ctools - Bug #1370

ctools 00-08-00 'make check' errors and failed test macros

11/22/2014 07:58 PM - Farnier Christian

Status:	In Progress	**Start date:**	11/22/2014
Priority:	High	**Due date:**	
Assigned To:	Knödlseder Jürgen	**% Done:**	50%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

While compiling the latest version of gammalib and ctools (git version from 2014/11/21), everything get installed but ctools does not pass the installation test 'make check'

- ctools unit testing * **********
  Test ctobssim functionality: ..... ok
  Test ctobssim on observation container: .... ok
  Test ctselect functionality: E.. NOK
  Test ctbin functionality: ... ok
  Test ctlike functionality: ... ok
  Test cttsmap functionality: ... ok
  Test ctmodel functionality: ... ok
  Test ctskymap functionality: ... ok
  Test ctexpcube functionality: ... ok
  Test ctpsfcube functionality: ... ok
  Test ctbkgcube functionality: ... ok
  Test ctcubemask functionality: ... ok
  Test ctbutterfly functionality: ... ok
  Test unbinned pipeline with FITS file saving: .E.. NOK
  Test unbinned in-memory pipeline: .E.. NOK
  FAIL: test_python.py ==========
  1 of 3 tests failed
  Please report to jurgen.knodlseder@irap.omp.eu ==========
  make[2]: **[check-TESTS] Erreur 1**
  make[2]: quittant le répertoire « /raid/cfarn/SOFT/GAMMALIB/20141121/ctools/test »
  make[1]: [check-am] Erreur 2
  make[1]: quittant le répertoire « /raid/cfarn/SOFT/GAMMALIB/20141121/ctools/test »
  make: ** [check-recursive] Erreur 1

In addition, some 'examples' macros fail:

./make_binned_analysis.py

- CTA binned analysis scripts * **********
  ... this script will take 1-2 minutes

Executable analysis pipeline: ==========
Simulated events (2.96 CPU seconds)
Binned events into counts map (2.56 CPU seconds)
Maximum likelihood fitting (12.52 CPU seconds)
Total wall time elapsed: 7.0 seconds
Total CPU time used ...: 18.04 seconds

In memory analysis pipeline: ==========
Simulated events (2.32 CPU seconds)
Binned events into counts map (2.19 CPU seconds)
Maximum likelihood fitting (18.87 CPU seconds)
Total wall time elapsed: 10.0 seconds
Total CPU time used ...: 23.38 seconds

Make plots (using matplotlib): ==========
/usr/lib64/python2.6/site-packages/matplotlib/backends/backend_gtk.py:621: DeprecationWarning: Use the new widget gtk.Tooltip
self.tooltips = gtk.Tooltips()
Traceback (most recent call last):
File "./make_binned_analysis.py", line 422, in <module>
pipeline_v2()
File "./make_binned_analysis.py", line 232, in pipeline_v2
plot_counts(bin.obs())
File "./make_binned_analysis.py", line 275, in plot_counts
ebounds = cube.ebounds()
AttributeError: 'SwigPyObject' object has no attribute 'ebounds'

Snapshot of the faulty section of the code: # Loop over observations
for obs in observations:

1. Get event cube
   cube = obs.events()

1. Create energy axis
   energy = []
   ebounds = cube.ebounds()

Now "cube" do not have ebounds attribute anymore and isn't iterative (next complaint in the script at line 282: for bin in cube:).

History

#1 - 11/24/2014 09:09 AM - Knödlseder Jürgen

- Status changed from New to In Progress

- Assigned To set to Knödlseder Jürgen

- Target version set to 1.0.0

- % Done changed from 0 to 50

I corrected the make_binned_analysis.py and make_unbinned_analysis.py scripts.

Concerning the test script errors you encountered, could you please post the file test/reports/ctools.xml?

Could you also check if after removing all files in your ~/pfiles folder the make check errors persist?

#2 - 11/24/2014 10:47 AM - Farnier Christian

- Status changed from In Progress to Closed

- % Done changed from 50 to 100

Thanks for your help. This fully solved the issue.

#3 - 11/24/2014 10:57 AM - Knödlseder Jürgen

- Status changed from Closed to Feedback

What did you do? Delete the files in the ~/pfiles folder? (we want to keep track of the solutions so that they could go into a "Known Problems" section).

