(28)
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* Assignment 5 *

Title:- function Template.

Problem Statement:-
Implement a function template selection sort write a program that inputs, sorts and outputs an integer array and a float array.

Prerequisites:- object oriented programming

objectives:- To learn Concept of template.

Theory:-
Templates:-
Templates are the foundation of generic programming which involves writing code in a way that is independent of any particular type A template is a blueprint or formula for creating a generic class or a function.

function Template:-
The general form of a template function defination is shown here.

```
template <class type> ret-type func-name
        (parameter list)
{
    // body of function
}
```

Here, type is a placeholder name of a data type used by the function This name can be used within the function defination.

Class Template :-

Just as we can define function to template we can also define class template. The general form of a generic class declaration is shown.

template < class type > class class-name {
" "
};

Here type is the placeholder type name, which will be specified when a class is instantiated you can define more than one generic data type by using a comma-seperated list.

Slection Sort :-

Slection Sort is a Sorting algorithm, specifically an inplace comparison Sort. It has O(n²) time complexity making it inefficient on large list and generally peform woose than the similar insertion Sort. selection Sort is noted for its simplicity, and it has performance advantage over more complicated algorithm in certain situation particularly where axillary memory is located

(25)
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How Selection Sort works ?

(1) 14 33 27 10 35 19 42 44
(2) 10 33 27 14 35 19 42 44
(3) 10 14 27 33 35 19 42 44.

* for list position in the sorted list, the whole list is scanned sequentially. the first position where 14 is sorted presently. we search the whole list and find that 10 is the lowest value.
* So, we replace 14 with 10. After one iteration 10, which happens to be the minimum value in the list, appear in the first position of sorted list.
* for the second position, where 33 is residing we start scanning the rest of the list in linear manner.
* we find that 14 is the second lowest value in the list and it should appear at the second place.
we swap the value.
* After two iteration two least values are positioned at the beginning in the sorted manner. the same process is applied to the rest of the item in the array.

facilities :- linux operating system, Gtt.

(73) - 25/5 (4)

Algorithm:-

① start
② Define template function for selection sort
③ In main () define two arrays, one for the integer and another for float and take input for both the array and all sorting functions template to sort the number.
④ Stop.

Conclusion:-

Hence we have studied Concept of function Template.