**Lab manual 05**

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**Merge sort 01:**

#include<bits/stdc++.h>

using namespace std;

int n;

void mergesort(int ara[],int l,int r)

{

if(l==r)

return;

int mid=(l+r)/2;

mergesort(ara,l,mid);

mergesort(ara,mid+1,r);

int dummy[n];

for(int i=l,j=l,k=mid+1;i<=r;i++)

{

if(j>mid)

dummy[i]=ara[k++];

else if(k>r)

dummy[i]=ara[j++];

else if(ara[j]<=ara[k])

dummy[i]=ara[j++];

else if(ara[k]<ara[j])

dummy[i]=ara[k++];

}

for(int i=l;i<=r;i++)

ara[i]=dummy[i];

}

int main()

{

int i,j,Min,x,t;

cout<<"Enter the number of element: ";

cin>>n;

int ara[n];

double sum=0;

cout<<"Enter elements: ";

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

{

cin>>ara[i];

sum+=ara[i];

}

mergesort(ara,0,n-1);

cout<<"Sort : ";

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

cout<<ara[i]<<' ';

cout<<endl;

cout<<"Median Value: "<<(sum/n)<<endl;

return 0;

}

**Merge sort 02:**

#include<bits/stdc++.h>

using namespace std;

int n;

void mergesort(int ara[],int l,int r)

{

if(l==r)

return;

int mid=(l+r)/2;

mergesort(ara,l,mid);

mergesort(ara,mid+1,r);

int dummy[n];

for(int i=l,j=l,k=mid+1;i<=r;i++)

{

if(j>mid)

dummy[i]=ara[k++];

else if(k>r)

dummy[i]=ara[j++];

else if(ara[j]<=ara[k])

dummy[i]=ara[j++];

else if(ara[k]<ara[j])

dummy[i]=ara[k++];

}

for(int i=l;i<=r;i++)

ara[i]=dummy[i];

}

int main()

{

int i,j,Min,x,t;

cout<<"Enter the number of element: ";

cin>>n;

int ara[n],sum=0,digit\_sum=0;

cout<<"Enter elements: ";

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

{

cin>>ara[i];

sum+=ara[i];

}

mergesort(ara,0,n-1);

cout<<"Sort list: ";

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

cout<<ara[i]<<' ';

cout<<endl;

cout<<"Sum: "<<sum<<endl;

while(sum)

{

digit\_sum+=(sum%10);

sum=sum/10;

}

cout<<"Digit Sum: "<<digit\_sum<<endl;

return 0;

}