## Program2: Fourth smallest in an unsorted list:

```
package mounika2;
     class KthSmallst
     int kthSmallest(int arr[], int 1, int r, int k)
           {
                            if (k > 0 & k < r - 1 + 1)
                      {
                                  int pos = randomPartition(arr, 1, r);
                                  if (pos-1 == k-1)
                                  return arr[pos];
                                  if (pos-l > k-1)
                                  return kthSmallest(arr, 1, 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 1, int r)
              int x = arr[r], i = 1;
              for (int j = 1; j \leftarrow r - 1; j++)
              {
                  if (arr[j] <= x)
                      swap(arr, i, j);
                      i++;
              }
              swap(arr, i, r);
              return i;
         }
         int randomPartition(int arr[], int 1, int r)
              int n = r-l+1;
              int pivot = (int)(Math.random()) * (n-1);
              swap(arr, 1 + pivot, r);
              return partition(arr, 1, 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));

}

}
```

```
□ ☑ Main.java ☑ Main.java ×
□ 12 × × 0 × 8
                                                                                                                                                                                                                     # mounika2
                                                                               int kthSmallest(int arr[], int l, int r, int k)
                                                                                                                                                                                                                          ▲ kthSmallest(int[], int, int, int) : int
                                                                                                     if (k > 0 && k <= r - 1 + 1)
                                                                                                                                                                                                                           swap(int[], int, int): void
partition(int[], int, int): int
                                                                                                            int pos = randomPartition(arr, 1, r);
if (pos-1 == k-1)
    return arr[pos];
if (pos-1 > k-1)
    return kthSmallest(arr, 1, pos-1, k);
return kthSmallest(arr, pos+1, r, k-pos+1-1);
                                                                                                                                                                                                                     ▲ randomPartition(int[], int, int) : in
> G Main

→ 

→ Mounika1

          > Main.java
                                                                                         return Integer.MAX_VALUE;

// void swap(int arr[], int i, int j)
                                                                                     int partition(int arr[], int 1, int r)
                                                                                          int x = arr[r], i = 1;
for (int j = 1; j <= r - 1; j++)
                                                                                              if (arr[j] <= x)
                                                                                                                                                                                                  = x % | R = 9 9 8 2 9 - 9 - 9
                                                                   <terminated> Main (1) [Java Application] C:\Users\Mounika\:p2\poo\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.7.v20230425-1502\tyre\bin\javaw.exe (May 16, 2023, 104 K'th smallest element is 7
```