Name : Waseef-ullah

Id NO : 15391

Subject : Data Structure

Semester : 3rd

Program : BS (CS)

Teacher : Sir Adil

Q.1 Let the size of A[] be 15654 and the lower bound be 36767, calculate the upper bound.

Solution:

Given data

the size of an array A[] = 15654

lower bound lb = 36767

The required upper bound = ?

Knowing that the siz of A[] = ub - lb - 1 put the value of lb and size of an array in the above given equation

P.T.O

$A[1] = ub - lb + 1$

$15654 = = ub - 36767 + 1$

$= -ub = -15654 - 36767 + 1$

by taking (-) common to the right side and divide

$-ub = -(15654 + 36767 - 1)$

$ub = 15654 + 36767 - 1$

$ub = 15654 + 36766$

$ub = 52420$

the upper bound is 52420

(b) Suppose a list of 350 element is to be sorted using bubble sort, than find

(i) Tota number of passes

As it crstal clear that.

total number of Passes = total number of element - 1

total number of Passes = $N - 1$

$= 350 - 1 = 349$

P.T.O

(ii) Total number of steps

total number of steps $= n\frac{(n-1)}{2}$

as $N = 350$

total number of steps $= 350\frac{(350-1)}{2}$

$= 350\frac{(349)}{2}$

$= 122150/2$

And the total number of steps $= 61075$

(iii) Number of steps in pass # 137

Number of steps in pass #137 $= 350 - 137$

$= 213$

Steps in pass # 137 $= 213$

(iv) Number of steps in pass # 193

Number of steps in pass #193 $= n -$ pass #

As we know that $n = 350$

Number of steps in pass #193 $= 350 - 193 = 157$

Number of steps in pass #193 $= 157$

P.T.O

Q.2 Sort the given list using selection sort.

10, 15, 0, 7, 8, 6

Sol:

Sorting by using selection sort first we are needed to find the number of steps and after it implement the steps for each element in order for ordering and arranging the above or given list

N = number of elements

Steps = N − 1

= 6 − 1 = 5

And know we need to sort the list in 5 steps

elements of the lists 10, 15, 0, 7, 8, 6

Step 1 = for element 10

(10), 15, (0), 7, 8, 6

element 10 has been circled with the smallest elemen 0 in the list and know we can interchang their positions.

R= 0, 15, 10, 7, 8, 6

P.T.O

Step 2 = For element 15

0, (15), 10, 7, 8, (6)

the same Procedure of Step 1 is repeated.

R = 0, 6, 10, 7, 8, 15

Step 3 = For element 10

0, 6, (10), (7), 8, 15

as the circled member interchanged

R = 0, 6, 7, 10, 8, 15

Step 4 = For element 10

0, 6, 7, (10), (8) 15

R = 0, 6, 7, 8, 10, 15

Step 5 = 0, 6, 7, 8, 10, 15

Sorting is Completed as 10 is on its proper position. The sorting list is as follows.

0, 6, 7, 8, 10, 15

P.T.O

Q 3 Fill in the blanks.

(i) Fysical

(ii) Logical

(iii) Data structure

(iv) non-Linear

(v) Linear

(vi) Linear

(vii) 8

(viii) File

(ix) Degree of record

(x) Blocking Factor