

HistogramDrawOptions [↗](#)

Can't use pointer returned from Root Class Object

A Root class pointer defined in a function, but when it is returned out of the function, it can't be used any more

solution: Because the memory of the Root pointers are all managed by Root, when the function finished, the memory will be released by Root (c++ don't do this) use pointer->SetDirectory(0) to let Root not to manage the memory of this pointer. or TH1::AddDirectory(kFALSE) to let Root not to manage memory for any pointers of TH1.

search memory problem

http://www.veryword.com/2009/08/valgrind_tutorial.html [↗](#)

valgrind --tool=memcheck program

to find which lib produce the following error.

our example is 1. we copy a .h file from the A package to B package. 2. the .h define some class and objects 3. if load A and B lib, the object defined in .h are free-ed 2 times.

problem:

```
*** glibc detected *** /afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/
===== Backtrace: =====
/lib64/libc.so.6[0x2aff5d850d7f]
/lib64/libc.so.6(cfree+0x4b) [0x2aff5d8511db]
/lib64/libc.so.6(exit+0xe5) [0x2aff5d813515]
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN11TU
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN12TAp
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libRint.so(_ZN5TRin
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN11TU
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN11TU
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN7TSys
/afs/cern.ch/sw/lcg/app/releases/ROOT/5.28.00g/x86_64-slc5-gcc43-opt/root/lib/libCore.so(_ZN7TSys
```

Problem in using TTree::SetBranchAddress

When use TTree::SetBranchAddress to link variables to some of the branches (not all branches), some time, the link is not working as expected.

for example, SetBranchAddress("branch_a",&var_a) , but after tree->GetEntry(i), var_a may in fact get the value from branch_b, In this case branch_b is not linked to any variable.

To solve the problem:

to switch off all other not-used branches with SetBranchStatus("branch_b", 0);

TChain read only the first file in the chain

When use TChain to chain several files and use "maked class" to read the events, it happened that

```
for( int i=0; i<tchain.GetEntries(); i++){
    tchain.GetEntry(i);
```

```

...
...
}

```

The correct should be

```

for( int i=0; i<tchain.GetEntries(); i++){
    tchain.GetTree()->GetEntry(i);
    ...
    ...
}

```

ERRORs and reason/solutions

- error message

```

Error: Symbol #include is not defined in current scope (tmpfile):1:
Error: Symbol exception is not defined in current scope (tmpfile):1:
Syntax Error: #include <exception> (tmpfile):1:
Error: Symbol G__exception is not defined in current scope (tmpfile):1:
Error: type G__exception not defined FILE:(tmpfile) LINE:1
*** Interpreter error recovered ***

```

Reason and Solution: Memory leakage problem. When the leakage is getting big enough it produces this error. In the case pointer is defined and memory is allocated but didn't deleted after using.

- "[ROOT] Load Error: Failed to load Dynamic link library"

This usually happens when the compiler version used to build ROOT is not the same as the compiler available in the path (i.e. bash> g++ -v).

- Statement too long

```

reloading /atlas/czhu/myAnalysisCode/my_method/./method2_a.cxx 0
Limitation: Statement too long method2_a.cxx:197:
cint: Security mode 0x7:0x2 Error: Too many '}' method2_a.cxx:208:

```

reason: has the following statement, just in the file method2_a.cxx (not inside any function)
for(int i=0;i<10;i++)pa_mceffi[i]=0.;

- Unexpected EOF, need to use +P or -p option

```

reloading /atlas/czhu/myAnalysisCode/notes/notes_ele25/./T7CSCnote.cxx 0
Error: Unexpected EOF G__fignorestream():3 T7CSCnote.cxx:4159:
Advice: You may need to use +P or -p option

```

reason: "" or {} don't exist in pairs

- error message as below:

```

root [1] CheckObjects(1000015)
open new data...$HOME/analysisResults/5205_12605_jcali_atlfast/ANA.ntuple.root
open the 3nd data...$HOME/analysisResults/5205_12605_jcali_fullsim_truthHardProc/ANA.ntuple.root

*** Break *** segmentation violation
Generating stack trace...

```

In happens, when program runs switch{case break;}. A very long double vector is defined in one of the (case break), which make all the (case, break) after the definition can't be run, but the (case break) before this definition can be run correctly.

- error incomplete type used in nested name specifier

g++ gives this message if you've forward-declared a type, like this

```
class MyClass;
```

and then you try and access one of its members, like maybe:

```
MyClass::doSomething()
```

g++ is complaining that it hasn't seen the body of class MyClass yet, so it has no way to know what MyClass::doSomething is.

(In C++ jargon, an "incomplete type" is a type that's been forward-declared but not yet defined.)

You can often fix this by adding the right #include at the top of the source file.

