**10: Implementation of Runs above and below the mean test for checking independence Property of random numbers.**

import java.util.\*;

public class RunsTest{

public static void main(String args[]){

Scanner sc=new Scanner(System.in);

int n=sc.nextInt();

double ran[]=new double[n];

double x[]=new double[n];

x[0]=0;

int a=22;

int c=1;

int m=72;

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

x[i]=(a\*x[i-1]+c)%m;

ran[i]=((a\*x[i-1]+c)%m)/m;

ran[i]=Math.floor(ran[i]\*100)/100;

}

for(int tt=0;tt<n;tt++)

System.out.println(ran[tt]);

boolean s[]=new boolean[n];

int ram=0,rbm=0,b=0;

double m1=0.495; // mean=m1=0.495 (fixed)

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

if(ran[t]>m1)

{ s[t]=false;

ram++;

}

else

{

s[t]=true;

rbm++;}

}

for(int ttt=0;ttt<n;ttt++)

System.out.println(s[ttt]);

for(int k=0;k<n && (k+1)<n;k++){

if(s[k] != s[k+1])

{

b++;

System.out.println(k);

}

}

++b;

System.out.println(ram+"rab"+rbm);

double mean=((double)(2\*ram\*rbm)/(double)n)+0.5;

double variance=(double)((2\*ram\*rbm)\*(2\*ram\*rbm-n))/(double)(n\*n\*(n-1));

double z=(b-mean)/Math.sqrt(variance);

System.out.println("b="+b+"mean "+mean+"variance "+variance+" z= "+z);

if(z>=-1.96 && z<=1.96)

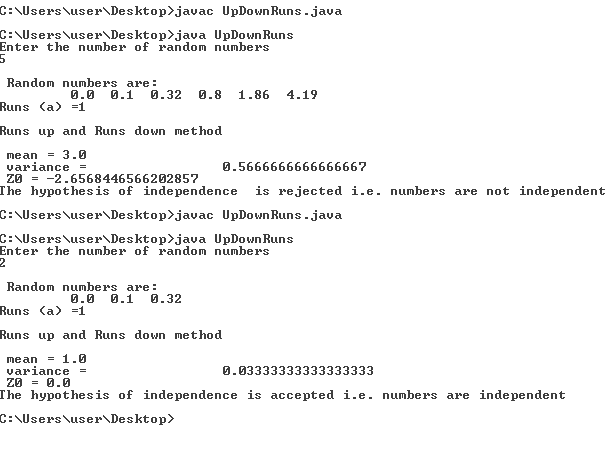
System.out.println("independent");

else

System.out.println("not");

}}

**Output**

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