**Project-4**

**SOURCE CODE**

import java.util.\*;

public class LongestIncreasingSubsequence {

public void lis(int arr[],int lis[], int n){

int i, j, max = 0,ind=0;

for (i = 0; i < n; i++)

lis[i] = 1;

for (i = 1; i < n; i++)

for (j = 0; j < i; j++)

if (arr[i] > arr[j] && lis[i] < lis[j] + 1)

lis[i] = lis[j] + 1;

for (i = 0; i < n; i++)

if (max < lis[i]){

max = lis[i];

ind=i;

}

System.out.println("The longest Increasing subsequence is:");

int temp[]=new int[max];

temp[max-1]=arr[ind];

int t1=max-2;

for(i=ind-1;i>=0;i--){if((lis[ind]-lis[i])==1){

temp[t1]=arr[i];

ind=i;

t1--;

}

}

for(int k=0;k<max;k++) {

System.out.print(temp[k]+" ");

}

System.out.println("\nThe length of the longest Increasing subsequence

is: "+max);

}

public static void main(String[] args) {

Scanner sc=new Scanner(System.in);

System.out.println("Enter the size of the array: ");

int n=sc.nextInt();

System.out.println("Enter the random numbers:");

int arr[]=new int[n];

int lis[]=new int[n];

if(n<100){

for(int i=0;i<n;i++){

arr[i]=sc.nextInt();

lis[i]=1;

}

} else

System.out.println("Enter the length of list of random numbers

lessthan 100");

LongestIncreasingSubsequence l1=new

LongestIncreasingSubsequence();

l1.lis(arr,lis,n);

}

}