1.import java.util.*;

```
public class qn1 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		int num;
		System.out.print("Enter your number :");
		Scanner in = new Scanner(System.in);
		num=in.nextInt();

		for(int i=1 ; i<=num;i++) {
			for(int j=1 ; j<=num;j++) {
				if(i==1 || i==num) {
					System.out.print(j);
				}
				else {
					if(i==num-j+1) {
						System.out.print(j);
					}
					else {
						System.out.print(" ");
					}
				}
			}
	System.out.println("");
		}
	 }

}
```

2.import java.util.*;

```
public class qn2 {
   public static void main (String arg[]){
      int D , N;
      Scanner in = new Scanner(System.in);
      N=in.nextInt();
      D=in.nextInt();
      System.out.print("(");
      for(int i =1 ; i<N ;i++){
         System.out.print(D+"+");

      }
      System.out.print(D+")/"+D);
   }
}
```

```
3.import java.util.*;
public class qn3 {

        public static void main(String[] args) {
                // TODO Auto-generated method stub
                int num;
                System.out.print("Enter your number :");
                Scanner in = new Scanner(System.in);
                num=in.nextInt();

                for(int i=1 ; i<=num;i++) {
                        for(int j=1 ; j<=num;j++) {
                                if(i==1 || i==num) {
                                        System.out.print(j);
                                }
                                else {
```

```
                                        if(i==num-j+1) {
                                                System.out.print(j);
                                        }
                                        else {
                                                System.out.print(" ");
                                        }
                                }
                        }
          System.out.println("");
                        }
           }

}

4.import java.util.*;
public class qn4 {
   public static void main(String arg[]){
      int N,M,K;
      Scanner in = new Scanner (System.in);
      N=in.nextInt();
      M=in.nextInt();
      K=in.nextInt();
      ArrayList <Integer> alM = new  ArrayList<Integer>();
      ArrayList <Integer> alK = new  ArrayList<Integer>();
      Set <Integer> set = new HashSet<>();
      int n=0;

      for(int i=0; i<M;i++){
         n=in.nextInt();
         alM.add(n);
         set.add(n);
```

```
        }
        for(int i=0; i<K;i++){
           n=in.nextInt();
           alK.add(n);
           set.add(n);

        }
        ArrayList <Integer> al3 = new ArrayList<Integer>(alM);
        al3.retainAll(alK);
        int num1 , num2;
        num1=al3.size();
        num2=N-set.size();
        System.out.println(num1+" "+num2);

    }

}

5.import java.util.*;
public class qn5 {
    public static void main(String arg[]){
        int num=0,s=1;
        Scanner in = new Scanner (System.in);
        num=in.nextInt();
        for(int i=0;i<num;i++){
           for(int j=0;j<s;j++){
              System.out.print("*");
           }
           System.out.print("\n");
           s+=2;
```

```
    }
  }
}

6.import java.util.*;
public class qn6 {
  public static void main(String arg[]){

    Scanner in = new Scanner(System.in);
    String str1,str2;
    str1=in.nextLine();
    str2=in.nextLine();
    List<String> myList1 = new ArrayList<String>(Arrays.asList(str1.split("")));
    List<String> myList2 = new ArrayList<String>(Arrays.asList(str2.split("")));
    String s1="" ,s2="";
    for(String a:myList1){
      if(!myList2.contains(a)){

        s1=s1+a;
      }
    }
    for(String a:myList2){
      if(!myList1.contains(a)){
        s2=s2+a;
      }
    }

    System.out.println(s1+s2);


  }
```

```
}

7.import java.util.*;
public class qn7 {
   public boolean check(String s){
      char arr[]=s.toCharArray();
      String numbers="123456789";
      Arrays.sort(arr);
      s="";

      for(char a:arr){
         s+=a;
      }
      if(s.equals(numbers)){
         return true;
      }
      else
         return false;
   }
   public static void main (String arg[]){
      qn7 obj = new qn7();
      String num;
      Scanner in = new Scanner (System.in);
      String numbers="123456789";
      ArrayList <String> rnum = new ArrayList<>(Arrays.asList(numbers.split("")));
      num = in.nextLine();
      int input=Integer.parseInt(num);
      for(int i=0;i<num.length();i++){
         rnum.remove(Character.toString(num.charAt(i)));
      }
```

```
int size=rnum.size();
ArrayList<String> arl2 = new ArrayList<String>(rnum);
String ot;
boolean flag=true;
int it=0;
while(flag){
   ArrayList <String> temp = new ArrayList<>();
   for(String b:rnum){
      for(int i =0 ; i<arl2.size();i++){
         if(b.length()+arl2.get(i).length() >size+1){
            System.out.println("no");
            flag=false;
            return;
         }
         int num1=Integer.parseInt(b);
         int num2=Integer.parseInt(arl2.get(i));
         if(num1*num2 == input){
            if(obj.check(num+arl2.get(i)+b)){
               System.out.println(num+b+arl2.get(i));
               System.out.println("\nyes");
               flag=false;
               return;
            }
            else{
               temp.add(arl2.get(i)+b);
            }
         }
         else{
         temp.add(arl2.get(i)+b);

         it++;
```

```
            }


            }


        }
        arl2.addAll(temp);
        rnum.addAll(temp);
        temp.clear();
      }
   }



}
```

