



# ***Green University of Bangladesh***

Department of Computer Science and Engineering

## **Lab report-1**

Course Title: Algorithms Lab

Course code: CSE-206

Date of Submission: 21.02.2021

|                                |                                |
|--------------------------------|--------------------------------|
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**Task Name :** The following MergeSort algorithm is used to sort the array of 7 integers below.

Array: 96 48 91 94 31 77 2

**Objective:**

- 1.To learn problem solving technique using C .
- 2 .To be familiar with mergesort and quicksort algorithm to sort the array

**Code:**

```
#include<stdio.h>

#include<stdlib.h>

int Partition(int A[],int left,int right)
{
    int x, i,j,temp;
    x = A[right];
    i = left-1;
    for(j=left; j<=right-1;j++)
    {
        if(A[j]<=x)
        {
            i++;
            temp = A[j];
            A[j] = A[i];
```

```

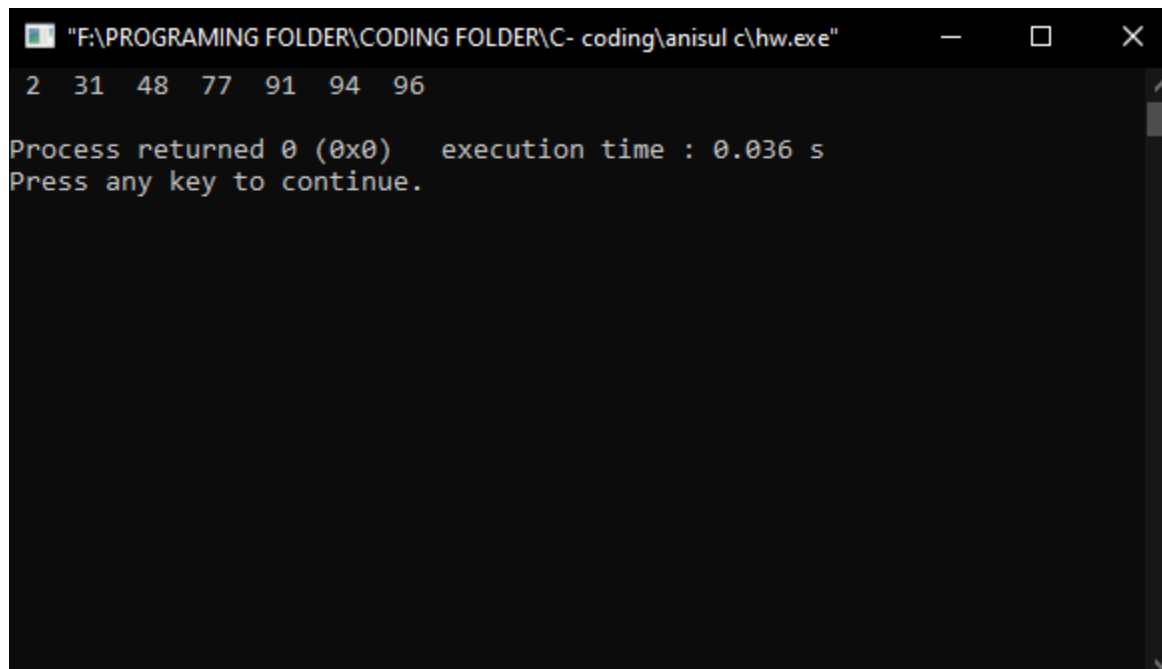
        A[i] = temp;
    }
}
temp = A[right];
A[right] = A[i+1];
A[i+1] = temp;
return i+1;
}
void Quicksort(int A[],int left,int right)
{
    int q;
    if(left<right)
    {
        q = Partition(A,left,right);
        Quicksort(A,left,q-1);
        Quicksort(A,q+1,right);
    }
}
int main()
{
    int i;

    int A[]={96, 48, 91, 94, 31, 77, 2};

```

```
Quicksort(A,0,6);  
for(i = 0;i<7;i++)  
{  
    printf(" %d ",A[i]);  
}  
printf("\n");
```

### Output:



```
"F:\PROGRAMING FOLDER\CODING FOLDER\C- coding\anisul c\hw.exe"  
2 31 48 77 91 94 96  
Process returned 0 (0x0) execution time : 0.036 s  
Press any key to continue.
```

**Table:**

| Left(Index) | Right(Index) | Return Value | Array                 |
|-------------|--------------|--------------|-----------------------|
| 0           | 6            | 0            | {2,48,91,94,31,77,96} |
| 0           | 6            | 0            | {2,48,31,77,91,94,96} |
| 0           | 6            | 0            | {2,31,48,77,91,94,96} |
| 0           | 6            | 0            | {2,31,48,77,91,94,96} |
| 0           | 6            | 0            | {2,31,48,77,91,94,96} |
| 0           | 6            | 0            | {2,31,48,77,91,94,96} |

**Discussion:** This is a code written in c program. The program is focused on sorting the array of given integers. From this lab I understood the basic structure of C programming including the merge sort and Quicksort steps of problem solving. Hence the problem is solved and displayed and Compare.