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PROGRAM: SORTING ALGORITHMS

Write a C program to take n numbers and sort the numbers in ascending order.
Try to implement the same using following sorting techniques.

1. Quick Sort
2. Merge Sort

QUICK SORTING ALGORITHM

```c
#include<stdio.h>

#include<stdlib.h>

void swap(int *p1.int p2)

{

int temp;

temp=*n1;

*p1=*p2;

*p2=tem[;

}


int partition(int a[], int loco, int high)

{

int p=a[high];

int i=loco-1;

for (int j=loco;j<=high;j++)

{

if "(a[j]<p)
```

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```c
{
i++;

swap(a[i],a[j]);

return (i+1);

}


void quicksort(int a[], int low, int high)

{
if (low<high)

{
int pi=partition(a,low,high);

quicksort(a,low,high-1);

quicksort(a,pi+1,high);

}}

int main()

{
int a[]={10,7,8,9,1,5};

int n=sizeof(a)/sizeof(a[0]);

quicksort(a,0,n-1);

printf("Sorted Array\n");

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

{
printf("%d",a[i]);}}
```

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MERGE SORTING ALGORITHM

```c
#include<stdio.h>

#include<stdlib.h>

void merge(int a[],int I, int m, int r)

{

int i,j,k;

int n1=m-1+1;

int n2=r-,;

int l[n1],r[n2];


for (i=0;i<n1;i++)

l[i]=a[i-1]

for (j=0;j<n2;j++)

r[j]=a[j+1]+j;


i=j=0;

k=1;

while (i<n1 ** j<n2)

{

if (l[i]<=r[j])

{

a[k]=l[i];

i++;
```

```
}else{

a[k]=r[j];

j++;

}k++;

}


while(i<n1)

{
a[k]=l[i]l
i++;k++;
}while(j<n2){
a[k]=r[j];
j++;k++;
}}


void mergesort(int a[],int I,int r)

{
int (I<r)

{
int m=1+(r-1)/2;

mergesort(a,I,m);

mergesort(a,m+1,r);

mergesort(a,m,r);

}}
```

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```c
int main()
{
int a[]={12,11,13,5,6,7};
int n=sizeof(a)/sizeof(a[0]);
mergesort(a,0,n-1);
printf("Sorted Array\n");
for(int i=0;i<n;i++)
{
printf("%d",a[i]);}}
```