**PROGRAM :**

import java.util.\*;

public class dag {

static String[] a;

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

HashMap<String,Integer> map=new HashMap<String,Integer>();

int n;

System.out.println("Enter the total levels of the DAG :");

n=sc.nextInt();

int tot=0;

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

tot=tot+(int)Math.pow(2,i);

}

a=new String[tot];

System.out.println("Enter the DAG nodes(if any child is not present then enter -)");

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

a[i]=sc.next();

}

ArrayList<String> arr=new ArrayList<String>();

int g;

arr.add(a[0]);

map.put(a[0], 0);

int ind=(tot-3)/2;

for(int i=1;i<=ind;i++){

g=2\*i+1;

if(i%2==1){

if(arr.contains(a[(i-1)/2])==true && a[i].equals("--")==false && g<tot && (a[g].equals("--")==false ||a[g+1].equals("--")==false)){

arr.add(a[i]);

map.put(a[i],i);

}

}

else{

if(arr.contains(a[(i-2)/2]) && a[i].equals("--")==false && g<tot && (a[g].equals("--")==false ||a[g+1].equals("--")==false)){

arr.add(a[i]);

map.put(a[i],i);

}

}

}

Collections.reverse(arr);

System.out.println("Sequence :");

System.out.println(arr);

int count =0;

int i=1;

String tt="",ss="";

for(String s:arr){

int f=map.get(s);

System.out.println("MOV "+a[(2\*f+1)]+" "+"R"+i);

char aa=s.charAt(2);

if(aa=='+'){

System.out.println("Add "+a[(2\*f+2)]+" "+"R"+i);

System.out.println("MOV "+"R"+i+" "+s.charAt(0)+s.charAt(1));

count++;

ss=s;

if(count==2)

break;

}

else if(aa=='-'){

System.out.println("Sub "+a[(2\*f+2)].charAt(0)+a[(2\*f+2)].charAt(1)+" "+"R"+i);

tt="R"+i;

i=i-2;

}

i++;

}

System.out.println("Sub "+tt+" "+ss.charAt(0)+ss.charAt(1));

}

}

**OUTPUT :**

Enter the total levels of the DAG :

4

Enter the DAG nodes(if any child is not present then enter -)

t4-

t1+

t3-

a

b

e

t2+

--

--

--

--

--

--

c

d

Sequence :

[t2+, t3-, t1+, t4-]

MOV c R1

Add d R1

MOV R1 t2

MOV e R2

Sub t2 R2

MOV a R1

Add b R1

MOV R1 t1

Sub R2 t1

BUILD SUCCESSFUL (total time: 5 seconds)