Rudno Rudno JT-22002 (Lind) to Ett. Komo & wanted Program-1: Find kth smallest element in an Annay List. Lapli static void main (stangli) and Il importing required classes from Java standard libra Solo: impont java.util. Annay List; import java util Collections Las trapand Import java util. Scanneri public class hthsmallest { 11 Method to And With smallest element from Array List public static int Kth Smallest (AnnayList (Integen) Annay, int m) hosenals" to a to " asta I" Jostonag two mot of 11 Check for invalid input if (m(0 11 m) Annay.size()) 11 Throw exception with as mersage thrownew Illegal Angument Exception (" Invalid value of m.");

I I that to my some toil

TANNET

): Henompo wer to

else {

Collections.sont (Annay); //sont Array List in ascending onden

metunn Annay. gt get (m-1); // Petunn the (m-1)th

index value

3

public static void main (String [] angs) {

11 Create Scannen object to read input

Scanner sc=new Scanner (Systemin);

AnnayList (Integer) Annay = new AnnayList (); System.out.pnintin ("Enten the number of

Method to find who compiles to element from A

int n = sc.nextInt(); // Read number of eternents.

System.out.pnintln("Enten" + n + "etements:");

(C) = = NA Annoy. S'EE(3)

for (in+ 1 = 0: 1 < n: 1+1) ~ 1 . 1 . 2 . 1)

3

Array.add (sc.nex+In+())

throw new Inegal Angument Exel

System. out printin (" Enden the noth etement
to be seanched:"): 11 Prompt usen to
enten value of m

int n=scrextInt();

```
Programmes: Incomer programmes as a
     int kthsmallest = Kthsmallest (Amnay, m); 11 Call
    System.out.println ("The"+n+"th smallest
                 elementis: "+ kthsmallest); // Print
                                           result
                       import java util. Mapi
  catch (Illegal Angument Exception e) (morn
        System.out.bulufly (6.861 Wessage ()): 11 Display
                    John ow part error message If
  Bow to yourself tower of northwell
   Ontput: Dames ) pand towns borsitals
  Enten the number of elements:
 Map (String Integer) inprinces Trees
 Enten 5 elements!
 10985 6bnow bait of paillige 11
Enten the nth element to be seanched!
    Menote over woods.
The 4th smallest elementis 9.
```

Program-2: Trace Map program to stone the mappings of words to their frequencies in a given text

Soln:

impontjava.util. Map;

import java. utl. Scannening of logal

impont java.util. TreeMapi

public class Freq words {

In given text.

static void count frea (String str)

3

Map (String, Integer) mp = new TreeMap

<>()();

11 Splitting to find wond 8001

string ann [] = str. split (" "):

1/Loop to Henate over words.

The fish smallest element is 2.

```
for (int 1=0) ( cann. Length; itt)
{ ] (=prol I pront?) nion biovoidate of Hug
   11 Conditions to chack if array element is
present in the hash-map
   if (mp. contains Key (ann [i])
                     11 Function call
      mp. put (ann [i], mp.get(ann [i])+1);
   Also {
      mp.put (annti], 1);
Software Engineening is the best passion
 Illoop to itenate over elements of map.
for (Map. Entry (String, Integer) entry
            mp. entry Set())
3
     System.out. println (entry · get key () +
              "-" + entry . get value ()) ) == 9
```

11 Entry point of the program. public static vold main (String[] angs) { Scannen sc=new Scannen (Systemin); String str = sanex + Line (); 11 Function call count freq (str) Output: Software Engineening is the best passion in the world Engineening-1 Software- 1 best-1 in - 1 Ps = 1 + of . Batas) alta ag to passion-11

Program-3: Treemap program to store the mappings of student IDs to their details. (integen): " Soln: impont java. util. Map; impontjava.util. Scannen; importjava util. TreeMap; public class map ID Name { public static void main (String I Jangs) { 11 The eMap stores key in son ted order TreeMap (Intelgen, String) studen + Mapz new Tree Map () Scannence = new scannen (system.in); Systemiout - printto ("Enter the number of students ... al ") up of students is it (- - - (GI tg paper 05) int n=sc. nextIn+(); schenting ; Monsume newline, Student Map entry set ()) {

fon (in+1=0;1<n;1+4) {

System.out.pnint ("Enten student ID

(Integen): ");

