**COUNTING SORT**

|  |  |
| --- | --- |
| **def counting\_sort(A,k):** | **COUNTING-SORT(A, n, k)** |
| B = list(A); C=[] | let B[1:n] and C[0:k] be new arrays |
| for i in range(k+1):  C.append(0) | for i = 0 to k  C[i] = 0 |
| Compute C[A[j]] that will contain the number of elements equal to i | |
| for j in range(len(A)):  C[A[j]] += 1 | for j = 1 to n  C[A[j]] = C[A[j]] +1 |
| Compute C[i] that will contain the number of elements less than or equal to i | |
| for i in range(1, k+1):  C[i] += C[i-1] | for i = 1 to k  C[i] = C[i] + C[i-1] |
| Copy A to B, starting from the end of A | |
| for j in range(len(A)-1, -1, -1):  B[C[A[j]]-1] = A[j]  C[A[j]] -=1 | for j = n downto 1  B[C[A[j]]] = A[j]  C[A[j]] = C[A[j]] – 1 // to handle duplicate values |
| return B | return B |