**Name of Algorithm**

1. **Algorithm Introduction/ Description/Explanation**

* Font will be **Times New Roman** as here.
* Font size should be **12.**
* Plagiarism must be **0%** in this section.
* Write in your own words not to copy from anywhere.

1. **Flowchart**

You can use following website for creating flowchart

<https://www.lucidchart.com/pages/examples/data-flow-diagram-software>

<https://creately.com/lp/data-flow-diagram-software-online/>

1. **Algorithm**

* Must be in Courier New Font and font size is **12** as mentioned in below sample example.

begin BubbleSort(list)

for all elements of list

if list[i] > list[i+1]

swap(list[i], list[i+1])

end if

end for

return list

end BubbleSort

1. **Examples**

Two examples with explanation, One with normal case and other one with either worst case or best case.

1. **Complexity Analysis**

The Sample of complexity analysis given as below for Merge sort without Plagiarism:

Mergesort function dividing a large list into small sublists recursively and at last, it calls merge function.

Here Merge function is comparing the elements of two sublists A, B and merge their elements by comparing them and save them into a newly created list. So it requires extra list of length n (length of list).

**Recurrence Relation**

Mergesort (Divide) Divide the problem into two equal parts.

Merge (Conquer) Compare ()

Write ()

Final recurrence relation for merge sort

****

By master’s method

, , , 

Here  

Also,



**Performance**

Worst-case time complexity: 

Best-case time complexity: 

Average-case time complexity: 

Worst-case space complexity: (extra list)

**Advantages**

For large data structures, merge sort is better because of its stable nature, unlike quick sort and heap sort. Its worst-case time complexity is , which is better than any other algorithm.

**Disadvantages**

It requires extra space for sorting. It’s slower as compare to quick sort because of more function calling.

1. **C and Python Implementation**

* The C language and Python Implementation of the Algorithm is required here with all the required comments (//) and notations.
* Font Courier New and font size must be 12.

// A utility function to get maximum of two integers

int max(int a, int b)

{

    return (a > b)? a : b;

}

**Note:**

1. The Start Writing the above Mentioned Points from Second Page.
2. First Page with Contain Algorithm, and Participating Student Name and RollNo with their contribution as per following format.

**Linear Search**

ABC(R12345)- Introduction of Algorithm

DEF(R67890)-Flowchart and Algorithm

XYZ(R54321)-Complexity Analysis and Codes