#4 - 11/24/2014 11:13 AM - Farnier Christian

- File ctools.xml added

Sorry, I was not explicit.

No, I did not deleted the ~/pfiles folder, I wanted to do it step by step. So, I simply updated the ctools directory:
git remote update -p
git pull

and tried again to run the make_binned_analysis.py script. And it works fine now.

As for the report file, I have attached it now. As indeed this is still pending, I shouldn't have changed the completion level to 100, sorry for the mess.

#5 - 11/24/2014 11:44 AM - Knödlseder Jürgen

- Status changed from Feedback to Closed

No worries.

Unfortunately the XML file is not very informative, some exceptions occurred. This was maybe indeed due to obsolete pfiles, but they should get updated when we re-run the ctools configuration script (which I guess is done when you connect to a new terminal when you have added the ctools setup script to your .bashrc file).

I think we can close this now.

#6 - 11/24/2014 02:58 PM - Farnier Christian

Sorry again, I should have said that the fix only applies to the ploting (and therefore access of the energy boundaries), which is the initial problem I reported.

The 'make check' problem persists, even when removing the pfile/ directory.

For completeness, the source of the problem is the run() function of test_ctselect.py example:

```
>>> select["infile"].filename("data/crab_events.fits")
>>> select["outfile"].filename("selected_events.fits")
>>> select["ra"].real(83.63)
>>> select["dec"].real(22.01)
>>> select["rad"].real(3.0)
>>> select["tmin"].real(0.0)
>>> select["tmax"].real(1800.0)
>>> select["emin"].real(0.1)
>>> select["emax"].real(100.0)
>>>
>>> select["debug"].boolean(True)
>>> select.run()
2014-11-24T13:56:34: +=============+
2014-11-24T13:56:34: | Parameters |
2014-11-24T13:56:34: +=============+
2014-11-24T13:56:34:  infile .....: data/crab_events.fits
2014-11-24T13:56:34:  outfile .....: selected_events.fits
2014-11-24T13:56:34:  prefix .....: selected_
2014-11-24T13:56:34:  usepnt .....: no
2014-11-24T13:56:34:  ra .....: 83.629999999999995
2014-11-24T13:56:34:  dec .....: 22.010000000000002
2014-11-24T13:56:34:  rad .....: 3.
2014-11-24T13:56:34:  tmin .....: 0.
2014-11-24T13:56:34:  tmax .....: 1800.
2014-11-24T13:56:34:  emin .....: 0.1
2014-11-24T13:56:34:  emax .....: 100.
2014-11-24T13:56:34:  expr .....:
2014-11-24T13:56:34:  usethres .....: NONE
2014-11-24T13:56:34:  chatter .....: 2
2014-11-24T13:56:34:  clobber .....: yes
2014-11-24T13:56:34:  debug .....: yes
2014-11-24T13:56:34:  mode .....: ql
```

```
2014-11-24T13:56:34:  logfile ...................: ctselect.log
2014-11-24T13:56:34:
2014-11-24T13:56:34: +================================+
2014-11-24T13:56:34: | Observations before selection |
2014-11-24T13:56:34: +================================+
2014-11-24T13:56:34: === GObservations ===
2014-11-24T13:56:34:  Number of observations ....: 1
2014-11-24T13:56:34:  Number of predicted events : 0
2014-11-24T13:56:34: === GCTAObservation ===
2014-11-24T13:56:34:  Name ......................:
2014-11-24T13:56:34:  Identifier ................:
2014-11-24T13:56:34:  Instrument ................: CTA
2014-11-24T13:56:34:  Event file ................: data/crab_events.fits
2014-11-24T13:56:34:  Event type ................: EventList
2014-11-24T13:56:34:  Statistics ................: Poisson
2014-11-24T13:56:34:  Ontime ....................: 1800 s
2014-11-24T13:56:34:  Livetime ..................: 1710 s
2014-11-24T13:56:34:  Deadtime correction .......: 0.95
2014-11-24T13:56:34:  User energy range .........: undefined
2014-11-24T13:56:34: === GCTAPointing ===
2014-11-24T13:56:34:  Pointing direction ........: (RA,Dec)=(83.63,22.01)
2014-11-24T13:56:34:  Response function .........: undefined
2014-11-24T13:56:34: === GCTAEventList ===
2014-11-24T13:56:34:  Number of events ..........: 6141
2014-11-24T13:56:34:  Time interval .............: 51544.5 - 51544.5 days
2014-11-24T13:56:34:
2014-11-24T13:56:34: +==================+
2014-11-24T13:56:34: | Event selection |
2014-11-24T13:56:34: +==================+
2014-11-24T13:56:34: === Observation ===
2014-11-24T13:56:35:  Time range ................: 0 - 1800 s
2014-11-24T13:56:35:  Selected energy range .....: 0.1 - 100 TeV
2014-11-24T13:56:35:  Requested ROI .............: Centre(RA,DEC)=(83.63, 22.01) deg, Radius=3 deg
2014-11-24T13:56:35:  ROI of data ................: Centre(RA,DEC)=(83.63, 22.01) deg, Radius=5 deg
2014-11-24T13:56:35:  Selected ROI ..............: Centre(RA,DEC)=(83.63, 22.01) deg, Radius=3 deg
2014-11-24T13:56:35:  cfitsio selection .........: TIME >= 0,00000000 && TIME <= 1800,00000000 && ENERGY >= 0,10000000 && ENERGY <=
 100,00000000 && ANGSEP(83,630000,22,010000,RA,DEC) <= 3,000000
2014-11-24T13:56:35:  FITS filename .............: /tmp/filehbtaeQ[EVENTS][TIME >= 0,00000000 && TIME <= 1800,00000000 && ENERGY >=
 0,10000000 && ENERGY <= 100,00000000 && ANGSEP(83,630000,22,010000,RA,DEC) <= 3,000000]
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "/raid/cfarn/SOFT/GAMMALIB/20141121/lib64/python2.6/site-packages/ctools/tools.py", line 408, in run
    return _tools.ctselect_run(self)
RuntimeError: *** ERROR in GFits::open(std::string&): Unable to open FITS file "/tmp/filehbtaeQ[EVENTS][TIME >= 0,00000000 && TIME <=
 1800,00000000 && ENERGY >= 0,10000000 && ENERGY <= 100,00000000 && ANGSEP(83,630000,22,010000,RA,DEC) <= 3,000000]"
 (status=431)
```

