Setting up fitsio_read_image.pro under *Linux* and *Mac OS X*

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The IDL routine fitsio_read_image.pro is a useful tool for dealing with the Rice compressed images. You will need a runtime object fitsio.so along with the routine, which may need to be compiled first on your machine.

Choose one of the following from the ftp site:

ftp://pail.stanford.edu/pub/HMIvector/documents/

fitsio32.zip for a 32-bit machine; fitsio64.zip for 64-bit. You will find fitsio_read_image.pro in the package. Place in your IDL_PATH. Place the pre-compiled fitsio.so in the same directory. Then find the following line in fitsio_read_image.pro:

```
LIB = '/home/kehcheng/idl/fitsio/fitsio.so'
```

and change the directory to the one where you keep fitsio.so. Now try reading a Rice compressed image in IDL, for example, rice_sample.fits from the ftp site.

```
data = fitsio_image_read ('rice_samle.fits', hdr)
```

If you are using *Linux*, most likely it will be working. If not, follow the instructions below for *Mac OS X* with according adjustments. (Since you are already using *Linux*, it should not be difficult.)

In brief, you will need a valid c compiler and the cfitsio library to make it work. Here's what I did on my *Mac*.

1. In terminal, try and see if you have a c compiler. I'm using gcc.

```
bash> which gcc
/usr/bin/gcc
```

If not, you will need to get one. The most straight forward way is to do a clean installation of Xcode. If you already have one and gcc is not working, you might want to uninstall it first:

```
bash> sudo /Developer/Library/uninstall-devtools --mode=all
```

You can get a copy of Xcode from the Apple website, or from a *OS X* installation disk.

2. Install the cfitsio library, if you haven't done so.

You'll need the source code, which can be found at the following ftp site:

ftp://heasarc.gsfc.nasa.gov/software/fitsio/c/

The latest version is cfitsio3280.tar.gz. Create a directory and unzip the files, say to ~/cfitsio/

```
bash> cd
bash> mkdir cfitsio
bash> cd cfitsio
bash> untar -xvf cfitsio3280.tar.gz
bash> export CFLAGS="-arch i386 -arch x86_64 -g -O2"
bash> ./configure
bash> make
```

If all is well you will find a compiled library libcfitsio.a in the same directory.

3. Compile source code for fitsio.so

Get source.tar from the ftp site, which contains two c codes: get_info.c and get_data.c. Now you will need to know where you have all your c headers (in my case /usr/include); and where you keep idl_export.h (in my case /Applications/itt/idl/idl81/external/include).

```
bash> gcc -I /usr/include -I /Applications/itt/idl/idl81/external/include -c get_info.c get_data.c
bash> gcc -bundle -o fitsio.so get_info.o get_data.o ~/cfitsio/libcfitsio.a
```

If you are using icc you may need additional flag -static-intel in the second step.

If you are using *Linux*, you should add -fPIC flag in the first step, and substitute -bundle with -shared in the second step.

Now you'll find a newly compiled fitsio.so. Move it into the directory where you keep the IDL routine and specify the directory path in fitsio_read_image.pro if you haven't done so. This should do the trick.

Acknowledgment:

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