# PZFlex Interview Problems

Please complete the following short project:

1. Write a C++ function to compare if two binary trees are equal in structure and value.
2. Define a matrix class and derive a vector class.

Write a program that creates a real matrix of n rows and m columns and initializes it with random numbers. Reorder the values of each column in increasing order. Print the matrix to screen.

1. Write a C++ program that reads a column format file with N samples (file inputc.dat attached)

Column 1: Real Part of Complex number

Column 2: Imaginary Part of Complex number

And writes out a file with N samples with

Column 1: Amplitude

Column 2: Phase

Hint: <http://en.wikipedia.org/wiki/Complex_number>

1. Download Qt 4.8.6,build the libraries or install the Open Source package: <http://download.qt.io/archive/qt/>
2. Create a Qt application that loads and displays the files of problem 3.

         Help @ <http://doc.qt.io/qt-4.8/gettingstartedqt.html>

1. Download Qwt 5.2.1 and build the libraries: <http://sourceforge.net/projects/qwt/files/qwt/5.2.1/>

                Compile the examples/simple\_plot example.

1. Modify the Qwt simple\_plot example to plot the amplitude curve computed in problem 3.

Note: x axis is sample #; y axis is amplitude.

Clearly mark and explain the code modifications.

Project Guidelines:

* Describe your programming environment: OS, compilers, IDE …
* Document your code with comments.
* Capture snapshots of your running code.
* Upload program 1 into GitHub. Let us know the location of the repository.
* Zip the source code/snapshots for the other problems and e-mail to info@pzflex.com.
* If after attempting Exercises 4-7, you are having difficulties building the libraries, solve similar problem use the Qt 5.6/Qwt 6 distributions to load the text file and plot the curve.