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**Order Statistics**

Writing a program in Java to understand order statistics

class KthSmallst

{

int kthSmallest(int arr[], int l, int r, int k)

{

if (k > 0 && k <= r - l + 1)

{

int pos = randomPartition(arr, l, r);

if (pos-l == k-1)

return arr[pos];

if (pos-l > k-1)

return kthSmallest(arr, l, pos-1, k);

return kthSmallest(arr, pos+1, r, k-pos+l-1);

}

return Integer.MAX\_VALUE;

}

void swap(int arr[], int i, int j)

{

int temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

int partition(int arr[], int l, int r)

{

int x = arr[r], i = l;

for (int j = l; j <= r - 1; j++)

{

if (arr[j] <= x)

{

swap(arr, i, j);

i++;

}

}

swap(arr, i, r);

return i;

}

int randomPartition(int arr[], int l, int r)

{

int n = r-l+1;

int pivot = (int)(Math.random()) \* (n-1);

swap(arr, l + pivot, r);

return partition(arr, l, r);

}

}

public class Main

{

public static void main(String[] args) {

KthSmallst ob = new KthSmallst();

int arr[] = {12, 3, 5, 7, 4, 19, 26};

int n = arr.length,k = 4;

System.out.println("K'th smallest element is "+ ob.kthSmallest(arr, 0, n-1, k));

}

}

**Output:**

