writefile* function to handle serial file transfer and
so in the go.mod file, I am using a replace directive:
 1. Added some fields to the results of the lsblk command
```
2. Erase the flash - by running minicom and typing `erase chip 0` - the last arg (0) isn't used and can be anything. After that command succeeds you can check if the erase worked by using the xxd `<hex address> [size of hexdump if bytes]` command and all you should see is `ff ff ff ...` everywhere.
3. Leave the space from 0 to 4000 hex free for storing other info (wifi, number of files, addresses ...)
4. Go into code/serial and activate the virtual environment with `. bin/active`
5. write the first 14.8 kb dithered file to the flash at 4000 hex (16384 decimal) `python transfer2.py 4000 albert_einstein.bd`
6. write the next 14.8 kb file starting at 8000 hex `python transfer2.py charles_darwin.bd 8000`
7. Write the next 14.8 kb file starting at c000 hex
8. ... write the next 14.8kb file ...
9. Now go into ~/code/draw_images and compile main.go and transfer to the m4 express and you should see rotating pictures You just read 14.8kb (decimal) from a beginning address (eg 4000, 8000, c000 hex ...)

The tinygo flash package has a console app that is similar to the tinyfs console app that allows you to issue commands.

==Note== that there is a directory ~/code/images that converts a jpg into a bit vector dithered image. the syntax is just ./main neil_young.jpg

hex address|base 10|file name ----------|-------|--------- 0x4000|16384|albert*einstein.bd 0x8000*|*32768*|*charles*darwin.bd 0xc000|49152|joan*didion.bd 0x10000*|*65536*|*neil*young.bd 0x14000|81920|patty*griffin.bd 0x18000*|*98304*|*paul*dirac.bd 0x1c000|114688|philip*larkin.bd 0x20000*|*131072*|*rob*pike.bd