8.

```
import java.util.*;
public class qn8 {
   public String check(String num){
      switch(num){
         case "0":
            return "zero";
         case "1":
            return "one";
         case "2":
            return "two";
         case "3":
            return "three";
         case "4":
            return "four";
         case "5":
            return "five";
         case "6":
```

```
            return "six";
        case "7":
            return "seven";
        case "8":
            return "eight";
        case "9":
            return "nine";
        default:
            return "";
      }
   }

   public static void main(String arg[]){
      String str;
      qn8 obj = new qn8();
      Scanner in = new Scanner(System.in);
      str = in.nextLine();
      ArrayList<String> al = new ArrayList<>(Arrays.asList(str.split("")));
      for(String s: al){
         System.out.print(obj.check(s)+" ");
      }

   }
}

9.import java.util.*;
public class qn9 {
   public static void main(String arg[]){
      String input ;
      Scanner in = new Scanner (System.in);
      input=in.nextLine();
```

```
        Map<String,Integer> map = new HashMap<>();
        ArrayList<String> newarray = new ArrayList<>(Arrays.asList(input.split("")));
        for(String s:newarray){
           if(map.containsKey(s)){
              int num=map.get(s);
              map.replace(s, num, num+1);
           }
           else{
              map.put(s, 1);
           }
        }

        String key ;
        key = in.nextLine();
        System.out.println(map.get(key));

    }

}

10.import java.util.*;

public class qn10 {
    public int check(String s,int x){
        ArrayList<String> eq = new ArrayList<>(Arrays.asList(s.split("")));
        ArrayList<String> stackop = new ArrayList<>();
        ArrayList<Integer> stackn = new ArrayList<>();
        ArrayList<String> operand = new ArrayList<String>(Arrays.asList("+-*/()x".split("")));
        int n=0;
        for(char a: s.toCharArray()){
              try{
```

```
    if(Character.toString(a).equals("x")){
        stackn.add(x);
    }
    else{
        n=Integer.parseInt(Character.toString(a));
        stackn.add(n);
    }
}catch(Exception e){
    if(operand.contains(Character.toString(a))){
    String op= Character.toString(a);

    if(stackop.size()==0){
        stackop.add(op);
    }
    else if(op.equals("/")){
        if((stackop.get(stackop.size()-1).equals("/"))){
            int num=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }
        else if((stackop.get(stackop.size()-1).equals("*"))){
            int num=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }
```

```
    else{
        stackop.add(op);
    }
}
else if(op.equals("*")){
    if((stackop.get(stackop.size()-1).equals("*"))){
        int num=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
        stackn.remove(stackn.size()-1);
        stackn.remove(stackn.size()-1);
        stackn.add(num);
        stackop.remove(stackop.size()-1);
        stackop.add(op);
    }
    else if((stackop.get(stackop.size()-1).equals("/"))){

        int num=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
        stackn.remove(stackn.size()-1);
        stackn.remove(stackn.size()-1);
        stackn.add(num);
        stackop.remove(stackop.size()-1);
        stackop.add(op);
    }

    else{
        stackop.add(op);
    }
}

else if(op.equals("+")){
    if((stackop.get(stackop.size()-1).equals("+"))){
        int num=stackn.get(stackn.size()-2)+stackn.get(stackn.size()-1);
```

```
    stackn.remove(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.add(num);
    stackop.remove(stackop.size()-1);
    stackop.add(op);
}
else if((stackop.get(stackop.size()-1).equals("-"))){

    int num=stackn.get(stackn.size()-2)-stackn.get(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.add(num);
    stackop.remove(stackop.size()-1);
    stackop.add(op);
}
else if((stackop.get(stackop.size()-1).equals("/"))){

    int num=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.add(num);
    stackop.remove(stackop.size()-1);
    stackop.add(op);
}

else if((stackop.get(stackop.size()-1).equals("*"))){

    int num=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.remove(stackn.size()-1);
    stackn.add(num);
```

```
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }


        else{
            stackop.add(op);
        }
    }
    else if(op.equals("-")){
        if((stackop.get(stackop.size()-1).equals("+"))){
            int num=stackn.get(stackn.size()-2)+stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }
        else if((stackop.get(stackop.size()-1).equals("-"))){

            int num=stackn.get(stackn.size()-2)-stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }
        else if((stackop.get(stackop.size()-1).equals("/"))){

            int num=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
```

```
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }

        else if((stackop.get(stackop.size()-1).equals("*"))){

            int num=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(num);
            stackop.remove(stackop.size()-1);
            stackop.add(op);
        }


        else{
            stackop.add(op);
        }
    }
    else if(op.equals("(")){
        stackop.add(op);
    }
    else if(op.equals(")")){
        while(!stackop.get(stackop.size()-1).equals("(")){
            switch(stackop.get(stackop.size()-1)){
                case "+":
                    n=stackn.get(stackn.size()-2)+stackn.get(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
```

```
                    stackn.add(n);
                    break;
                case "-":
                    n=stackn.get(stackn.size()-2)-stackn.get(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.add(n);
                    break;
                case "*":
                    n=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.add(n);
                    break;
                case "/":
                    n=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.remove(stackn.size()-1);
                    stackn.add(n);
                    break;
              }
              stackop.remove(stackop.size()-1);
            }
            stackop.remove(stackop.size()-1);

          }

        }
    }
}
while(stackop.size()!=0){
```

```
    switch(stackop.get(stackop.size()-1)){
        case "+":
            n=stackn.get(stackn.size()-2)+stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(n);
            break;
        case "-":
            n=stackn.get(stackn.size()-2)-stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(n);
            break;
        case "*":
            n=stackn.get(stackn.size()-2)*stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(n);
            break;
        case "/":
            n=stackn.get(stackn.size()-2)/stackn.get(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.remove(stackn.size()-1);
            stackn.add(n);
            break;
        case ")":
            break;
    }
    stackop.remove(stackop.size()-1);
}
return stackn.get(stackn.size()-1);
```

```
    }

    public static void main(String arg[]){
        qn10 obj = new qn10();
        boolean fg=true;
        int i=0;
        Scanner in = new Scanner(System.in);
        String eqn = in.nextLine();
        int r=in.nextInt();
        int d=in.nextInt();
        int result;
        while(fg){
            result=obj.check(eqn,i);
            if((result%d)==r ){
                System.out.println(i);
                fg=false;
                break;
            }
            i++;
        }
    }

}

11.import java.util.*;
public class qn11 {
    public static int count=1;
    public boolean check(ArrayList<Integer> a1 ,ArrayList<Integer> a2 ){
        int A1=a1.get(0)*100+a1.get(1);
        int A2=a1.get(2)*100+a1.get(3);
```

```
    int B1=a2.get(0)*100+a2.get(1);
    int B2=a2.get(2)*100+a2.get(3);
    if((B1>=A1) && (B1<A2) ){
        return true;
    }
    else if((A1>=B1)&&(A1<B2)){
        return true;
    }
    else{
        return false;
    }

}
public static void main(String arg[]){
    qn11 obj = new qn11();
    Scanner in = new Scanner(System.in);
    int num=in.nextInt();
    ArrayList<ArrayList> list = new ArrayList<>();
    for(int i=0 ; i<num;i++){
        ArrayList<Integer> numal = new ArrayList<>();

        int k;
        for(int j=0 ;j<4;j++){
            k=in.nextInt();
            numal.add(k);
        }
        if(list.size()!=0){
            for(ArrayList l :list){
                if(obj.check(l, numal)){
                    qn11.count++;
                }
```

```
            }
        }
        list.add(numal);

    }
    System.out.println(qn11.count);

  }

}

12.import java.util.*;
public class qn12 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int num = in.nextInt();
      for(int i=0 ; i<num;i++){
         for(int j=0;j<i+1;j++){
            System.out.print("*");
         }
         System.out.print("\n");
      }
      for(int i=num;i>0;i--){
         for(int j=1 ;j<i;j++){
            System.out.print("*");
         }
         System.out.print("\n");
      }
   }

}
```

```
13.import java.util.*;
public class qn13 {
   public static void main(String arg[]){
      Scanner in = new Scanner (System.in);
      int X,Y,K,num=0;
      ArrayList<Integer> a1 = new ArrayList<>();
      ArrayList<Integer> a2 = new ArrayList<>();
      X=in.nextInt();
      Y=in.nextInt();
      K=in.nextInt();
      for(int i=0 ;i<X;i++){
         num=in.nextInt();
         a1.add(num);
      }
      for(int i=0 ;i<Y;i++){
         num=in.nextInt();
         a2.add(num);
      }
      int count=0;
      for(int a:a1){
         for(int b:a2){
            if(a+b ==K){
               if(count>0){
                  System.out.print(",");
                  System.out.print(" "+a+" "+b);
               }
               else{
                  System.out.print(a+" "+b);
               }
```

```
                count++;
            }
        }
    }
}
```

