


```

//
//
// Licensing:
//
// This code is distributed under the GNU LGPL license.
//
// Modified:
//
// 2012.06.01
//
// Author:
//
// Young Won Lim
//
// Parameters:
//
//-----

//-----
// Plot Quad Tree Angles
//-----
//-----
void plot_quad_tree_angles ()
{
    int i, j;
    double r, s;
    ofstream myout;

    cout << "* plot_quad_tree_angles ... ";

    // writing residue errors
    myout.open("angle.dat");

    for (i=0; i<40; i+=4) {
        myout << fixed << right << setw(15) << i ;
        for (j=0, s=0.0; j<4; ++j) s += atan(1. / pow(2., i+j) );
        for (j=0; j<4; ++j) {
            r = atan( 1. / pow(2., i+j) ) / s * 100;
            cout << "index = " << i+j << " --> r = " << r << endl;
            myout << fixed << right << setw(15) << r ;
        }
        myout << endl;
    }

    myout.close();

    // writing gnuplot commands

    GnuTerm = "wxt";

    // writing gnuplot commands
    myout.open("command.gp");
    myout << "set terminal " << GnuTerm << endl;
    myout << "set autoscale y" << endl;
    myout << "set autoscale y" << endl;
    // myout << "set output 'egl0.leaf.offfac_ssr.emf'" << endl;
    // myout << "set title \"offFactor-SSR Plot (Leaf) \" " << endl;
    myout << "set xlabel \"quad leaves\" " << endl;
    myout << "set ylabel \"raio\" " << endl;

    myout << "set boxwidth 0.9 relative \n" ;
    myout << "set style data histograms \n" ;

```

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myout << "set style histogram rowstacked \n" ;
myout << "set style fill solid 1.0 border lt -1 \n" ;
myout << "plot for [COL=2:5:1] 'angle.dat' using COL \n" ;

myout << "pause mouse keypress" << endl;
myout.close();

system("gnuplot command.gp");

return;
}

```

```

:::::::::::::
QuadTree_tb.cpp
:::::::::::::
# include <cstdlib>
# include <cmath>
# include <iostream>
# include <iomanip>
# include <fstream>

using namespace std;

# include "QuadTree.hpp"

extern string GnuTerm;

//-----
// Purpose:
//
//
// Discussion:
//
//
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int main (int argc, char * argv[])
{

// -----
// nIter : Number of Iteration = Height of binary angle tree
// nAngle : Number of Angles = Number of Leaf Nodes
// -----
int nIter = 3;

```

```
int    nAngle = 1 << nIter;  
double th = 0.0;
```

```
GnuTerm = "wxt";
```

```
plot_quad_tree_angles();
```

```
return 0;
```

```
}
```