- error not a TStreamerInfo object

When reading a root file produced with root5.26/00d with root5.26/00, this error happen

The 5.26/00d is none year later update of 5.26/00

- error in using proofError message:

```
Info in <TProofLite::MarkBad>:  events  |>.....| 0.00 %
+++ Message from master at lxplus206.cern.ch : marking 0.0-lxplus206.cern.ch-1285753103-11416:-1
+++ Reason: undefined message in TProof::CollectInputFrom(...)

+++ Most likely your code crashed
+++ Please check the session logs for error messages either using
+++ the 'Show logs' button or executing
+++
+++ root [] TProof::Mgr("lxplus206.cern.ch")->GetSessionLogs()->Display("")
```

Error in <TPacketizerAdaptive::SplitPerHost>: The input list contains no elements

Solution: because m_goodRunListXmlFile doesn't exist.

```
1888     TDOMParser xmlparser;
1889     #if ROOT_VERSION_CODE >= ROOT_VERSION( 5, 17, 4 )
1890         xmlparser.SetReplaceEntities( kTRUE );
1891     #endif
1892     Int_t parseError = xmlparser.ParseFile( m_goodRunListXmlFile.c_str() );
1893     if( parseError ) {
1894
1895         cout << "Loading of xml document \"" << m_goodRunListXmlFile
1896             << "\" failed";
```

Example of using

```
double sys_bt1    [5]={50, 55, 60, 65, 70 };
double sys_A_bt   [5]={0.718301, 0.861586, 0.855908, 0.907561, 0.858515 };
double sys_A_bt_e [5]={0.107668, 0.0962074, 0.0879854, 0.0841657, 0.0797709 };

TGraphErrors* sysAbt =new TGraphErrors(5, sys_bt1, sys_A_bt, 0, sys_A_bt_e );
sysAbt->SetTitle("A vs b tag efficiency");
```

```

sysAbt->SetLineWidth(2);
sysAbt->SetMarkerSize(1.1);
sysAbt->GetXaxis()->SetTitle(" b tag efficiency (%)");
sysAbt->GetYaxis()->SetTitle("A");
sysAbt->Draw("AP");
sysAbt->Fit("poll");

```

Example to creat 2D histogram of variable bins

- This example produce 2 2D histogram, divide one by the other and draw.

```

const int    mptbins = 8;
const int    metabins = 7;
const Float_t mxbin[mptbins+1]={20.,25,30,35,40,50,70,120.,300};
const Float_t mybin[metabins+1]={-2.5,-1.35,-1.15,-0.1,0.1,1.15,1.35,2.5};

plot_Efficiency2D(ntuple_tt_3_d, "m_reco_effi_pteta_d", weight_3*data*semimu*"selmuon_true==1 &&

void plot_Efficiency2D(TTree* tree,char* hist, TCut cutup, TCut cutdw, char* varntuplex, int binx,
  tmpupref=new TH2F("tmpupref", "tmpupref", binx,xbin, biny,ybin);
  GetHistFromNtuple2D(tree, cutup, "tmpupref",varntuplex,scalex, varntupley,scaley);
  TH2F* tmpdwref=new TH2F("tmpdwref", "tmpdwref", binx,xbin, biny,ybin);
  GetHistFromNtuple2D(tree, cutdw, "tmpdwref",varntuplex, scalex, varntupley,scaley);

  tmpdwref->Sumw2();
  tmpupref->Divide(tmpdwref);
  tmpupref->Clone(hist);
  tmpupref->DrawCopy("lego")
  tmpupref->Delete();
  tmpdwref->Delete();
}

void GetHistFromNtuple2D( TTree* tree, TCut cut, char* histname, char* varntuplex,float scalex=1,
  char var[1000];
  sprintf( var , "(%s*%f):(s*%f)>>%s", varntupley,scaley,varntuplex,scalex,histname);
  tree->Draw(var, cut,"goff");
}

```

Options for drawing histogram

- use gStyle->SetOptFit

The type of information about fit parameters printed in the histogram statistics box can be selected via the parameter mode.

The parameter mode can be = pcev (default = 0111)

```

p = 1; print Probability
c = 1; print Chisquare/Number of degress of freedom
e = 1; print errors (if e=1, v must be 1)
v = 1; print name/values of parameters

```

Example: gStyle->SetOptFit(1011);

print fit probability, parameter names/values and errors.

When "v"=1 is specified, only the non-fixed parameters are shown.

When "v"=2 all parameters are shown.

Note: gStyle->SetOptFit(1) means "default value", so it is equivalent to gStyle->SetOptFit(111)

- Use gStyle->SetOptStat

The type of information printed in the histogram statistics box can be selected via the parameter mode.

