Green University of Bangladesh

Department of Computer Science and Engineering

Lab report-1

Course Title: Algorithms Lab

Course code: CSE-206

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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:

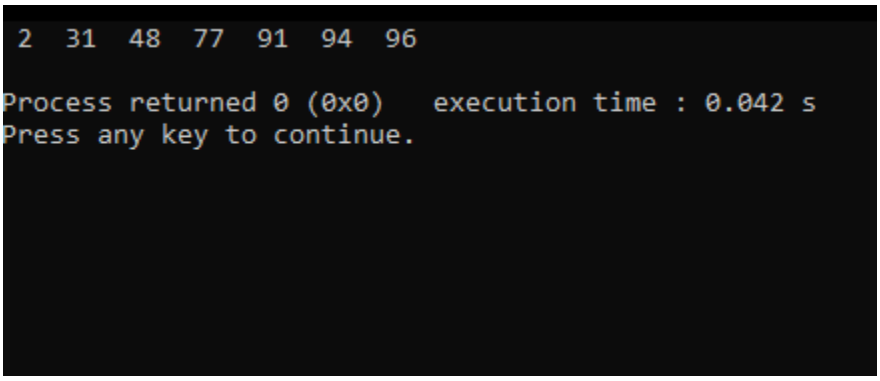

Table:

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.