14.
```
import java.util.*;
public class qn14 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int n= in.nextInt();
        int p=1 , s=0;
        int num;
        for(int i=0 ;i<n;i++){
            num=in.nextInt();
            p*=num;
            s+=num;
        }

        if((s%2)==0){
            System.out.println(s);
        }
        else{
            System.out.println(p);
        }

    }

}
```

```
15.import java.util.*;
public class qn15 {
   public static void main(String arg[]){
      int N,M,K;
      Scanner in = new Scanner (System.in);
      N=in.nextInt();
      M=in.nextInt();
      K=in.nextInt();
      ArrayList <Integer> alM = new  ArrayList<Integer>();
      ArrayList <Integer> alK = new  ArrayList<Integer>();
      Set <Integer> set = new HashSet<>();
      int n=0;

      for(int i=0; i<M;i++){
         n=in.nextInt();
         alM.add(n);
         set.add(n);

      }
      for(int i=0; i<K;i++){
         n=in.nextInt();
         alK.add(n);
         set.add(n);

      }
      ArrayList <Integer> al3 = new ArrayList<Integer>(alM);
      al3.retainAll(alK);
      int num1 , num2;
      num1=al3.size();
      num2=N-set.size();
      System.out.println(num1+" "+num2);
```

```
    }

}

16.import java.util.*;
public class qn16 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int a=in.nextInt();
        int b=in.nextInt();
        int sum=0;
        for(int i=12;i<=50;i++){
            if((i%3==0)&&(i%5==0)){
                sum+=i;
            }
        }
        System.out.println(sum);
    }
}

17.import java.util.*;
public class qn17 {
    public static boolean check(int a){
        String str= Integer.toString(a);
        String rev="";
        for(int i=str.length()-1;i>=0;i--){
            rev+=str.charAt(i);
        }
        if(str.equals(rev)){
            return true;
```

```
        }
        else{
            return false;
        }
    }
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int a,b;
        a=in.nextInt();
        b=in.nextInt();
        for(int i=a ;i<=b;i++){
            if(qn17.check(i)){
                System.out.print(i+" ");
            }
        }


    }
}
```

18.

```
import java.util.*;
public class qn18 {

    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        String str = in.nextLine();
        String sub1=in.nextLine();
        String sub2=in.nextLine();
        str=str.replaceAll(sub1, sub2);
        System.out.println(str);
    }
```

```
}

19.import java.util.*;
public class qn19 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int num = in.nextInt();
      in.nextLine();
      String s;
      String arr[]={"a","e","i","o","u","A","E","I","O","U"};
      ArrayList<ArrayList> al = new ArrayList<>();
      for(int i=0;i<num;i++){
         s=in.nextLine();
         ArrayList<String> st = new ArrayList<>(Arrays.asList(s.split("")));
         for(String e:arr){
            if(st.contains(e)){
               st.remove(e);
            }
         }
         al.add(st);

      }

      for(ArrayList<String> a:al){
         for(String e:a){
            System.out.print(e);
         }
         System.out.println();
      }
   }
```

```
}

20.import java.util.*;

public class qn20 {
   public static boolean isPrime(int num){
      boolean fg=true;
      for(int i=2 ; i<num;i++){
         if(num%i ==0){
            fg=false;
            return false;
         }
      }
      if(fg){
         return true;
      }
      else{
         return true;
      }
   }
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      String s=in.nextLine();
      int i=in.nextInt();
      String [] vt= s.split("");
      ArrayList<Integer> al = new ArrayList<>();
      for(int n=0;n<vt.length;n++){
         if(vt[n].equals("1")){
            if(qn20.isPrime(n+1)){

               for(int j=1;j<=i;j++){
```

```
                if(!al.contains(j*(n+1))){
                al.add(j*(n+1));
              }
              }
            }
            else{
              vt[n+1]="0";
            }
          }
      }
      Collections.sort(al);
      System.out.println(al.get(i-1));

  }

}
```

21.

```
import java.util.*;
public class qn21 {
  public static void main(String arg[]){
      String arr[]="ABCDEFGHIJKLMNOPQRSTUVWXYZ".split("");
      Scanner in = new Scanner(System.in);
      int num=in.nextInt();
      for(int i=num;i>=1;i--){
        for(int j=1;j<=i;j++){
          System.out.print(arr[j+i-2]);
        }
        System.out.println();
      }
  }
}
```

```
22.import java.util.*;
class BestMobilePlan{
   int day,eve,night;
   BestMobilePlan(){};
   BestMobilePlan(int a,int b,int c){
      this.day=a;
      this.eve=b;
      this.night=c;
   }
   private double plan_A(){
      double sum=0;
      if(day>100){
         sum+=(day-100)*25;
      }
      sum+=eve*15;
      sum+=night*20;
      return sum/100;
   }
   private double plan_B(){
      double sum=0;
      if(day>250){
         sum+=(day-250)*45;
      }
      sum+=eve*35;
      sum+=night*25;
      return sum/100;
   }

   void printPlanDetails(){
      double A=plan_A();
```

```
        double B=plan_B();
        System.out.printf("Plan A costs %.2f \n",A);
        System.out.printf("Plan B costs %.2f \n",B);
        if(A>B){
            System.out.println("Plan B is cheapest");
        }
        else if(A==B){
            System.out.println("Plan A and B are the same price");
        }
        else{
            System.out.println("Plan B is cheapest");
        }
    }

}

class qn22 extends BestMobilePlan{
    qn22(int a,int b,int c){
        super(a,b,c);
    }
    public static void main (String arg[]){
        int a,b,c;
        Scanner in = new Scanner(System.in);
        a=in.nextInt();
        b=in.nextInt();
        c=in.nextInt();

        qn22 obj = new qn22(a,b,c);
        obj.printPlanDetails();
    }
}
```

23.
```
import java.util.*;
public class qn23 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      String s= in.nextLine();
      char arr[]=s.toCharArray();
      List <String> vov = new ArrayList<>(Arrays.asList("aeiouAEIOU".split("")));
      String temp;
      String Max_String = "" ;
      int max_int=0;
      for(char a: arr){
         String e=Character.toString(a);
         if(vov.contains(e)){
            Max_String+=e;
         }
         else{
            if(max_int<Max_String.length()){
               max_int=Max_String.length();
            }
            Max_String="";
         }
      }
      System.out.println(max_int);
   }
}
```

24.
```
import java.util.*;
class qn24
{
   public static void main(String[] args)
```

```
    {
        Scanner sc = new Scanner(System.in);
        float a = sc.nextFloat();
        float b = sc.nextFloat();
        float c;
        c = a/b;
        System.out.println(c +" Km/hr");
    }
}
```

25.

```
import java.util.*;
public class qn25 {
    public static void main(String arg[]){
        Scanner in = new Scanner (System.in);
        int X,Y,K,num=0;
        ArrayList<Integer> a1 = new ArrayList<>();
        ArrayList<Integer> a2 = new ArrayList<>();
        X=in.nextInt();
        Y=in.nextInt();
        K=in.nextInt();
        for(int i=0 ;i<X;i++){
            num=in.nextInt();
            a1.add(num);
        }
        for(int i=0 ;i<Y;i++){
            num=in.nextInt();
            a2.add(num);
        }
        int count=0;
        for(int a:a1){
            for(int b:a2){
```

```
            if(a+b ==K){
                if(count>0){
                    System.out.print(",");
                    System.out.print(" "+a+" "+b);
                }
                else{
                    System.out.print(a+" "+b);
                }

                count++;
            }
        }
    }
  }
}

26.import java.util.*;
public class qn26 {
   public static void main(String arg[]){
      String input ;
      Scanner in = new Scanner (System.in);
      input=in.nextLine();
      Map<String,Integer> map = new HashMap<>();
      ArrayList<String> newarray = new ArrayList<>(Arrays.asList(input.split("")));
      for(String s:newarray){
         if(map.containsKey(s)){
            int num=map.get(s);
            map.replace(s, num, num+1);
         }
         else{
            map.put(s, 1);
```

```
        }
      }

      String key ;
      key = in.nextLine();
      System.out.println(map.get(key));

   }

}
```

27.

```
import java.util.*;
class qn27
{
   public static void main(String[] args)
   {
      int c;
      Scanner sc = new Scanner(System.in);
      int a=sc.nextInt() ;
      int b=sc.nextInt();
      c=(a>b)?b:a;
      for(int i=c;i>1;i--){
         if(a%i==0 && b%i==0){
            System.out.println(i);
            break;
         }
      }
   }
}
```

