

1.3/Shell.h

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1  /*----- File: Shell.c -----+
2  |Shell Sort                               |
3  |                                         |
4  |                                         |
5  | Implementado por Guilherme C. Pena em 20/11/2023 |
6  +-----+ */
7
8  #ifndef SHELL_H
9  #define SHELL_H
10
11 #include <stdio.h>
12 #include <stdlib.h>
13 #include <time.h>
14
15
16 int* copiaVetorShell(int* v, int n){
17     int i;
18     int *v2;
19     v2 = (int*) malloc (n*sizeof(int));
20     for(i=0; i<n; i++) v2[i] = v[i];
21     return v2;
22 }
23
24 void imprimeVetorShell(int* v, int n){
25     int i, prim = 1;
26     printf("[");
27     for(i=0; i<n; i++)
28         if(prim){ printf("%d", v[i]); prim = 0; }
29         else printf(", %d", v[i]);
30     printf("]\n");
31 }
32
33 void preencheAleatorioShell(int* v, int n, int ini, int fim){
34     int i;
35     for(i=0; i<n; i++)
36         v[i] = ini + rand() % (fim-ini + 1);
37 }
38
39 void trocaShell(int* a, int *b, long* mov){
40     int aux = *a;
41     *a = *b;
42     *b = aux;
43     (*mov)++;
44 }
45
46 void ShellSort(int *v, int n, long* comp, long* mov) {
47     int i, j, atual;
48     int h = 1;
49     while(h < n) h = 3*h+1;
50     while (h > 0) {
51         for(i = h; i < n; i++) {
52             atual = v[i];
53             j = i;
54             while (j > h-1 && atual <= v[j - h]) {
55                 v[j] = v[j - h];
56                 j = j - h;
57                 (*comp)++;

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58 |         (*mov)++;  
59 |     }  
60 |     v[j] = atual;  
61 | }  
62 | h = h/3;  
63 | }  
64 | }  
65 |  
66 |  
67 | #endif
```