Assignment 1

Name:Furkan Alahi

ID:011 161 212   Section A

Math number-Chapter 1.1

Example 1.1.3

A = {x : x = 3, 4, 5, . . .} where A is the event that it will take three or more flips

of the coin to observe the same face on two consecutive flips

To find P(A),

first find the probability of A' = {x : x = 2}, the complement of A

P(A') = P({HH, TT}) =0.5

P(A) =1-.5

=0.5

```java
import java.util.*;
class CoinToss
{
    public static void main (String[]args)
    {
        int p=0;
        double differ=2;
        int m;
        double arr[]=new double[1000];
        for( m=0;m<30;m++)
        {
            arr[m]=differ;
            differ=(differ+15);        //declaring checking times
        }

        int j;
        for(j=m;j<70;j++)
        {
            arr[j]=differ;
            differ=differ+150;
        }

        for(int i=j;i<100;i++)
```

```java
{
    arr[i]=differ;
    differ=differ+500;
}


System.out.println("number of checking time");
for(int i = 0;i<100;i++)
{
    System.out.println(arr[i]);    //number of check
}
System.out.println("number of success ");




double arr2[]=new double[2];
double arr3[]=new double[100];
Random r = new Random();

int n=0;
for(int i=0;i<100;i++)
{


    p=0;

    for(int t=0;t<arr[i];t++)
    {

        for(int k=0;k<2;k++)
        {
            n = r.nextInt(2) + 1;
            arr2[k]=n;
            //System.out.println(arr2[k]);

        }
        if(arr2[0]==arr2[1] )

        {
```

```java
            p++;
            // System.out.println(p);


        }


    }

    arr3[i]=p;
    System.out.println(arr3[i]);

}


double arr4[]=new double[100];
double d=0.0;

System.out.println("probability of having same face on first two toss");
for(int i=0;i<100;i++)
{
    d=arr3[i]/arr[i];

    System.out.println(d);



}

System.out.println("\n\nprobability of having same face on three or more than three toss  P(A)");

for(int i=0;i<100;i++)
{
    d=arr3[i]/arr[i];

    System.out.println(1-d);
}


    }
}
```

(n) 2	N(A) 1	N(A)/n .5	1-N(A)/n .5
17	9	0.5294117647	0.4705882353
32	12	0.375	0.625
47	28	0.5957446809	0.4042553191
62	39	0.6290322581	0.3709677419
77	44	0.5714285714	0.4285714286
92	42	0.4565217391	0.5434782609
107	48	0.4485981308	0.5514018692
122	59	0.4836065574	0.5163934426
137	76	0.5547445255	0.4452554745
152	78	0.5131578947	0.4868421053
167	81	0.4850299401	0.5149700599
182	91	0.5	0.5
197	91	0.461928934	0.538071066
212	116	0.5471698113	0.4528301887
227	119	0.5242290749	0.4757709251
242	128	0.5289256198	0.4710743802
257	132	0.513618677	0.486381323
272	145	0.5330882353	0.4669117647
287	137	0.4773519164	0.5226480836
302	136	0.4503311258	0.5496688742
317	158	0.4984227129	0.5015772871
332	173	0.5210843373	0.4789156627
347	189	0.5446685879	0.4553314121
362	180	0.4972375691	0.5027624309
377	204	0.5411140584	0.4588859416
392	192	0.4897959184	0.5102040816
407	200	0.4914004914	0.5085995086
422	228	0.5402843602	0.4597156398
437	236	0.5400457666	0.4599542334
452	220	0.4867256637	0.5132743363
602	299	0.4966777409	0.5033222591
752	367	0.4880319149	0.5119680851
902	464	0.5144124169	0.4855875831
1052	541	0.5142585551	0.4857414449
1202	576	0.4792013311	0.5207986689
1352	685	0.5066568047	0.4933431953
1502	789	0.5252996005	0.4747003995
1652	837	0.5066585956	0.4933414044
1802	920	0.5105438402	0.4894561598
1952	993	0.5087090164	0.4912909836
2102	1024	0.4871550904	0.5128449096
2252	1104	0.4902309059	0.5097690941
2402	1205	0.5016652789	0.4983347211
2552	1287	0.5043103448	0.4956896552
2702	1381	0.5111028868	0.4888971132
2852	1470	0.51542777	0.48457223
3002	1523	0.5073284477	0.4926715523
3152	1560	0.4949238579	0.5050761421
3302	1665	0.5042398546	0.4957601454
3452	1748	0.506373117	0.493626883
3602	1820	0.5052748473	0.4947251527
3752	1843	0.4912046908	0.5087953092
3902	1942	0.4976934905	0.5023065095
4052	1989	0.4908687068	0.5091312932
4202	2119	0.5042836744	0.4957163256
4352	2188	0.5027573529	0.4972426471
4502	2257	0.501332741	0.498667259
4652	2304	0.4952708512	0.5047291488
4802	2433	0.50666389	0.49333611
4952	2512	0.50726979	0.49273021
5102	2545	0.4988239906	0.5011760094
5252	2615	0.4979055598	0.5020944402
5402	2686	0.4972232506	0.5027767494
5552	2782	0.5010806916	0.4989193084
5702	2830	0.4963170817	0.5036829183
5852	2948	0.5037593985	0.4962406015
6002	2941	0.4900033322	0.5099966678
6152	3114	0.5061768531	0.4938231469
6302	3180	0.5046017137	0.4953982863
6452	3209	0.4973651581	0.5026348419
6952	3532	0.5080552359	0.4919447641
7452	3770	0.5059044552	0.4940955448
7952	3964	0.4984909457	0.5015090543
8452	4255	0.5034311406	0.4965688594
8952	4533	0.5063672922	0.4936327078
9452	4781	0.5058188743	0.4941811257
9952	4967	0.4990956592	0.5009043408
10452	5216	0.4990432453	0.5009567547
10952	5482	0.5005478451	0.4994521549
11452	5683	0.4962451973	0.5037548027
11952	5935	0.4965696118	0.5034303882
12452	6279	0.5042563444	0.4957436556
12952	6476	0.5	0.5
13452	6692	0.4974724948	0.5025275052
13952	6940	0.4974197248	0.5025802752
14452	7345	0.5082341544	0.4917658456
14952	7415	0.4959202782	0.5040797218
15452	7723	0.4998058504	0.5001941496
15952	8037	0.5038239719	0.4961760281
16452	8252	0.501580355	0.498419645
16952	8428	0.497168457	0.502831543
17452	8639	0.495014898	0.504985102
17952	8928	0.4973262032	0.5026737968
18452	9241	0.50081292	0.49918708
18952	9586	0.5058041368	0.4941958632
19452	9642	0.495681678	0.504318322
19952	10006	0.5015036087	0.4984963913
20452	10333	0.5052317622	0.4947682378
20952	10453	0.4989022528	0.5010977472

sub-title