Gmail **Shahin Ahmadi <ahmadisha89@gmail.com>**

ROOT/C++ test

John Walker <jmgwalker@triumf.ca> Tue, Aug 20, 2019 at 9:25 AM
To: shahin ahmadi <ahmadis1@myumanitoba.ca>
Cc: Blair Jamieson <bl.jamieson@uwinnipeg.ca>, Matej Pavin <MPavin@triumf.ca>

Hi Shahin,

For your ROOT/C++ test I would like you to build on the work you did creating the Polynomial class by creating a new class that plots a graph and a histogram.

Write a PolyPlot class that has the following private member variables:
TTree* tree
TH1D* hist
TGraph* graph
vector<double> random

Write the following methods:

1. PolyPlot(); //default constructor

2. void FillTree(int num_values, double min, double max);
//Fill tree with num_values of random numbers between min and max

3. void PrintTree();
//Print values in tree

4. void WriteRandom(const char* fileName);
//Save tree to fileName

5. void ReadRandom(const char* fileName);
//Read file with TTree and store values in vector random

6. void FillHist(const Polynomial& p);
//Loop through random to access each random number, rand_i
//Fill histogram with value rand_i and a weight of p evaluated at rand_i
//Scale histogram so that the integral is the same as the integral of p

7. void PlotHist(const char* fileName);
//Plot hist and save to fileName

8. void MakeGraph(int num_values, double min, double max, const Polynomial& p);
//Create TGraph where the x values have num_values points between min and max, and the y values are p(x)

9. void PlotGraph(const char* fileName);
//Plot graph and save to fileName

10. TH1D* GetHist();

//Returns hist

11. TGraph* GetGraph();
//Returns graph

At the end of your test you should submit:
PolyPlot.h
PolyPlot.cpp
A Makefile to compile the code
A main.cpp program which demonstrates each of the functions in PolyPlot
The main.cpp program should also return a plot of hist overlaid with graph
Please make your plots look publication quality

Please submit your work by 6pm PDT today (Tues Aug 20) to:
bl.jamieson@uwinnipeg.ca
jmgwalker@triumf.ca
mpavin@triumf.ca

Kind Regards,
John