28.

```
import java.util.*;
```

```
public class qn28 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int n= in.nextInt();
      int p=1 , s=0;
      int num;
      for(int i=0 ;i<n;i++){
         num=in.nextInt();
         p*=num;
         s+=num;
      }

      if((s%2)==0){
         System.out.println(s);
      }
      else{
         System.out.println(p);
      }

   }

}

29.import java.util.*;
public class qn29 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int N = in.nextInt();
      int K = in.nextInt();
      int e;
      ArrayList<Integer> al = new ArrayList<>();
```

```
        for( int i=0 ;i<N;i++){
            e=in.nextInt();
            al.add(e);
        }

        Collections.sort(al);
        for(int i=0 ;i<K;i++){
            System.out.print(al.get(0)+" ");
            al.remove(0);
        }

        for(int i=al.size()-1;i>=0;i--){
            System.out.print(al.get(i)+" ");
        }
    }
}
```

30.

```
import java.util.*;
public class qn30_1 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        String str = in.nextLine();
        String arr[] = str.split(" ");
        String NewStr="";
        for(int i=0 ; i<arr.length;i++){
            String s= arr[i];
            StringBuilder stb = new StringBuilder();
            stb.append(s);
            s=stb.reverse().toString();
            NewStr=NewStr+s+" ";
        }
```

```
        System.out.println(NewStr);
    }
}

31.import java.util.*;
public class qn31 {
    public static void main(String arg[]){
        Scanner in = new Scanner (System.in);
        String str = in.nextLine();
        String arr[] = str.split(" ");
        String temp="";
        for(int i=0 ;i<arr.length;i++){
            temp+=Character.toString(arr[i].charAt(0)).toUpperCase();
            temp+=arr[i].substring(1, arr[i].length());
            temp+=" ";
        }
        System.out.println(temp);
    }

}

32.import java.io.*;
import java.util.*;

class qn32 {

    public static void split(String str)
    {
        int len = str.length();

        if (len == 1) {
```

```
    System.out.println("Not Possible");
    return;
}

String s1 = "", s2 = "";
long num1, num2;

for (int i = 0; i <= len / 2; i++) {

    int flag = 0;

    s1 = str.substring(0, i + 1);
    num1 = Long.parseLong((s1));
    num2 = num1 + 1;

    s2 = Long.toString(num2);
    int k = i + 1;
    while (flag == 0) {
        int l = s2.length();
        if (k + l > len) {
            flag = 1;
            break;
        }

        if ((str.substring(k, k + l).equals(s2))) {
            flag = 0;

            num2++;
            k = k + l;
            if (k == len)
                break;
```

```
                s2 = Long.toString(num2);
                l = s2.length();
                if (k + 1 > len) {

                    flag = 1;
                    break;
                }
            }

            else
                flag = 1;
        }

        if (flag == 0) {
            System.out.println("Possible"
                               + " " + s1);
            break;
        }
         else if (flag == 1 && i > len / 2 - 1) {
            System.out.println("Not Possible");
            break;
        }
    }
  }
  public static void main(String args[])
  {
    Scanner in = new Scanner(System.in);
    String str = in.nextLine();
    split(str);
  }
}
```

```
33.import java.util.*;
public class qn33 {
   public static double check(int i){
      double sum=0;
      if(i==24){
         sum=80;
         return sum;
      }
      if(i<=3){
         sum+=30;
         return (double)sum;
      }
      else{
         sum=30+((i-3)*5);
         return sum;

      }

   }
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int n = in.nextInt();
      Map<Integer,Integer> mp=new HashMap<>();
      ArrayList<Integer> al = new ArrayList<>();
      for(int i=0;i<n;i++){
         int no , hr;
         no=in.nextInt();
         hr=in.nextInt();
         mp.put(no, hr);
         al.add(no);
```

```
        }
        for(int i:al){
            double rs = qn33.check(mp.get(i));
            System.out.println(i+" "+mp.get(i)+" "+rs);
        }

    }

}

34.import java.util.*;

public class qn34 {
    public static boolean isPrime(int num){
        boolean fg=true;
        for(int i=2 ; i<num;i++){
            if(num%i ==0){
                fg=false;
                return false;
            }
        }
        if(fg){
            return true;
        }
        else{
            return true;
        }
    }
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
```

```
        String s=in.nextLine();
        int i=in.nextInt();
        String [] vt= s.split("");
        ArrayList<Integer> al = new ArrayList<>();
        for(int n=0;n<vt.length;n++){
           if(vt[n].equals("1")){
              if(qn20.isPrime(n+1)){

                 for(int j=1;j<=i;j++){
                    if(!al.contains(j*(n+1))){
                    al.add(j*(n+1));
                 }
                 }
              }
              else{
                 vt[n+1]="0";
              }
           }
        }
        Collections.sort(al);
        System.out.println(al.get(i-1));

     }

}

35.import java.util.*;
public class qn35 {
    public static void main(String arg[]){
        Scanner in = new Scanner (System.in);
        String str = in.nextLine();
```

```
        String arr[] = str.split(" ");
        String temp="";
        for(int i=0 ;i<arr.length;i++){
           temp+=Character.toString(arr[i].charAt(0)).toUpperCase();
           temp+=arr[i].substring(1, arr[i].length());
           temp+=" ";
        }
        System.out.println(temp);
    }

}

36.import java.util.*;
public class qn36 {
    public static void main(String arg[]){
        Scanner in =  new Scanner(System.in);
        int m=in.nextInt();
        int n= in.nextInt();
        System.out.println("Minimum number od times is "+(m*n-1));
    }

}

37.import java.util.*;
public class qn37 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int n= in.nextInt();
        ArrayList<Integer> al = new ArrayList<>();
        int e=0;
        for (int i=0;i<n;i++){
```

```
            e=in.nextInt();
            al.add(e);
        }
        int num = in.nextInt();
        al.remove((Integer)num);
        for(int i:al){
            System.out.print(i+" ");
        }
    }
}
```

```
38.import java.util.*;
class BestMobilePlan{
    int day,eve,night;
    BestMobilePlan(){};
    BestMobilePlan(int a,int b,int c){
        this.day=a;
        this.eve=b;
        this.night=c;
    }
    private double plan_A(){
        double sum=0;
        if(day>100){
            sum+=(day-100)*25;
        }
        sum+=eve*15;
        sum+=night*20;
        return sum/100;
    }
    private double plan_B(){
        double sum=0;
```

```
        if(day>250){
            sum+=(day-250)*45;
        }
        sum+=eve*35;
        sum+=night*25;
        return sum/100;
    }

    void printPlanDetails(){
        double A=plan_A();
        double B=plan_B();
