PRN-23UAI313

EXP-3

```c
#include<stdio.h>
void merge(int arr[],int left,int mid,int right)
{
int i,j,k;
int n1=mid-left+1;
int n2=right-mid;
int L[n1],R[n2];
for(i=0;i<n1;i++)
L[i]=arr[left+i];
for(j=0;j<n2;j++)
R[j]=arr[mid+1+j];
i=0;
j=0;
k=left;
while(i<n1 && j<n2)
{
if(L[i]<=R[j])
{
arr[k]=L[i];
i++;
}
 else{
arr[k]=R[j];
j++;
}
k++;
}
while(i<n1){
arr[k]=L[i];
```

```c
i++;
k++;
}
while(j<n2)
{
arr[k]=R[j];
j++;
k++;
}
}
void mergesort(int arr[],int left,int right)
{
if(left<right){
int mid=left+(rightleft)/2;
mergesort(arr,left,mid);
mergesort(arr,mid+1,right);
merge(arr,left,mid,right);
}
}
void printArray(int arr[],int size)
{
int i;
for(i=0;i<size;i++)
printf("%d \t",arr[i]);
printf("\n");
}
int main()
{
int arr[]={12,11,13,5,6,7};
int arr_size=sizeof(arr)/sizeof(arr[0]);
printf("Given array is \n");
```

```c
    printArray(arr,arr_size);

    mergesort(arr,0,arr_size-1);

    printf("\nsorted array is \n");

    printArray(arr,arr_size);

    return 0;

}
```