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WRITE A C PROGRAM FOR SORTING USING SHELL SORT

```

1.  /*
2.  << Algorithm >>
3.  Step 1
4.      Read a[n]
5.  Step 2
6.      Repeat for d=n/2 to 1 step by d/2
7.          Repeat for k=d/2 to n step by one
8.              key<-a[k]
9.              j<-j-d
10.             f<-0
11.
12.             Repeat while j>=1 and f=0
13.                 if(key<=a[j]) then
14.                     a[j+d]=a[j]
15.                     j<-j-d
16.                 else
17.                     f<-1
18.                 End if
19.             End while
20.         a[j+d]<-key
21.     End for(k)
22. End for(d)
23.
24. Step 3
25.     write a[n]
26.
27. */
28. #include<stdio.h>
29. #define true 1

```

```

30. #define false 0
31.
32. void shell(int a[],int n);
33.
34. int main(){
35.     int a[100],i,n;
36.     printf("What's Your limit ? ");
37.     scanf("%d",&n);
38.     for(i=1;i<=n;i++){
39.         printf("Enter %d Data ",i);
40.         scanf("%d",&a[i]);
41.     }
42.     shell(&a[0],n);
43.     printf("Sorted successfully\n");
44.     for(i=1;i<=n;i++){
45.         printf("%d ",a[i]);
46.     }
47.     return 0;
48. }
49. void shell(int *a,int n){
50.     int d,k,key,flag,j;
51.     for(d=n/2;d>=1;d=d/2){
52.         for(k=d+1;k<=n;k++){
53.             key=a[k];
54.             j=k-d;
55.             flag=false;
56.             while(j>=1&&flag==false){
57.                 if(key<a[j]){
58.                     a[j+d]=a[j];
59.                     j=j-d;
60.                 }
61.                 else{
62.                     flag=true;
63.                 }
64.             }
65.             a[j+d]=key;
66.         }
67.     }
68. }

```

OUTPUT

```
Enter your Limit 5
Enter 1 Data 20
Enter 2 Data 10
Enter 3 Data 40
Enter 4 Data 30
Enter 5 Data 25
Data Sorted Successfully
10 20 25 30 40
```

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