**Project: function plotting program**

Introduction:

This is a program that is used to plot out a series of functions regarding to the distances and frequencies for which the data is in stored in csv files located in a folder.

Features:

The program will load a folder to read the data which it will automatically discard any file that is not named in “Line[number]\_[name]\_[Image or Real]”.

Meanwhile it will search for the preferred frequencies control file in the folder which specifies the frequencies need to show on the graph. The frequency control file need to located in the main folder of the line frequency files.

After the program filter out all of the qualified files, it will start reading the file and looking for the specified header and frequency that is included in this file. The program will combine the image part and real part of the same named line and plot on one graph.

In loading process, the qualified files must have the name of “Line[number][name][Image or Real]” and header of this form:

"BB1\_Transfer\_Function\_File\_Version\_1\n"

"Line=1"

"Frequencies=13,21,27,33,44,57,76,100,132,172,227,297,390,512,672,883,1159,1521,1997,2621,3439,4515,5926,7778,10209,13400,16999,22000\n"

After loading is complete, the name of loaded lines will display on the right side list view. Click on each line will display all the preferred plots on the left graphic view. The graph are limited by minimum and maximum data points by default. In the view option, the user can change their preference of plotting for current graph. custom\_scale will display the plots in favor of the user defined bounds and auto\_scale is the qwt library default plotting bounds.

The two button for creating pdf is used to print off all of the plots in one pdf page. “Create PDF” button is used to print off the current displayed line into the pdf and “create PDF for all” is used to print off all of the lines into the pdf file in the folder where the line folder is located.

Thoughts on future improvement

There are few points that the program could be enhanced.

* The loading algorithm, I am considering about using native library supported tokenizer instead of third party library Boost, which may decrease the dependency of the program.
* Plotting part of the program currently is using the third party library Qwt, which is the best suit for plotting, but considered the large amount of plots for each line, I am thinking about changing to other minimized or simplified version of plotting library. This may increase the speed of just plotting out numerous lines.
* It may be better for user to gain control over each frequency of the lines where user may able to magnify and restore each plots to see the details.
* Generating PDF for all lines right now does not support for customized plotting scale. It will only create PDF with respect to domain max and min for each frequency.