        System.out.printf("Plan A costs %.2f \n",A);
        System.out.printf("Plan B costs %.2f \n",B);
        if(A>B){
            System.out.println("Plan B is cheapest");
        }
        else if(A==B){
            System.out.println("Plan A and B are the same price");
        }
        else{
            System.out.println("Plan B is cheapest");
        }
    }

}

class qn38 extends BestMobilePlan{
    qn38(int a,int b,int c){
        super(a,b,c);
    }
    public static void main (String arg[]){
```

```
        int a,b,c;
        Scanner in = new Scanner(System.in);
        a=in.nextInt();
        b=in.nextInt();
        c=in.nextInt();

        qn38 obj = new qn38(a,b,c);
        obj.printPlanDetails();
    }
}

39.import java.util.*;
public class qn39 {
    public static void main (String arg[]){
        Scanner in = new Scanner(System.in);
        int X= in.nextInt();
        int num = in.nextInt();
        if(num<50){
            System.out.printf("%.2f",(double)X*num);
        }
        else if(num>=50 && num<=100){
            double rs=X*num;
            rs=rs-(rs*10/100);
            System.out.printf("%.2f",rs);

        }
        else if(num>=101 && num<=200){
            double rs=X*num;
            rs=rs-(rs*20/100);
            System.out.printf("%.2f",rs);
```

```
        }
        else if(num>=201 && num<=400){
            double rs=X*num;
            rs=rs-(rs*30/100);
            System.out.printf("%.2f",rs);

        }
    }
}
```

```
40.import java.util.*;
public class qn40 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int num=in.nextInt();
        for(int i=1;i<=num;i++){
            for(int a=1;a<=num;a++){
                if(a==i){
                    System.out.print(a);
                }
                else{
                    System.out.print(" ");
                }
            }
            for(int a=num-1;a>=1;a--){
                if(a==i){
                    System.out.print(a);
                }
                else{
                    System.out.print(" ");
                }
```

```
            }
            System.out.println();
        }
        for(int i=num-1;i>=1;i--){
            for(int a=1;a<=num;a++){
                if(a==i){
                    System.out.print(a);
                }
                else{
                    System.out.print(" ");
                }
            }
            for(int a=num-1;a>=1;a--){
                if(a==i){
                    System.out.print(a);
                }
                else{
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}

41.import java.util.*;
public class qn41 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int n=in.nextInt();
        int m=in.nextInt();
```

```
        int sum=0;
        for(int i=1;i<=m;i++){
            System.out.println(n*i);
            sum+=n*i;
        }
        System.out.println(sum);
    }
}

42.import java.util.*;
public class qn42 {
    public static void main(String arg[]){
        Scanner in= new Scanner(System.in);
        String str=in.nextLine();
        ArrayList<String> al = new ArrayList<>();
        for(int j=0;j<str.length();j++){
            for(int k=0;k<str.length();k++){
                String s="";
                for(int i=j;i<=k;i++){
                    s+=str.charAt(i);
                }
                if(!s.equals("")){
                    al.add(s);
                }
            }
        }
        int sum=0;
        for(String s:al){
            sum+=Integer.parseInt(s);
        }
        System.out.println(sum);
```

```
    }
}

43.import java.util.*;
public class qn43 {

    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        String str = in.nextLine();
        String sub1=in.nextLine();
        String sub2=in.nextLine();
        str=str.replaceAll(sub1, sub2);
        System.out.println(str);
    }

}

44.import java.util.*;
public class qn44 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        String str = in.nextLine();
        String smallest=str ,largest="";
        String arr[]=str.split(" ");
        for(String e:arr){
            if(smallest.length()>e.length()){
                smallest=e;
            }
            if(largest.length()<e.length()){
                largest=e;
            }
```

```
        }
        System.out.println("Smallest word: "+smallest);
        System.out.println("Largest word: "+largest);
    }
}

45.import java.util.*;
class BestMobilePlan{
    int day,eve,night;
    BestMobilePlan(){};
    BestMobilePlan(int a,int b,int c){
        this.day=a;
        this.eve=b;
        this.night=c;
    }
    private double plan_A(){
        double sum=0;
        if(day>100){
            sum+=(day-100)*25;
        }
        sum+=eve*15;
        sum+=night*20;
        return sum/100;
    }
    private double plan_B(){
        double sum=0;
        if(day>250){
            sum+=(day-250)*45;
        }
        sum+=eve*35;
```

```
        sum+=night*25;
        return sum/100;
    }

    void printPlanDetails(){
        double A=plan_A();
        double B=plan_B();
        System.out.printf("Plan A costs %.2f \n",A);
        System.out.printf("Plan B costs %.2f \n",B);
        if(A>B){
            System.out.println("Plan B is cheapest");
        }
        else if(A==B){
            System.out.println("Plan A and B are the same price");
        }
        else{
            System.out.println("Plan B is cheapest");
        }
    }

}

class qn45 extends BestMobilePlan{
    qn45(int a,int b,int c){
        super(a,b,c);
    }
    public static void main (String arg[]){
        int a,b,c;
        Scanner in = new Scanner(System.in);
        a=in.nextInt();
        b=in.nextInt();
```

```
        c=in.nextInt();

        qn45 obj = new qn45(a,b,c);
        obj.printPlanDetails();
    }
}

46.import java.util.*;
public class qn46 {
    public static int prod(int num){
        int p =1;
        while(num!=0){
            p*=num%10;
            num/=10;
        }
        return p;
    }
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int num = in.nextInt();
        int e;
        List<Integer> al = new ArrayList<>();
        for(int i=0;i<num;i++){
            e=in.nextInt();
            al.add(e);
        }
        ArrayList<Integer> sorted = new ArrayList<>();
        int size=al.size();
        for(int i=0 ;i<size;i++){
            int min=1000;
            int elm=0;
```

```
        for(int a:al){
            if(qn46.prod(a)<min){
                min=qn46.prod(a);
                elm=a;
            }
        }
        sorted.add(elm);
        al.remove((Integer)elm);
      }

      for(int i:sorted){
        System.out.print(i+" ");
      }
   }
}

47.import java.util.*;
class qn47
{
   public static void main(String[] args)
   {
      int c;
      Scanner sc = new Scanner(System.in);
      int a=sc.nextInt() ;
      int b=sc.nextInt();
      c=(a>b)?b:a;
      for(int i=c;i>1;i--){
        if(a%i==0 && b%i==0){
            System.out.println(i);
            break;
        }
```

```
        }
    }
}
```