I'm not particularly familiar with FITS format, so could it be some misinterpration of dot and comma?

The save() function works just fine.

```
>>> select.save()
ls -lh selected_events.fits
-rw-r--r-- 1 cfarn su-users 735K 24 nov.  14:26 selected_events.fits
```

Opening the file with fv, everything seems perfectly fine:

```
XTENSION= 'BINTABLE'           / binary table extension
BITPIX  =                    8 / 8-bit bytes
NAXIS   =                    2 / 2-dimensional binary table
NAXIS1  =                  119 / width of table in bytes
NAXIS2  =                 6141 / number of rows in table
PCOUNT  =                    0 / size of special data area
GCOUNT  =                    1 / one data group (required keyword)
TFIELDS =                   26 / number of fields in each row
TTYPE1  = 'EVENT_ID'           / label for field   1
TFORM1  = '1J      '           / data format of field: 4-byte INTEGER
TZERO1  =           2147483648 / offset for unsigned integers
```

```
TSCAL1  =                    1 / data are not scaled
TTYPE2  = 'OBS_ID  '           / label for field   2
TFORM2  = '1J      '           / data format of field: 4-byte INTEGER
TZERO2  =           2147483648 / offset for unsigned integers
TSCAL2  =                    1 / data are not scaled
TTYPE3  = 'TIME    '           / label for field   3
TFORM3  = '1D      '           / data format of field: 8-byte DOUBLE
TTYPE4  = 'TLIVE   '           / label for field   4
TFORM4  = '1D      '           / data format of field: 8-byte DOUBLE
TTYPE5  = 'MULTIP  '           / label for field   5
TFORM5  = '1I      '           / data format of field: 2-byte INTEGER
TTYPE6  = 'TELMASK '           / label for field   6
TFORM6  = '100X    '           / data format of field: BIT
TTYPE7  = 'RA      '           / label for field   7
TFORM7  = '1E      '           / data format of field: 4-byte REAL
TTYPE8  = 'DEC     '           / label for field   8
TFORM8  = '1E      '           / data format of field: 4-byte REAL
TTYPE9  = 'DIR_ERR '           / label for field   9
TFORM9  = '1E      '           / data format of field: 4-byte REAL
TTYPE10 = 'DETX    '           / label for field  10
TFORM10 = '1E      '           / data format of field: 4-byte REAL
TTYPE11 = 'DETY    '           / label for field  11
TFORM11 = '1E      '           / data format of field: 4-byte REAL
TTYPE12 = 'ALT     '           / label for field  12
TFORM12 = '1E      '           / data format of field: 4-byte REAL
TTYPE13 = 'AZ      '           / label for field  13
TFORM13 = '1E      '           / data format of field: 4-byte REAL
TTYPE14 = 'COREX   '           / label for field  14
TFORM14 = '1E      '           / data format of field: 4-byte REAL
TTYPE15 = 'COREY   '           / label for field  15
TFORM15 = '1E      '           / data format of field: 4-byte REAL
TTYPE16 = 'CORE_ERR'           / label for field  16
TFORM16 = '1E      '           / data format of field: 4-byte REAL
TTYPE17 = 'XMAX    '           / label for field  17
TFORM17 = '1E      '           / data format of field: 4-byte REAL
TTYPE18 = 'XMAX_ERR'           / label for field  18
TFORM18 = '1E      '           / data format of field: 4-byte REAL
TTYPE19 = 'SHWIDTH '           / label for field  19
TFORM19 = '1E      '           / data format of field: 4-byte REAL
TTYPE20 = 'SHLENGTH'           / label for field  20
TFORM20 = '1E      '           / data format of field: 4-byte REAL
TTYPE21 = 'ENERGY  '           / label for field  21
TFORM21 = '1E      '           / data format of field: 4-byte REAL
