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How to perform bubble sort using Templates in C++ Programming

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Following are the uses of templates in programming:



Programming C++

Example Template

C++ Template

Bubble Sort

- Templates are widely used to implement the Standard Template Library (STL).
- Templates are used to create Abstract Data Types (ADTs) and classify algorithms and data structures.
- Class templates are generally used to implement containers.

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Function Templates

A function template is a function which contains generic code to operate on different types of data. This enables a programmer to write functions without having to specify the exact type of parameters. Syntax for defining a template function is as follows:

```
1 template<class Type, ...>
2 return-type function-name(Type arg1, ...)
3 {
4 //Body of function template
5 }
```



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As shown above, the syntax starts with the keyword *template* followed by a list of template type arguments or also called generic arguments.

The *template* keyword tells the compiler that what follows is a template. Here, *class* is a keyword and *Type* is the name of generic argument.

Following program performs Bubble sort using function templates:



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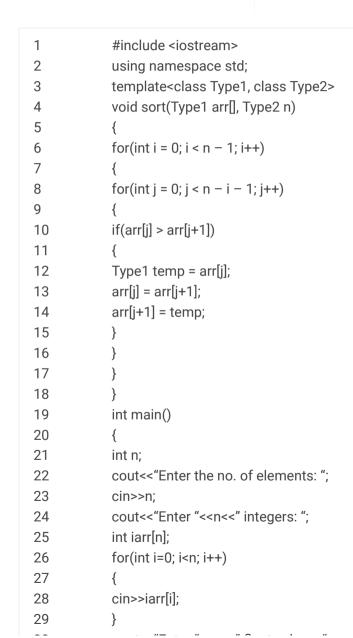
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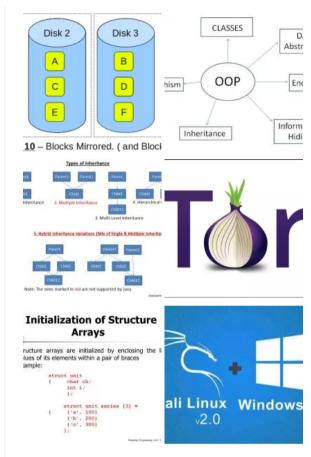








```
30
             cout<<"Enter "<<n<<" float values: ";
31
             float farr[n];
             for(int i=0; i<n; i++)
32
33
34
             cin>>farr[i];
35
36
             sort(iarr, n);
37
             sort(farr, n);
             cout<<"After sorting integer values are: ";
38
39
             for(int i=0; i<n; i++)
40
             cout<<iarr[i]<<" ";
41
42
43
             cout<<"\nAfter sorting floating point values are: ";
             for(int i=0; i<n; i++)
44
45
             cout<<farr[i]<<" ";
46
47
             return 0;
48
49
50
             Input and Output for the above program are as follows:
             Enter the no. of elements: 5
51
52
             Enter 5 integers: 3 2 1 6 4
             Enter 5 float values: 8.8 3.3 2.2 1.1 5.5
53
54
             After sorting integer values are: 1 2 3 4 6
55
             After sorting floating point values are: 1.1 2.2 3.3 5.5 8.8
56
57
```



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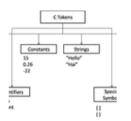
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