48.
```
import java.util.*;
public class qn48 {
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        String st=in.nextLine();
        int mid=st.length()/2;
        if(st.length()%2==0){
            System.out.println(st.charAt(mid-1)+""+st.charAt(mid));
        }
        else{
            System.out.println(st.charAt(mid));
        }
    }
}
```

49.
```
import java.util.*;
public class qn49 {
    public static int find_len(String s,ArrayList<String> al){
        int count=0;
        for(String str : al){
            if(str.equals(s)){
                count++;
            }
        }
        return count;
    }
    public static void main(String arg[]){
```

```
        Scanner in = new Scanner(System.in);
        int n=in.nextInt();
        in.nextLine();
        String s="";
        ArrayList<String> list = new ArrayList<>();
        for(int i=0;i<n;i++){
           s=in.next();
           list.add(s);
        }
        Set<String> set = new HashSet<>(list);

        for(int i=0 ;i<2;i++){
           int max=0;
           for(String st:set){
              if(qn49.find_len(st, list)>max){
                 max=qn49.find_len(st, list);
                 s=st;
              }
           }
           if(i==0){
              list.remove(s);
              set.remove(s);
           }
        }
        System.out.println(s);
    }
}

50.import java.util.*;
public class qn50 {
    public static void main(String arg[]){
```

```
Scanner in = new Scanner(System.in);
int num=in.nextInt();
ArrayList<String>list=new ArrayList<>(Arrays.asList("abcdefghijklmnopqrstuvwxyz".split("")));
ArrayList<Integer>al1=new ArrayList<>();
ArrayList<Integer>al2=new ArrayList<>();

for(int i=num-1;i>=0;i--){
   al1.add(i);
   if(i<num-1){
      al2.add(num-i-1);
   }
   int n1=1;
   for(int j=0;j<num;j++){
      if(al1.contains(j)){
         System.out.print(list.get(num-n1));
         if(j<num-1){
            System.out.print("-");

         }
         n1++;
      }
      else{
         System.out.print("--");
      }
   }
   int n2=al2.size();
   for(int j=1;j<num;j++){
      if(al2.contains(j)){
         System.out.print("-"+list.get(num-n2));
         n2--;
      }
```

```
        else{
            System.out.print("--");
        }
    }
    System.out.println();
}
al1.remove((Integer)0);
for(int i=1;i<=num-1;i++){
    al2.remove((Integer)i);
    int n1=1;
    for(int j=0;j<num;j++){
        if(al1.contains(j)){
            System.out.print(list.get(num-n1));
            if(j<num-1){
                System.out.print("-");

            }
            n1++;
        }
        else{
            System.out.print("--");
        }
    }
    int n2=al2.size();
    for(int j=0;j<=num-2;j++){
        if(al2.contains(num-j-1)){
            System.out.print("-"+list.get(num-n2));
            n2--;
        }
        else{
            System.out.print("--");
```

```
            }
        }
        System.out.println();
        al1.remove((Integer)i);




    }
  }
}

51.import java.util.*;

public class qn51 {
   public static void main(String arg[]){
      Scanner in = new Scanner(System.in);
      int num = in.nextInt();
      String bit_32="00000000000000000000000000000000";
      String bin = "";
      while(num!=0){
         if(num%2==1){
            bin+=Integer.toString(1);
         }
         else{
            bin+=Integer.toString(0);
         }
         num/=2;
      }
      StringBuilder stb = new StringBuilder();
      stb.append(bin);
      bin =stb.reverse().toString();
```

```
        bit_32=bit_32.substring(0,bit_32.length()-bin.length());
        bit_32+=bin;
        bit_32=bit_32.replace("0", "9");
        bit_32=bit_32.replace("1", "0");
        bit_32=bit_32.replace("9", "1");
        stb.delete(0, stb.length());
        stb.append(bit_32);
        bin =stb.reverse().toString();
        long sum=0L;
        for(int i=0;i<bin.length();i++){
            String e=Character.toString(bin.charAt(i));
            if(e.equals("1")){
                sum+=Math.pow(2,i);
            }
        }
        System.out.println(sum);

    }
}

52.import java.util.*;
public class qn52 {
    public static int find_len(String s,ArrayList<String> al){
        int count=0;
        for(String str : al){
            if(str.equals(s)){
                count++;
            }
        }
        return count;
    }
```

```
public static void main(String arg[]){
    Scanner in = new Scanner(System.in);
    int n=in.nextInt();
    in.nextLine();
    String s="";
    String result="";
    ArrayList<String> list = new ArrayList<>();
    for(int i=0;i<n;i++){
        s=in.next();
        list.add(s);
    }
    Set<String> set = new HashSet<>(list);
    int size=set.size();
    for(int i=0 ;i<size;i++){
        int max=0;
        for(String st:set){
            if(qn49.find_len(st, list)>max){
                max=qn49.find_len(st, list);
                s=st;
            }
        }
        for(int j=0 ; j<max;j++){
            result+=s+" ";
        }

        list.remove(s);
        set.remove(s);
        max=0;

    }
    System.out.println("\n"+result);
```

```
    }
}

53.import java.util.*;
public class qn53{
    public static String check(int i){
        if(i%2==0){
            return "even";
        }
        else{
            return "odd";
        }
    }
    public static void main(String arg[]){
        Scanner in = new Scanner(System.in);
        int num = in.nextInt();
        in.nextLine();
        String str = in.nextLine();
        ArrayList<String> list = new ArrayList<>(Arrays.asList(str.split(" ")));
        int max=0 , index=0,e;
        int sum=0,count=0;
        int size=list.size();
        size=(size%2==0)?size/2:(size/2)+1;
        String set="";
        for(int j=0 ;j<list.size();j++){
            if(count<size){
                for(int i=0 ;i<list.size();i++){
                    e=Integer.parseInt(list.get(i));
                    if(e>max){
                        max=e;
```

```
                index=i;
            }
        }
        if(j==0){
            set=qn53.check(index);
            sum+=max;
            count++;



        }
        else if(j>0){
            if(set.equals(qn53.check(index))){
                sum+=max;
                count++;

            }
        }
        list.set(index,"0");
        max=0;
        index=0;
      }
      else{
        break;
      }

    }
    System.out.println(sum);
  }
}
```

```
54.import java.util.*;
```

```
class qn54
{
   public static void main(String[] args)
   {
      Scanner sc = new Scanner(System.in);
      float a = sc.nextFloat();
      float b = sc.nextFloat();
      float c;
      c = a/b;
      System.out.println(c +" Km/hr");
   }
}
```

```
55.import java.io.*;
import java.util.*;
class BankAccount{
   private String name;
   private int num;
   private double blns;
   BankAccount(String s , int n , double b){
      name=s ;
      num= n;
      blns = b;
   }
   public void display(){
      System.out.println("Account Holder Name: "+name);
      System.out.println("Account Balance: "+blns);

   }
   public void withdraw(double w){
      if(w>=blns){
```

```
            System.out.println("Error: Insufficient fund or Invalid amount!");
        }
        else{
            blns=blns-w;
        }
    }
    public void deposit(double d){
        blns = blns+d;
    }
}
class qn55{
    public static void main(String a[]){
        Scanner obj = new Scanner(System.in);
        System.out.print("Please Enter an Account Number: ");
        int num = Integer.parseInt(obj.nextLine());
        System.out.print("please Enter the Account Holder Name: ");
        String name = obj.nextLine();
        System.out.print("Please Enter the Balance: ");
        double blns = Double.parseDouble(obj.nextLine());
        BankAccount acc = new BankAccount(name , num , blns);
        acc.display();
        acc.deposit(blns);
        acc.display();
        acc.withdraw(2*blns);
        acc.display();
        acc.withdraw(blns);
        acc.display();

    }
}
```

```
56.class City{
   String name;
   double lon;
   double lat;
   City(String n,double lo , double la){
      name=n;
      lon = lo;
      lat = la;
   }
   public void report(){
      System.out.println("City: "+name+" is at: "+lon+", "+lat);
   }
   public double distanceFrom(double lon1 , double lat1 , double lon2 , double lat2){
      long R=6371L;
      double r1= Math.toRadians(lat1);
      double r2= Math.toRadians(lat2);
      double dla = Math.toRadians(lat2-lat1);
      double dlo = Math.toRadians(lon2-lon1);
      double a =
      Math.sin(dla/2)*Math.sin(dla/2)+Math.sin(dlo/2)*Math.sin(dlo/2)*Math.cos(r1)*Math.cos(r2);
      double c = 2*Math.atan2(Math.sqrt(a),Math.sqrt(1-a));
      double d = R*c;
      return d;
   }
}
class qn56{
   public static void main(String args[]){
      City ob1= new City("NYC",50.0,75.0);
      City ob2 = new City("Chicago",25.0,10.0);
      System.out.println("City#1");
      System.out.println("Name: "+ob1.name);
```

```
        System.out.println("Longitude: "+(int)ob1.lon);
        System.out.println("Latitude: "+(int)ob1.lat);
        System.out.println();
        System.out.println("City#2");
        System.out.println("Name: "+ob2.name);
        System.out.println("Longitude: "+(int)ob2.lon);
        System.out.println("Latitude: "+(int)ob2.lat);
        System.out.println();
        ob1.report();
        System.out.println();
        ob2.report();
        System.out.println();
        int distance=(int)ob2.distanceFrom(ob1.lon,ob1.lat,ob2.lon,ob2.lat);
        System.out.println(ob1.name+" is "+distance+" kms away from "+ob2.name);

    }
}
```

```
57.import java.io.*;
import java.util.*;
class GradeException{
    Hashtable<Integer , String> ht=new Hashtable<>();
    public static String grade[]=new String[7];
    static{
        grade[0]="A";
        grade[1]="B";
        grade[2]="C";
        grade[3]="D";
        grade[4]="E";
        grade[5]="F";
        grade[6]="I";
```

```
    }
    void validGrade(int id , String c)throws Exception{
        List <String> GradeList = new ArrayList<>(Arrays.asList(grade));
        if(GradeList.contains(c)){
            ht.put(id,c);
        }
        else throw new Exception("Grade Exception");

    }
    void display(){
        System.out.println("Key/Values in HasHtable are:\n"+ht);
    }
}
public class qn57{
    public static void main (String arg[])throws IOException{
        BufferedReader in = new BufferedReader(new InputStreamReader(System.in));
        GradeException g = new GradeException();
        int ID[] = new int[5];
        String grd;
        for(int i=0;i<5;i++){
            ID[i]=i+101;
            System.out.print("The Student ID is :"+ID[i]+"\nEnter the grade: ");
            grd=in.readLine();
            try{
                g.validGrade(ID[i],grd);
            }
            catch(Exception e){
                System.out.println(e);
            }
        }
        g.display();
```

```
    }
}
```

