Practical - 5

AIM :- Implement program of Counting Sort.

CODE :-

```
#include <stdio.h>
void counting_sort(int size1,int arr1[],int arr2[],int size2)
{
int i,j; for(i=0;i<size2;i++)
{
arr2[i]=0;
}
for(i=0;i<=size1-1;i++)
{
arr2[arr1[i]]=arr2[arr1[i]]+1;
}
for(i=0;i<size2;i++)
{
if(arr2[i]!=0)
{
int temp=arr2[i]; for(j=1;j<=temp;j++)
{
printf("%d ",i);
}
}
}
}
int main(void) {

int arr1[]={3,7,5,8,3,5,8,9,5,4,3};
int size1=sizeof(arr1)/sizeof(arr1[0]);
int arr2[6];
int size2=sizeof(arr2)/sizeof(arr2[0]);
counting_sort(size1,arr1,arr2,size2);
return 0;
}
```

OUTPUT :-

Output

```
3 3 3 4 5 5 5
```

Time Complexity: O(n+k) where n is the number of elements in input array and k is the range of input.