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: