**Assisted Practice: 4.2 Order Statistics**

This section will guide you to:

* Write a program in Java to find the fourth smallest element in an unsorted list
* Use Eclipse (the popular text editor for Java programs)
* Push code to Git

This lab has three subsections, namely:

* + 1. Creating a new project in Eclipse
    2. Writing the program in Java to understand order statistics
    3. Pushing the code to your GitHub repositories

**Step 4.2.1:** Creating a new project in Eclipse

* Open Eclipse
* Go to File -> New -> Project -> Java Project -> Next
* Type in any project name and click on Finish
* Select your project and go to File -> New -> Class
* Enter **Main** in class name, check the checkbox **public static void main(String[] args)**, and click on Finish

**Step 4.2.2:** 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:**



**Step 4.2.3:** Pushing the code to your GitHub repositories

* Open your command prompt and navigate to the folder where you have created your files.

**cd <folder path>**

* Initialize your repository using the following command:

**git init**

* Add all the files to your git repository using the following command:

**git add .**

* Commit the changes using the following command:

**git commit . -m “Changes have been committed.”**

* Push the files to the folder you initially created using the following command:

**git push -u origin master**