

Phase-1 Practice Project: Assisted Practice

2. Write a program in Java to find the fourth smallest element in an unsorted list

source code:

```
class KthSmallest
{
    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-1 == k-1)
                return arr[pos];
            if (pos-1 > k-1)
                return kthSmallest(arr, l, pos-1, k);
            return kthSmallest(arr, pos+1, r, k-pos+1-1);
        }
        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:

