

```
1: /*
2:  * GeraGrafo.cpp
3:  *
4:  * Created on: May 28, 2011
5:  * Author: darioandrade
6:  */
7:
8: #include <stdlib.h>
9: #include <math.h>
10: #include <ctime>
11:
12: #include "AdjacencyList.h"
13:
14: #define P_TIPO_0 0.2
15:
16: double randd ( )
17: {
18:     return ( ( double ) rand( ) ) / RAND_MAX;
19: }
20:
21: void GeraGrafo ( FILE* f, int nVertex, int type, int debug )
22: {
23:     // alimentando a semente randomica
24:     srand( time( NULL ) );
25:
26:     // calculando p
27:     double p = ( type == 0 ) ? P_TIPO_0 : ( 1.0 / ( 2.0 * sqrt( nVertex ) ) );
28:
29:     if ( debug > 0 )
30:     {
31:         fprintf( stderr,
32:             "Gerando %d vertices de grafo nao direcionado tipo %d (p = %.7f)\n",
33:             nVertex, type, p );
34:     }
35:
36:     // criando o grafo
37:     AdjacencyList graph( nVertex );
38:
39:     // percorrendo do primeiro vertice ate o penultimo (zero based list)
40:     for ( int i = 0; i < nVertex - 1; i++ )
41:     {
42:         if ( debug > 1 )
43:         {
44:             fprintf( stderr, " vertice %d: ", i );
45:         }
46:
47:         for ( int j = i + 1; j < nVertex; j++ )
48:         {
49:             double x = randd( );
50:
51:             if ( debug > 1 )
52:             {
53:                 fprintf( stderr, " %.4f", x );
54:             }
55:
56:             // should we cast an edge to j?
57:             if ( x < p )
58:             {
59:                 if ( debug > 1 )
60:                 {
61:                     fprintf( stderr, "Y" );
62:                 }
63:
64:                 graph.addEdge( i, j );
65:             }
66:             else
67:             {
68:                 if ( debug > 1 )
69:                 {
70:                     fprintf( stderr, " " );
71:                 }
72:             }
73:         }
74:
75:         if ( debug > 1 )
76:         {
77:             fprintf( stderr, "\n" );
78:         }
79:     }
80:
81:     graph.write( f );
82: }
```