Intid=sc.nex+Int();

sc. nextline();

System.out.pnint ("Enten student details (e, g, Name, department):");

String details=sc.nextLine(); student Map. put (id-details);

11 Displaying student data is sonted order of

System.out.println ("In-Student Details (Sonted by ID) ---"):

for (Map. Entry (Integer, String) entry: student Map. entry set ()) { System.out.println("ID:" + entry.getkey()+"-) Details: "+ entry get value (): 3 about seals

Node next.

Dutput!

3

Enten the number of students 1, 2 bold

Enter student ID (integen): 1

Enten student details (e.g. Name, Department):

AHF, ICT

Enten chident ID (integen): 2 Enten student de tails (e.g., Name, Department):

(Shood shoM

--- Student Details (Sonted by ID) - -ichood Is ITwo= ! Lbood) of New

ID: 1 -> Details: AHFICT

ID: 2 - Details: Ratul, ICT

instance lake

Program- 4: A program to check if two Linked Lists one equal.

Soln:

class Node {

int data;

Node next;

Noda (int data) - la madamun ant mater ?

: try to.0

this data = data;

this next thing elicited to buts noted

3

TOID: HA

3

class Identical Linked List (

Il Petunns true if two linked liste are equal static boolean ane Identical (Node head 1,

Node head 2)

white (head 1! = null && head 2! = null) {

if (head 1. data ! = head 2. data)

naturn false

11 Move to next nodes in bothlist head2=head2.next; 3. to I botall out ") althing two many? 11 If linked lists are identical, both head 1 and head 2 must be null. neturn (head 1== null &2 head 2== null) 3 no shall be shall salt ") althoung two motive public static vold main (String [] angs) { 11 Create firstlinked list: 3 -2-1 Node head 1 = new Node (3); headd.next=new Node (2); head 1 next next = new Node (1); 11 (neate second linked 11st: 1 -> 2 -> 3 Node head 2 = new Node (1); Paragram 5. A program to store mapping A : 3-morpong head 2 next (= new Node (2); of employee Ids to their departments head2. next next = new Node (3);

```
11 Function call
   if (ane Identical (head 1 head 2) = true)
      System.out.pnintln ("The linked lists are
              identical.")
  else {
   Systemiout printin ("The linked lists are not
     identical."):
 Output!
 The linked lists are not identical.
Program-5: Aprogram to store mappings
  of employee Ids to their departments
```

a Solor so replaces asked in altering two makes importjava.util. Hash Map; importjava.util. Mapinetxon. se bitai import java util. Scanner () on It xxxxx public class hash Map It Dept (public static vold main (string [] angs) { 1/ Hashmap to store employed ID) Department HashMap (Integen String) employee Map= Departm new HashMap <>(); Systemout print in ("In --- Employee Day Scannen scenew Scannen (Systemin) System.out.pnintin ("Enten number of Entras (bury Surved on Sturids Survey); employee Map entry set (1) { intnesconext Int(); system ong building in [welone ID: " sc.nex+Line (); // Consume newline. fundad e, + () has tob happen (() onlove for (int 1 = 0; i/n; i+t) (

System out printin ("Enter employee ID (integen)

scinextline(); // Consume newline

System.out.pnIntin ("Enten depantment;");
String depantment='sc.nextline();
employeeMap.put(id_depantment);

Mappings --- ");

for (Map. Entry > < Integer, String > entry:
employeeMap. entry Set ()) {

System.out.pnin+In ("Employee ID: "+
entry.get key()+" -> Department:"
+ entry.get Walue());

```
Output:
  Enten number of employees:
 1
 Enten employee ID (integen):
 1000
Enten department:
Human Resources
--- Employer Department Mappings ---
Employee ID: 1000 - Department: Human Resource
```