Instructions to use the Charged Higgs program

Foreword:

In this guide we assume the following things:

You have root installed in your computer.
You use a Unix operating system.
You have GitHub installed in your computer and you can use the git commands from your terminal.
You have already used “myprogram2.cpp” and read the instructions found there

About “chargedHiggs.cpp”:

This program uses the criteria stablished in page 14 of the file “prelim3.pdf” to search for events in which a Charged Higs could have decayed into the tb channel

About the “makefile”:

This is a black box, which means that we don’t care how it works, we care what it does.
If anything is this guide seems arbitrary, like the names or need of certain files or folders, is due to the “makefile”.
What it does is that is reads a code file and based on that creates an executable, a set of instructions you computer can follow, what we call a program.

Instructions:

Setting everything up:

1.-First you need the file with the data to analyze, to get it click here (https://cernbox.cern.ch/index.php/s/OoEQYoG4UWwzP0u)
It will take you to a page where you can download the file, which is quite large, so it may take some minutes

2.-Now you need to download the code from GitHub. First create the folder where you want to have the code and enter that folder in the terminal. This folder should be empty.
Then simply put the code “git clone https://github.com/Frigorifico9/Readding_Nero_Files”.
This should fill that folder with all the contents of the GitHub branch master

Running the file

3.-Open “chargedHiggs.cpp” and go to line 45, the one that reads:

```
  //Upload the file with the data, make sure the adress of the file matches the one in your
computer
  TFile* file = TFile::Open("/Users/Fer/Documents/traajo/samples/NeroNtuples_9.root"); //
TFile::Open() instead of a constructor since it works over xrootd etc.
```

and change the address of the file accordingly

4.-In the terminal, get into the folder “chargedHiggs”, and then type: “./bin/chargedHiggs” this should create a pdf file called “chargedHiggs_masses.pdf” in this folder, and this image should show the different histograms
4.5- If you modified the code and want to run this new version just save it, in the terminal go to the folder “myprogram2” and type “make” in the terminal, then do step 3 again

Compiling your own code

Assuming that you have a code that you want to run you can follow this steps.

5.-Create a folder with any name you want, for this instructions we will call it “myfolder”
6.-In “myfolder” create the empty folders “lib” and “bin”.
7.-In “myfolder” save the file with your code with any name you want, for this instructions we will call it “yourcode”. It has to have the extension .cpp
8.-Open the “makefile” and go to where you see something similar to the following:

```
#############################################################################
###
# Build main.c compiling only the first prereq: ($<) means main.c
#############################################################################
###
myprogram2 : myprogram2.o
```

And change the lines where in this case says “myprogram2” to match the name of your code file.

9.-Save the “makefile” to “myfolder”
10.-In the terminal go to “myfolder”
11.-Once you are there simply type “make” and the “makefile” will create the executable
12.-Finally type “./bin/yourcode” and your code will run

Problems:

If something didn’t work my best guess is that you weren’t in the correct folder, for example the command “./bin/yourcode” will only work if you were first in “myfolder”.

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