

LAB PROGRAM 5

AIM: Sort a given set of N integer elements using Quick Sort technique and compute its time taken.

SOURCE CODE

```
#include<stdio.h>
#include<stdlib.h>
#include<time.h>

void quicksort(int number[100000],int first,int last){
    int i, j, pivot, temp;
    if(first<last){
        pivot=first;
        i=first;
        j=last;
        while(i<j){
            while(number[i]<=number[pivot]&&i<last)
                i++;
            while(number[j]>number[pivot])
                j--;
            if(i<j){
                temp=number[i];
                number[i]=number[j];
                number[j]=temp;
            }
        }
        temp=number[pivot];
        number[pivot]=number[j];
        number[j]=temp;
        quicksort(number,first,j-1);
        quicksort(number,j+1,last);
    }
}
```

```
}

}

int main(){

    int i, count, number[100000];

    clock_t start,end;

    double timetaken;

    printf("Enter the size of the array: ");

    scanf("%d",&count);

    printf("\n");



    for(i=0;i<count;i++)

    {

        number[i]=rand();

    }

    printf("The given array is: ");

    for(i=0;i<count;i++)

    {

        printf(" %d",number[i]);

    }

    printf("\n");

    printf("\n");

    start=clock();

    quicksort(number,0,count-1);

    end=clock();

    printf("Sorted Array is: ");

    for(i=0;i<count;i++)

    printf(" %d",number[i]);

    timetaken=(double)(end-start);

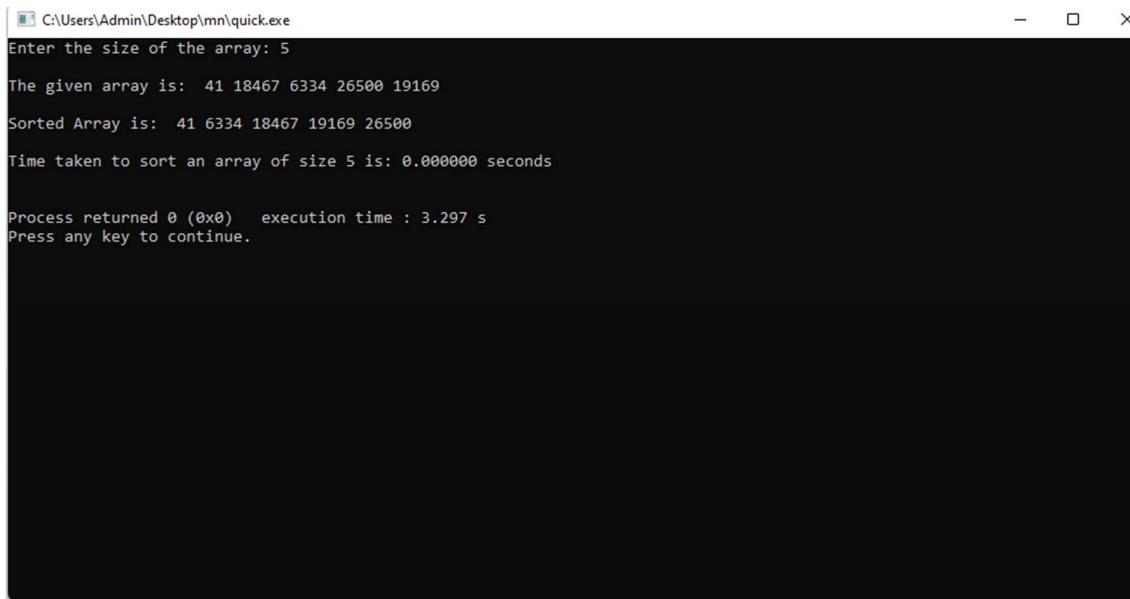
    timetaken=(timetaken/CLOCKS_PER_SEC);

    printf("\n");

    printf("\n");
```

```
printf("Time taken to sort an array of size %d is: %f seconds",count,timetaken);
printf("\n");
printf("\n");
return 0;
}
```

OUTPUT SCREENSHOT



The screenshot shows a terminal window titled 'C:\Users\Admin\Desktop\mn\quick.exe'. The window contains the following text:

```
Enter the size of the array: 5
The given array is: 41 18467 6334 26500 19169
Sorted Array is: 41 6334 18467 19169 26500
Time taken to sort an array of size 5 is: 0.000000 seconds

Process returned 0 (0x0)  execution time : 3.297 s
Press any key to continue.
```