58.
```
import java.util.Scanner;
public class qn58{
    public static void main(String arg[]){
       Scanner scan = new Scanner(System.in);
        int num = 0;
        do{
            System.out.println("Enter a number between 1 and 10");
            try{
                num= scan.nextInt();
                if (num < 1 || num>10){
                    System.out.println("\nIllegal value, "+ num +" entered. Please try again.");
                }
            }
            catch (Exception ime){
                System.out.println("Enter whole numbers only, with no spaces or other characters");
                scan.next();
            }
        }while(num<1 || num>10);

        System.out.println("\nValue correctly entered! Thank you.");
    }
}
```

59.
```
class sample{
    public int add(Integer... i){
        int sum=0;
        for(int n:i){
            sum=sum+n;
```

```
        }
        return sum;
    }
    public double add(Double... i){
        double sum=0;
        for(double n:i){
            sum=sum+n;
        }
        return sum;
    }
}
public class qn59{
    public static void main (String arg[]){
        sample obj = new sample();
        int e1=1 , e2=2 , e3=3;
        double e4=9.3 , e5=6.1;
        System.out.println("Sum of Three integers: "+obj.add(e1,e2,e3));
        System.out.println("Sum of Two integers: "+obj.add(e3,e1));
        System.out.println("Sum of Two doubles: "+obj.add(e4,e5));
    }
}

60.class Account{
    private double bal;
    private int accnum;

    Account(){}
    public Account(int a){
        bal=0.0;
        accnum=a;
    }
```

```
    public void deposit(double sum){
        if (sum>0){
            bal+=sum;
        }
        else System.err.println("Account.deposit(...): "+"cannot deposit negative amount.");

    }
    public void withdraw(double sum){
        if (sum>0) bal-=sum;
        else System.err.println("Account withdraw(...): "+"cannot withdraw negative amount.");

    }
    public double getAccountNumber()
    {
        return accnum;

    }
    public double getBalance(){
        return bal;
    }
    public String toString(){
        return "Acc "+accnum+": " + "balance ="+bal;
    }
    public final void print()
    {
        System.out.println(toString());
    }
}
class SavingsAccount extends Account{
    double interest=0.0;
```

```
    public SavingsAccount(double b,double i){
        super.deposit(b);
        interest=i;
    }
    public void setInterest(double n){
        interest=n;
        super.deposit(interest*100);
        System.out.println("After updating the interest rate");
        print();
    }
    public String toString(){
        return "Savings Account Balance = "+getBalance()+" Interest : "+interest;
    }
}
class CurrentAccount extends Account{
    double limit=0.0;
    public CurrentAccount(double b , double l){
        super.deposit(b);
        limit=l;
    }
    public void setLimit(double l){
        limit = l;
        System.out.println("After updating the withdrawn limit");
        print();
    }
    public String toString(){
        return "Current Account Balance = "+getBalance()+" Limit : "+limit;
    }
    public void withdraw(double num){
        System.out.println("Withdraw Rs. "+(int)num+" from Current Account");
        if(num<=limit){
```

```
            super.withdraw(num);


            print();
        }
        else System.out.println("Sorry, the limit is exceeded");
    }
}
class qn60{
    public static void main(String arg[]){
        Account a;
        a = new Account(1920102080);
        SavingsAccount b= new SavingsAccount(10000.0,0.25);
        CurrentAccount c = new CurrentAccount(20000.0,1000.0);
        b.print();
        c.print();
        b.setInterest(1.25);
        c.setLimit(2000.0);
        c.withdraw(1000);
        c.withdraw(1000);
        c.withdraw(3000);
        c.print();
    }
}


61.interface IntOperations {
    void integer();
    void evenodd();
    void prime();
    void factorial();
    void sumofdigit();
}
```

```
class MyNumber implements IntOperations{
    public int n;
    MyNumber(){n=0;}
    MyNumber(int i){n=i;}
    public void integer(){
        if(n>0){
            System.out.println(n+" is a Positive Number");
        }
        else System.out.println(n+" is a Negative Number");
    }
    public void evenodd(){
        if(n%2==0){
            System.out.println(n+" is a Even Number");
        }
        else System.out.println(n+" is a Odd Number");
    }
    public void prime(){
        int h=n/2;
        boolean fg=false;
        for(int i=2 ; i<=h ; i++){
            if(n%i==0) fg=true;
        }
        if(fg) System.out.println(n+" is not a Prime Number");
        else System.out.println(n+" is a Prime Number");
    }
    public void factorial(){
        int f=1;
        for(int i=1;i<=n;i++){
            f*=i;
        }
        System.out.println("The factorial of "+n+" is "+f);
```

```
    }
    public void sumofdigit(){
        int temp=n,sum=0;
        while(temp !=0){
            sum+=temp%10;
            temp/=10;
        }
        System.out.println("Sum of it's digits is "+sum);
    }
}
public class qn61{
    public static void main(String arg[]){
        MyNumber m=new MyNumber(11);
        MyNumber m2=new MyNumber(14);
        m.integer();
        m.evenodd();
        m.prime();
        m.factorial();
        m.sumofdigit();
        System.out.println();
        m2.integer();
        m2.evenodd();
        m2.prime();
        m2.factorial();
        m2.sumofdigit();


    }
}
```

