

ជាតិ សាសនា ព្រះមហាក្សត្រ

Institute of technology of Cambodia

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The lesson taking about using sorting in c++

Class activity (from 12-05-2022)

TP: Algorithm and Programming II

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```
1  #include<iostream>
2  using namespace std;
3  void test(int x=0)
4  {
5      if(x==0)
6      {
7          cout<<"Hello";
8      }else{
9          cout<<"Good bye\n";
10     }
11 }
12 void exchange(int*a, int*b)
13 {
14     int tmp;
15     tmp=*a;
16     *a=*b;
17     *b=tmp;
18 }
19 void sortSelection(int al[],int n)//array size of array
20 {
21     int minPosition;
22     for(int k=0; k<n-1; k++)
23     {
24         minPosition=k;//Find the position of the minimum element
25         for(int p=k+1; p<n; p++)
26         {
27             if(al[p]<al[minPosition])//value at position p is less than value at position minPosition
28             {
29                 minPosition=p;
30             }
31         }
32         exchange(&al[k],&al[minPosition]);//swap value k with position that has the minimum element
33     }
34 }

35 void sortSelectionV2(int al[],int n)//array size of array
36 {
37     int maxPosition;
38     for(int k=0; k<n-1; k++)
39     {
40         maxPosition=k;//Find the position of the maximum element
41         for(int p=k+1; p<n; p++)
42         {
43             if(al[p]>al[maxPosition])//value at position p is less than value at position maxPosition
44             {
45                 maxPosition=p;
46             }
47         }
48         exchange(&al[k],&al[maxPosition]);//swap value k with position that has the maximum element
49     }
50 }
51 void displayArray(int a[], int n)
52 {
53     for(int i=0; i<n; i++)
54     {
55         cout<<a[i]<<"\t";
56     }
57     cout<<endl;
58 }
```

```

58     },
59     void sortBubble(int a[], int n)//sortBubble smallest to the largest
60     {
61         bool state;
62         for (int k=0; k<n-1; k++)
63         {
64             state=false;
65             for(int p=0; p<n-1; p++)
66             {
67                 if(a[p]>a[p+1])//compare if is
68                 {
69                     exchange(&a[p],&a[p+1]);
70                     state=true;
71                 }
72             }
73             if(state==false)
74             {
75                 break;
76             }
77         }
78     }
79
80     void sortBubbleV2(int a[], int n)//sortBubble biggest to the smallest
81     {
82         bool state;
83         for (int k=0; k<n-1; k++)
84         {
85             state=false;
86             for(int p=0; p<n-1; p++)
87             {
88                 if(a[p]<a[p+1])//compare if is
89                 {
90                     exchange(&a[p],&a[p+1]);
91                     state=true;
92                 }
93             }
94             if(state==false)
95             {
96                 break;
97             }
98         }
99
100     main()
101     {
102         //test1
103         test();
104         test(4);
105         int a[]={9, 7, 10, -7, 92, 0};// initialize of array
106         sortSelection(a,6);
107         for(int i=0; i<6; i++)
108         {
109             cout<<a[i]<<" ";
110         }
111         cout<<endl;
112         sortSelectionV2(a,6);
113         for(int i=0; i<6; i++)
114         {
115             cout<<a[i]<<" ";

```

```

115     }
116     //test 2
117     test();
118     test(4);
119     int a[]={9,7,-1,0,8,1};
120     displayArray(a,6);
121
122     sortSelection(a,6);
123     displayArray(a,6);
124
125     sortSelectionV2(a,6);
126     displayArray(a,6);
127
128     //test3
129     test();
130     test(4);
131     int a[]={9,7,-1,0,8,1};
132     displayArray(a,6);
133
134     sortBubble(a,6);
135     displayArray(a,6);
136
137     sortBubbleV2(a,6);
138     displayArray(a,6);
139 }
140

```

```

100 {
101     //test1
102     test();
103     test(4);
104     int a[]={9, 7, 10, -7, 92, 0};
105     sortSelection(a,6);
106     for(int i=0; i<6; i++)
107     {
108         cout<<a[i]<<" ";
109     }
110     cout<<endl;
111     sortSelectionV2(a,6);
112     for(int i=0; i<6; i++)
113     {
114         cout<<a[i]<<" ";
115     }
116     //test 2

```

```

"C:\Users\Admin\Desktop\code c++\sorting.exe"
HelloGood bye
-7 0 7 9 10 92
92 10 9 7 0 -7
Process returned 0 (0x0)   execution time : 0.027 s
Press any key to continue.

```

```

116     //test 2
117     test();
118     test(4);
119     int a[]={9,7,-1,0,8,1};
120     displayArray(a,6);
121
122     sortSelection(a,6);
123     displayArray(a,6);
124
125     sortSelectionV2(a,6);
126     displayArray(a,6);
127

```

```

"C:\Users\Admin\Desktop\code c++\sorting.exe"
HelloGood bye
9       7       -1      0       8       1
-1      0       1       7       8       9
9       8       7       1       0       -1

Process returned 0 (0x0)   execution time : 0.027 s
Press any key to continue.

```

```

128 //test3
129 test();
130 test(4);
131 int a[]={9,7,-1,0,8,1};
132 displayArray(a,6);
133
134 sortBubble(a,6);
135 displayArray(a,6);
136
137 sortBubbleV2(a,6);
138 displayArray(a,6);
139 }
140

```

"C:\Users\Admin\Desktop\code c++\sorting.exe"

HelloGood bye

9	7	-1	0	8	1
-1	0	1	7	8	9
9	8	7	1	0	-1

Process returned 0 (0x0) execution time : 0.028 s
Press any key to continue.