TTYPE22 = 'ENERGY_ERR'         / label for field  22
TFORM22 = '1E      '           / data format of field: 4-byte REAL
TTYPE23 = 'HIL_MSW '           / label for field  23
TFORM23 = '1E      '           / data format of field: 4-byte REAL
TTYPE24 = 'HIL_MSW_ERR'        / label for field  24
TFORM24 = '1E      '           / data format of field: 4-byte REAL
TTYPE25 = 'HIL_MSL '           / label for field  25
TFORM25 = '1E      '           / data format of field: 4-byte REAL
TTYPE26 = 'HIL_MSL_ERR'        / label for field  26
TFORM26 = '1E      '           / data format of field: 4-byte REAL
EXTNAME = 'EVENTS  '           / name of this extension
DSTYP1  = 'TIME    '           / Data selection type
DSUNI1  = 's       '           / Data selection unit
DSVAL1  = 'TABLE   '           / Data selection value
DSREF1  = ':GTI    '           / Data selection reference
DSTYP2  = 'POS(RA,DEC)'        / Data selection type
DSUNI2  = 'deg     '           / Data selection unit
DSVAL2  = 'CIRCLE(83.63,22.01,5)' / Data selection value
DSTYP3  = 'ENERGY  '           / Data selection type
DSUNI3  = 'TeV     '           / Data selection unit
DSVAL3  = '0.1:100 '           / Data selection value
NDSKEYS =                    3 / Number of data selections
CREATOR = 'GammaLib'           / Program which created the file
TELESCOP= 'CTA     '           / Telescope
OBS_ID  =                    0 / Observation identifier
DATE_OBS= '2000-01-01'         / Observation start date
TIME_OBS= '11:58:56'           / Observation start time
DATE_END= '2000-01-01'         / Observation end date
TIME_END= '12:28:56'           / Observation end time
TSTART  =                    0 / [s] Mission time of start of observation
TSTOP   =                    1 / [s] Mission time of end of observation
MJDREFI =                51544 / [days] Integer part of time reference MJD
```

```
MJDREFF =                    5 / [days] Fractional part of time reference MJD
TIMEUNIT= 's       '           / Time unit
TIMESYS = 'TT      '           / Time system
TIMEREF = 'LOCAL   '           / Time reference
TELAPSE =                    1 / [s] Mission elapsed time
ONTIME  =                    1 / [s] Total good time including deadtime
LIVETIME=                    1 / [s] Total livetime
DEADC   =                    9 / Deadtime correction factor
TIMEDEL =                    1 / Time resolution
OBJECT  = '        '           / Observed object
RA_OBJ  =                    0 / [deg] Target Right Ascension
DEC_OBJ =                    0 / [deg] Target Declination
RA_PNT  =                    8 / [deg] Pointing Right Ascension
DEC_PNT =                    2 / [deg] Pointing Declination
ALT_PNT =                    0 / [deg] Average altitude of pointing
AZ_PNT  =                    0 / [deg] Average azimuth of pointing
RADECSYS= 'FK5     '           / Coordinate system
EQUINOX =                    2 / Epoch
CONV_DEP=                    0 / Convergence depth of telescopes
CONV_RA =                    0 / [deg] Convergence Right Ascension
CONV_DEC=                    0 / [deg] Convergence Declination
OBSERVER= 'string  '           / Observer
N_TELS  =                  100 / Number of telescopes in event list
TELLIST = 'string  '           / Telescope IDs
GEOLAT  =                    0 / [deg] Geographic latitude of array centre
GEOLON  =                    0 / [deg] Geographic longitude of array centre
ALTITUDE=                    0 / [km] Altitude of array centre
EUNIT   = 'TeV     '           / Energy unit
EVTVER  = 'draft1  '           / Event list version number
END
```

