**Program:**

#include<stdio.h>

#include<stdlib.h>

#include<pthread.h>

int a[30], \*a1[30], \*a2[30], a3[30], \*b[30], \*c[30], i, j, k, n, t;

void \*sortthread1(void \*p);

void \*sortthread2(void \*p);

void \*mergethread(void \*p);

int main(int argc,char \*argv[])

{

pthread\_t tid1,tid2,tid3;

printf("Enter the no. of integers: ");

scanf("%d",&n);

printf("Enter the list of integers: ");

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

scanf("%d",&a[i]);

int \*p=a;

pthread\_create(&tid1, NULL, sortthread1, (void \*)p);

pthread\_create(&tid2, NULL, sortthread2, (void \*)p);

pthread\_create(&tid3, NULL, mergethread, (void \*)p);

printf("\nsorting thread 1 & 2 processed");

pthread\_join(mergethread, NULL);

printf("\nSorted Sub List1: ");

for(i=0;i<n/2;i++)

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

printf("\nSorted Sub List2: ");

for(i=0;i<(n-n/2);i++)

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

printf("\nMerged Sorted List: ");

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

printf("%d ",a3[i]);

printf("\nmerge thread processed");

return 0;

}

void \*sortthread1(void \*p)

{

int \*a1=(int \*)p;

for(i=0;i<n/2;i++)

b[i]=a1[i];

for(i=0;i<n/2;i++)

{

for(j=0;j<(n/2-i-1);j++)

if(b[j]>b[j+1])

{

t=b[j];

b[j]=b[j+1];

b[j+1]=t;

}

}

pthread\_exit(0);

}

void \*sortthread2(void \*p)

{

int \*a2=(int \*)p;

for(i=0;i<(n-n/2);i++)

c[i]=a2[i+n/2];

for(i=0;i<(n-n/2);i++)

{

for(j=0;j<(n-n/2-i-1);j++)

if(c[j]>c[j+1])

{

t=c[j];

c[j]=c[j+1];

c[j+1]=t;

}

}

pthread\_exit(0);

}

void \*mergethread(void \*p)

{

i=0;

j=0;

k=0;

while(i<n/2 && j<(n-n/2))

{

if(b[i]<=c[j])

{

a3[k]=b[i];

i++;

}

else

{

a3[k]=c[j];

j++;

}

k++;

}

while(i<n/2)

{

a3[k]=b[i];

i++;

k++;

}

while(j<(n-n/2))

{

a3[k]=c[j];

j++;

k++;

}

pthread\_exit(0);

}

/\*

Enter the no. of integers: 10

Enter the list of integers: 58 1 42 31 4 2 97 35 64 5

sorting thread 1 & 2 processed

Sorted Sub List1: 1 4 31 42 58

Sorted Sub List2: 2 5 35 64 97

Merged Sorted List: 1 2 4 5 31 35 42 58 64 97

merge thread processed

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