The parameter mode can be = ksiourmen (default = 000001111)

```

k = 1; kurtosis printed
k = 2; kurtosis and kurtosis error printed

```

```

s = 1; skewness printed
s = 2; skewness and skewness error printed
i = 1; integral of bins printed
o = 1; number of overflows printed
u = 1; number of underflows printed
r = 1; rms printed
r = 2; rms and rms error printed
m = 1; mean value printed
m = 2; mean and mean error values printed
e = 1; number of entries printed
n = 1; name of histogram is printed
Example: gStyle->SetOptStat(11);
        print only name of histogram and number of entries.
        gStyle->SetOptStat(1101); displays the name of histogram, mean value and RMS.
WARNING: never call SetOptStat(000111); but SetOptStat(1111), 0001111 will
        be taken as an octal number !!
WARNING: SetOptStat(1) is taken as SetOptStat(1111) (for back compatibility
        with older versions. If you want to print only the name of the histogram
        call SetOptStat(1000000001).
NOTE that in case of 2-D histograms, when selecting just underflow (10000)
        or overflow (100000), the stats box will show all combinations
        of underflow/overflows and not just one single number!

```

- for detail [?](#)

use roffit and FFT with root

do not have root access of the machine to make a private install area for FFTW, e.g. /home/myse

1. www.fftw.org for fft downloading
2. Untar `fftw-XXX.tar.gz` in /tmp, cd into the untarred directory


```
./configure --prefix=/home/myself/fftw CFLAGS=fPIC CXXFLAGS=fPIC
' followed by 'make install'.
Substitute /home/myself/fftw with a directory of your choice. This
procedure will install FFTW in the location designated by you
```
3. in ROOT directory


```
Run
configure --enable-fftw3 --with-fftw3-include=/home/myself/fftw/include --with-fftw3-libdir=
Then run 'make'
```

xmanager can't farword plot to terminal

solution run `xmanager-broadcast` once to fix it.

using latex on plot

when you try to set `textsize` and let it show formulas on the plot, you need take care that `textfont` is correctly set. The text font is set by `SetTextFont(n)`

The text font code `n` is combination of the font number and the precision. Text font code = $10 * \text{fontnumber} + \text{precision}$ Font numbers must be between 1 and 14.

The precision can be: precision = 0 fast hardware fonts (steps in the size) precision = 1 scalable and rotatable hardware fonts (see below) precision = 2 scalable and rotatable hardware fonts precision = 3 scalable and rotatable hardware fonts. Text size is given in pixels.

If the precision is 0 or 1, your latex will print blankly, without symbol transformation. for precision 0, 1, 2 the

text size means the percentage of the pad size, for 3, text size will be absolute pixals

<http://root.cern.ch/root/html/TAttText.html#T4>

use rootcore

error: #error This file requires compiler and library support for the ISO C++ 2011 standard. This support is currently experimental, and must be enabled with the -std=c++11 or -std=gnu++11 compiler options. #error This file requires compiler and library support for the solution: Because of an interference between the ROOT dictionary of the algorithm, and the way TChain tries to clean up at the end of the job, we have to completely hide the tool pointer from the dictionary generator for now. That's what the *CINT* expression is for. in your header file put the included as following

```
#ifndef CINT #include "MuonMomentumCorrections/MuonCalibrationAndSmearingTool.h" #endif
```

```
class MuonCalibrationAndSmearingTool;
```

```
#ifndef CINT CP::MuonCalibrationAndSmearingTool *m_muonCalibrationAndSmearingTool; //! #endif // not CINT
```

root Streaminfo

Error in <TStreamerInfo::Build:>: MyxAODAnalysis: ConfigureClass* has no streamer or dictionary, this error happen because ConfigureClass has no streaminfo definition, so don't know how to save when save a class into file, the file has to have streamerinfo defined, so the code knows how to

If you don't want to save the class into file, define this way

```
ConfigureClass* conf;  ///
```

```
//! tell that you don't write the class into file
```

working with stats box

```
void ToolHelper::DrawHist(TH1* hOri, TString xTitle, TString yTitle) {
```

```
    gStyle->SetOptStat(1);    // must >0
    gStyle->SetOptFit(1111);  // what to set in stats box
    hOri->SetStats(1);
    TH1* h = HistClone(hOri, "h");
    h->SetStats(1);          // tells that we create stats box for h
    int dim = h->GetDimension();
    if (dim==2) h = Hist2DTo1D(h, "hNew");
    double max, min;
    ResetHisMaxMin(h, max, min);

    h->GetYaxis()->SetRangeUser(min, max);
    SetMarkerColorSizeStyle(h, kBlue);
    if(xTitle!="") h->SetXTitle(xTitle);
    if(yTitle!="") h->SetYTitle(yTitle);
    h->Draw("e");          // when draw, stats box will created, DrawCopy doesn't work here
    gPad->Update();        // in non-interactive mode, you need this to force the draw happen.
    TPaveStats* stats1 = (TPaveStats*) h->FindObject("stats"); // retrieve the stats box from drawn
    cout<<"stats1: " <<stats1<<endl;
    stats1->Draw();        // draw it or change its place and draw.

    //delete h;
```

```
return;  
}
```

-- ChengguangZhu - 29 Nov 2007

This topic: Main > ZhuUseROOT

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