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Paper :-

Data structure

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Q1

Ans:-

Given :- Size of Array = 15654

lower bound = LB = 36767

Required:-

upper bound = UB = ?

Solution:-

$$\text{Array - size} = \text{UB} - \text{LB} + 1$$

$$\text{UB} = \text{Array size} + \text{LB} - 1$$

$$\text{UB} = 15654 + 36767 - 1$$

$$\text{UB} = 54,420$$

Result:-

$$\boxed{\text{UB} = 54,420}$$

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Q2
b)
Ans

- i) Total number of Passes 349.
- ii) Total number of steps 700.
- iii) Number of steps in Pass # 137.
- iv) Number of steps in Pass # 193

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Q2

Sort the given list using selection sort

10, 15, 0, 7, 8, 6.

Ans

```
#include <bits/stdc++.h>
using namespace std;
void swap (int *x, int *y)
{
    int temp = *x;
    *x = *y;
    *y = temp;
}
int bubble sort (int arr[], int n)
{
    int i, j, passes = 0, steps = 0;
    for (i = 0; i < n - 1; i++)
    {
        passes++;
        for (j = 0; j < n - i - 1; j++)
            if (arr[j] > arr[j+1])
            {
                swap (&arr[j], &arr[j+1]);
                step++;
            }
    }
    return steps;
}
```

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```
}  
void print Array (int arr[], int size)  
{  
    int i;  
    for (i=0; i < size; i++)  
        cout << arr[i] << " ";  
    cout << endl;  
}  
int main ( )  
int arr [ ] = { 64, 25, 34, 12, 22, 11, 90 };  
int n = size of (arr) / size of (arr[0]);  
cout << n;  
cout << bubble sort (arr, n);  
cout << " sorted array: \n";  
Print Array (arr, n);  
return 0;  
}
```

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Q3 Fill int blank

- i) Primitive Data structure may deal with only a single value.
- ii) Non-Primitive Data structure may deal with multiple value.
- iii) The logical / Mathematical organization of data is called Data Structure.
- iv) A Tree is a Non-linear data structure.
- v) An array is a linear data structure.
- vi) list must be sorted binary searching.
- vii) An investigation Parade of Criminals is an example of _____.
- viii) $17 \text{ int} - \text{div } 2 = \underline{\hspace{2cm}}$
- ix) Number of fields in a Record is called Degree of Record.
- x) Number of Records in a Block is called Blocking factor.