62.import java.io.*;

```
interface StackOperations{
    int max=5;
    void push(int data);
    void pop();
    int isempty();
    int isfull();
}
class MyStack implements StackOperations{
    public int arr[]=new int[max];
    public int pos=max;
    public int isempty(){
        if(pos==max){
            return 1;
        }
        else return 0;
    }
    public int isfull(){
        if(pos==0){
            return 1;
        }
        else return 0;
    }
    public void push(int data){

            pos--;
            arr[pos]=data;

        }

    public void pop(){
```

```
        arr[pos]=0;
        pos++;
      }

   public void display(){
      for(int i=pos;i<max;i++){
        System.out.println(arr[i]);
      }
   }
}
public class qn62{
   public static void main(String arg[])throws Exception{
      int ch,data;
      String c;
      BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
      MyStack s = new MyStack();
      do{
        System.out.println("\n1:Push");
        System.out.println("\n2:Pop");
        System.out.println("\n3:Display");
        System.out.println("\n4:Exit");
        System.out.println("\nEnter your choice:");
        ch=Integer.parseInt(br.readLine());
        switch(ch){
          case 1:
            if(s.isfull()==1){
              System.out.println("Stack is full");

            }
            else{
              System.out.println("Enter the data:");
```

```
                data = Integer.parseInt(br.readLine());
                s.push(data);
              }break;
            case 2:
              if(s.isempty()==1){
                System.out.println("Stack is empty");

              }
              else{

                s.pop();
              }break;
            case 3:
              if(s.isempty()==1){
                System.out.println("Stack is empty");
              }
              else{
                System.out.println("The Elements in the Stack are:");
                s.display();
              }break;
            case 4:
              System.exit(0);
              break;
            default:
              System.out.println("\nInvalid choice");
          }
        }while(ch!=4);
    }
}
```

63.class GoodMorning extends Thread {

```
    public void run() {
        try {
            int i=0;
            while (i<5) {
                sleep(1000);
                System.out.println("Good morning ");
                i++;
            }
        } catch (Exception e) {
        }
    }
   }
class Hello extends Thread {
    public void run() {
        try {
            int i=0;
            while (i<5) {
                sleep(2000);
                System.out.println("hello");
                i++;
            }
        } catch (Exception e) {
        }
    }
}
class Welcome extends Thread {
    public void run() {
        try {
            int i=0;
            while (i<5) {
                sleep(3000);
```

```
            System.out.println("welcome");
            i++;
          }
        } catch (Exception e) {
          }
    }
}
class qn63{
    public static void main(String args[]) {
        GoodMorning t1 = new GoodMorning();
        Hello t2 = new Hello();
        Welcome t3 = new Welcome();
        t1.start();
        t2.start();
        t3.start();

    }
}

64.class Frst implements Runnable {
    Thread t;
    Frst() {
        t = new Thread(this);
        System.out.println("Good Morning");
        t.start();
    }
    public void run() {
        for (int i = 0; i < 10; i++) {
            System.out.println("Good Morning");
            try {
                t.sleep(1000);
```

```
            } catch (Exception e) {
                System.out.println(e);
            }
        }
    }
}
class sec implements Runnable {
    Thread t;
    sec() {
        t = new Thread(this);
        System.out.println("hello");
        t.start();
    }
    public void run() {
        for (int i = 0; i < 10; i++) {
            System.out.println("hello");
            try {
                t.sleep(2000);
            } catch (Exception e) {
                System.out.println(e);
            }
        }
    }
}
class third implements Runnable {
    Thread t;
    third() {
        t = new Thread(this);
        System.out.println("welcome");
        t.start();
    }
```

```
    public void run() {
        for (int i = 0; i < 10; i++) {
            System.out.println("welcome");
            try {
                t.sleep(3000);
            } catch (Exception e) {
                System.out.println(e);
            }
        }
    }
}
public class qn64{
    public static void main(String arg[]) {
        new Frst();
        new sec();
        new third();
    }
}

65.class Storage{
    int i=0;
    boolean value=false;
    public synchronized void add(int i) throws InterruptedException {
        this.i=i;
        this.value=true;
    }
    public synchronized int display() throws InterruptedException {
        this.value=false;
        return i;
    }
}
```

```
class Counter extends Thread{
    Storage s;
    Counter(){}
    Counter(Storage s){this.s=s;}
    public void run() {
        for(int i=0 ;i<10;i++) {
            try {
                synchronized(s) {
                    while(s.value==true) {
                        s.wait();
                    }
                    s.add(i);
                    System.out.println("Added: "+i);
                    s.notifyAll();
                }
            } catch (InterruptedException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
            }
        }
    }
}
class Printer extends Thread{
    Storage s;
    Printer(){}
    Printer(Storage s){this.s=s;}
    public void run() {
        for(int i=0 ;i<10;i++) {
        try {
            synchronized(s) {
                while(s.value==false) {
```

```
                s.wait();
            }
            System.out.println("Print: "+s.display());
            s.notifyAll();
          }
       } catch (InterruptedException e) {
          // TODO Auto-generated catch block
          e.printStackTrace();
          }
       }
   }
}
public class qn65{
   public static void main(String arg[]) {
      Storage s1= new Storage();
      Counter c= new Counter(s1);
      Printer p = new Printer(s1);
      try {
         c.start();
         p.start();
      }
      catch(Exception E) {
         System.out.println(E);
      }
   }
}

66.import java.util.*;
public class qn66{
   public static void main(String arg[]){
      System.out.println("number of terms :");
```

```
int n;
Scanner in = new Scanner(System.in);
n=in.nextInt();
System.out.println("\n");
System.out.println("imput string is :");
String str;
in.nextLine();
ArrayList<String> al = new ArrayList<String>();
for (int u =0 ; u<n ; u++ ){
   str=in.nextLine();
   al.add(str);
}
System.out.println("\n");
System.out.println("program output:");
String arr[]
={"a","b","c","d","e","f","g","h","i","j","k","l","m","n","o","p","q","r","s","t","u","v","w","x","y","z"};
boolean flag=false;
for (String g: al){
   for (String k: arr){
      if(g.contains(k)){
         flag=true;
      }
      else{
         flag=false;
         break;
      }
   }

   if(flag){
      System.out.println("YES");
   }
```

```
            else{
                System.out.println("NO");
            }
        }
    }
}
```

```
67.import java.util.*;
public class qn67 {
    public static void main(String[] args) {
        ArrayList<ArrayList> numList = new ArrayList<ArrayList>();
        int n=0;
        Scanner in = new Scanner(System.in);
        n=in.nextInt();

        for(int k =0 ; k<n ; k++){
            ArrayList<Integer> na = new ArrayList<Integer>();
            int nr = in.nextInt();
            na.add(nr);
            for(int j =0 ; j<nr ; j++){
                int elm = in.nextInt();
                na.add(elm);
            }
            numList.add(na);
        }
        n=in.nextInt();

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

            try {
                int x=in.nextInt();
```

```
            int y=in.nextInt();
            System.out.println(numList.get(x-1).get(y-1));
        } catch (Exception e) {
        //TODO: handle exception
            System.out.println("ERROR!");
        }
      }
   }
}
```

```
69.import java.io.*;
import java.util.*;
class SortedList{
   ArrayList <Integer> array = null;
   SortedList(){
      array = new ArrayList<Integer>();
   }
   public void add(int u ){
      array.add(u);
      Collections.sort(array);
   }
   public boolean isEmpty(){
      return array.isEmpty();
   }
   public int getFirst(){
      return array.get(0);
   }
   public int getLast(){
      return array.get(array.size()-1);
   }
}
```

```
public class qn69{
   public static void main(String arg[]){
      String data = null ;
      Scanner sc = new Scanner (System.in);
     data=sc.nextLine();
      try{
         File fi = new File(data.trim());
         FileReader fr = new FileReader(fi);
         BufferedReader dip = new BufferedReader(fr);
         String i;
         SortedList sl = new SortedList();
         while((i=dip.readLine())!=null){
            sl.add(Integer.parseInt(i));
         }
         if(sl.isEmpty()){
            System.out.println(" Empty array");
            System.out.println("min undefined");
            System.out.println("max undefined");
         }
         else{
            System.out.println(" min = "+ sl.getFirst());
            System.out.println("max = "+ sl.getLast());
         }
         fr.close();
      }
      catch(Exception e){
         System.out.println(e);
      }
   }
}
```