

# EECS340 - Algorithms - HW#6

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## Problem 1

```
1: SPARSE-TRANSPOSE(R,C,V,m,n,k)
2: for  $i = 0$  to  $k$  do
3:    $R'[C[i]] \leftarrow R'[C[i]] + 1$ 
4: end for
5: for  $i = 1$  to  $k$  do
6:    $R'[i] \leftarrow R'[i] + R'[i - 1]$ 
7: end for
8: for  $r \leftarrow m - 1$  to  $0$  do
9:   for  $j \leftarrow R'[r + 1] - 1$  downto  $R[r]$  do
10:     $C'[R'[C[j]]] \leftarrow r$ 
11:     $V'[R'[C[j]]] \leftarrow V[j]$ 
12:     $R'[C[j]] \leftarrow R'[C[j]] - 1$ 
13:   end for
14: end for
```

## Problem 2

```
1: STABLE-SORT(A)
2: for  $i = 1$  to  $n = A.length$  do
3:    $A[i] = A[i] - \frac{A[i]}{n+1}$ 
4: end for
5: MYSTERY-SORT(A)
6: for  $i = 1$  to  $n = A.length$  do
```

```
7:    $A[i] = \text{ceil}(A[i])$   
8: end for
```

The idea is to subtract an amount from the duplicates such that they get sorted in order but do not become a different number then after Mystery-Sort they are passed through the ceiling function to return the original integers.