**Assignment No:-**

**Assignment Name**:- **Implementation of program to sort an array in ascending order using Merge sort.**

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**Roll No:- 136.**

#include<iostream.h>

#include<conio.h>

#include<stdlib.h>

#include<timer.h>

class M

{

private:

int arr[1000],brr[1000],n;

public :

M(int);

void READ();

void SHOW();

void MERGE(int,int,int);

void MERGE\_SORT(int,int);

};

M::M(int par)

{

n=par;

}

void M::READ()

{

for(int i=1;i<=n;i++)

arr[i]=random(1000);

}

void M::SHOW()

{

for(int i=1;i<=n;i++)

cout<<arr[i]<<"\t";

}

void M::MERGE(int low,int mid,int high)

{

int i=low;

int j=mid+1;

int k=low;

while(i<=mid && j<=high)

{

if(arr[i]<arr[j])

{

brr[k]=arr[i];

i++;

}

else

{

brr[k]=arr[j];

j++;

}

k++;

}

if(i<=mid)

{

while(i<=mid)

{

brr[k]=arr[i];

i++;

k++;

}

}

else

{

while(j<=high)

{

brr[k]=arr[j];

j++;

k++;

}

}

for(k=low;k<=high;k++)

arr[k]=brr[k];

}

void M::MERGE\_SORT(int low,int high)

{

if(low<high)

{

int mid=(low+high)/2;

MERGE\_SORT(low,mid);

MERGE\_SORT(mid+1,high);

MERGE(low,mid,high);

}

}

void main()

{

clrscr();

Timer T;

int n;

cout<<"Enter the size of array : ";

cin>>n;

M obj(n);

obj.READ();

T.start();

obj.MERGE\_SORT(0,n);

T.stop();

obj.SHOW();

cout<<"\n Exact time of execution : "<<T.time();

getch();

}