

**Practical-7****Aim: Counting Sort****Code:**

```
#include<stdio.h>
int getMax(int a[], int n) {
    int max = a[0];
    for(int i = 1; i<n; i++) {
        if(a[i] > max)
            max = a[i];
    }
    return max;
}
void countSort(int a[], int n)
{
    int output[n+1];
    int max = getMax(a, n);
    int count[max+1];
    for (int i = 0; i <= max; ++i)
    {
        count[i] = 0;
    }
    for (int i = 0; i < n; i++)
    {
        count[a[i]]++;
    }
    for(int i = 1; i<=max; i++)
        count[i] += count[i-1];
    for (int i = n - 1; i >= 0; i--)
    {
        output[count[a[i]] - 1] = a[i];
        count[a[i]]--;
    }
    for(int i = 0; i<n; i++) {
        a[i] = output[i];
    }
}
```

```
void printArr(int a[], int n)
{
    int i;
    for (i = 0; i < n; i++)
        printf("%d ", a[i]);
}

int main()
{
    int a[] = { 90,73,91,34,23,89,10 };
    int n = sizeof(a)/sizeof(a[0]);
    printf("Before sorting \n");
    printArr(a, n);
    countSort(a, n);
    printf("\nAfter sorting \n");
    printArr(a, n);
    return 0;
}
```

## OUTPUT:

**Status** Successfully executed **Date** 2022-05-24 04:20:00 **Time** 0.006413 sec **Mem** 5400 kB



### Output

```
Before sorting
4 10 21 1 14 20 17
After sorting
1 4 10 14 17 20 21
```