Date:2023-05-18

```
Aim:
```

S.No: 12

Write a program to sort (ascending order) the given elements using radix sort technique.

At the time of execution, the program should print the message on the console as:

Exp. Name: Write a C program to sort given elements using Radix sort

```
Enter array size :
```

For example, if the user gives the input as:

```
Enter array size : 5
```

Next, the program should print the following message on the console as:

```
Enter 5 elements :
```

if the user gives the input as:

```
Enter 5 elements : 34 67 12 45 22
```

then the program should **print** the result as:

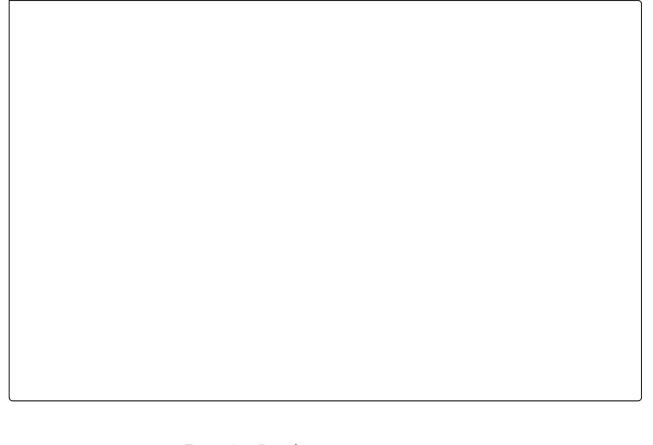
```
Before sorting the elements are : 34 67 12 45 22 After sorting the elements are : 12 22 34 45 67
```

## Source Code:

## RadixSortMain2.c

```
#include<stdio.h>
#include<conio.h>
void main()
   int size;
   int *arr,i;
   printf("Enter array size : ");
   scanf("%d",&size);
   arr = (int*) malloc(size * sizeof(int));
   printf("Enter %d elements : ",size);
   for(i=0;i<size;i++)</pre>
      scanf("%d", &arr[i]);
   printf("Before sorting the elements are : ");
   printArray(arr, size);
   Radixsort(arr,size);
   printf("After sorting the elements are : ");
   printArray(arr,size);
}
int largest(int a[], int n)
int i, k=a[0];
```

```
if(a[i]>k)
      k=a[i];
   }
 }
 return k;
void printArray(int a[],int n)
   int i;
   for(i=0;i<n;i++)
      printf("%d ",a[i]);
   printf("\n");
int Radixsort(int a[], int n)
int bucket[10][10],bucket_count[10],i,j,k,rem,NOP=0,divi=1,large,pass;
   large=largest(a,n);
   while(large>0)
      NOP++;
      large/=10;
   for(pass=0;pass<NOP;pass++)</pre>
      for(i=0;i<10;i++)
      {
         bucket_count[i] = 0;
      }
      for(i=0;i<n;i++)
         rem = (a[i]/divi)%10;
         bucket[rem][bucket_count[rem]] = a[i];
          bucket_count[rem]++;
      }
      i=0;
      for(k=0; k<10; k++)
       for(j=0;j<bucket_count[k];j++)</pre>
         a[i] = bucket[k][j];
         i++;
   divi*=10;
  }
}
```



## Execution Results - All test cases have succeeded!

Test Case - 1
Jser Output
Enter array size : 5
Enter 5 elements : 23
43
54
12
65
Before sorting the elements are : 23 43 54 12 65
After sorting the elements are : 12 23 43 54 65

Test Case - 2
User Output
Enter array size : 7
Enter 7 elements : 23
54
136
85
24
65
76
Before sorting the elements are : 23 54 136 85 24 65 76
After sorting the elements are : 23 24 54 65 76 85 136