#7 - 11/24/2014 03:41 PM - Knödlseder Jürgen

- Status changed from Closed to In Progress

- % Done changed from 100 to 50

This is VERY strange. Here the code that writes the time selection string:

```
    // Format time with sufficient accuracy and add to selection string
    char cmin[80];
    char cmax[80];
    sprintf(cmin, "%.8f", tmin);
    sprintf(cmax, "%.8f", tmax);
    selection = "TIME >= "+std::string(cmin)+" && TIME <= "+std::string(cmax);
    if (logTerse()) {
        log << gammalib::parformat("Time range");
        log << tmin << " - " << tmax << " s" << std::endl;
    }
```

It looks like if the sprintf(cmin, "%.8f", tmin) writes a comma instead of a dot.

Do you use a custom compiled version of ctools? I guess you have selected French in your OS?

This apparently has happened to others already:

- http://stackoverflow.com/questions/3709886/sprintf-commas-and-dots-in-c-and-localization
- http://stackoverflow.com/questions/14753505/c-c-printf-use-commas-instead-of-dots-as-decimal-separator
- http://en.cppreference.com/w/cpp/locale/setlocale

We may need to add some code to cools to make this country safe!!!

#8 - 11/24/2014 03:50 PM - Farnier Christian

I am actually on a swedish system...
Also, I haven't changed my setup and everything was ok for the previous version of gammalib/ctools.

#9 - 11/24/2014 03:53 PM - Knödlseder Jürgen

This part of the code has probably been changed. Any clues if a Swedish system uses comma or dot as separator?

#10 - 11/24/2014 03:54 PM - Knödlseder Jürgen

Well, looks like Sweden also uses a comma: http://en.wikipedia.org/wiki/Decimal_mark

#11 - 10/28/2015 08:26 AM - Knödlseder Jürgen

Christian, is this still a problem for you or have you fixed the issue?

#12 - 10/30/2015 12:20 AM - Knödlseder Jürgen

- Priority changed from Normal to Low

- Target version deleted (1.0.0)

Nothing new on that, and since about almost one year nobody has bothered about that, so let's keep it as an issue but remove it from the release 1.0.

#13 - 03/13/2017 12:23 PM - Knödlseder Jürgen

- Priority changed from Low to High

Eirik Saether Hatlen stumbled possibly over the same problem. He wrote:

I have started using CTOOLS and was making reasonable unbined .fits file using ctselect for my studies.

All of a sudden I get the following error when I enter ctselect in the terminal:

```
libc++abi.dylib: terminating with uncaught exception of type GException::par_file_syntax_error: *** ERROR in GApplicationPars::parse(): Syntax error
 occured in the following line of the parameter file (found 8 fields, require 7): rad,     r, a,0.5,1,0,180, "Radius of ROI (degrees)"
Abort trap: 6
```

I dont recall doing anything other than calling ctselect. All the other functions are working (i.e. ctobssim, ctbin etc).

Any suggestions? CTOOLS was installed completely standard by the instructions on MAC OS X El Capitan 10.11.6

Best
Eirik

Files

ctools.xml	9.73 KB	11/24/2014	Farnier Christian