

```

1: #include<stdio.h>
2: #include<limits.h>
3: #include<stdlib.h>
4:
5: void printArray(int *A, int n)
6: {
7:     for (int i = 0; i < n; i++)
8:     {
9:         printf("%d ", A[i]);
10:    }
11:    printf("\n");
12: }
13:
14:
15: int maximum(int A[], int n){
16:     int max = INT_MIN;
17:     for (int i = 0; i < n; i++)
18:     {
19:         if (max < A[i]){
20:             max = A[i];
21:         }
22:     }
23:     return max;
24:
25: }
26: void countSort(int * A, int n){
27:     int i, j;
28:     // Find the maximum element in A
29:     int max = maximum(A, n);
30:
31:     // Create the count array
32:     int* count = (int *) malloc((max+1)*sizeof(int));
33:
34:     // Initialize the array elements to 0
35:     for (i = 0; i < max+1; i++)
36:     {
37:         count[i] = 0;
38:     }
39:

```

```

40:      // Increment the corresponding index in the count array
41:      for (i = 0; i < n; i++)
42:      {
43:          count[A[i]] = count[A[i]] + 1;
44:      }
45:
46:      i =0; // counter for count array
47:      j =0; // counter for given array A
48:
49:      while(i<= max){
50:          if(count[i]>0){
51:              A[j] = i;
52:              count[i] = count[i] - 1;
53:              j++;
54:          }
55:          else{
56:              i++;
57:          }
58:      }
59:  }
60:
61:  int main(){
62:      int A[] = {9, 1, 4, 14, 4, 15, 6};
63:      int n = 7;
64:      printArray(A, n);
65:      countSort(A, n);
66:      printArray(A, n);
67:      return 0;
68:  }
69:

```