

## Lampiran 1

## PROGRAM PEMBANGKITAN BILANGAN RANDOM

PROGRAM SIMULASI (input, output);

USES CRT;

VAR J,P,N,I,SUM,TEM:LONGINT;

U,RATA:REAL;

CONST

P1=72;P2=105;P3=81;P4=76;P5=76;P6=64;P7=69;P8=59;P9=45;P10=24;

BEGIN

CLRSCR;

FOR J:=1 TO 32 DO

BEGIN

CLRSCR;RANDOMIZE;

SUM:=0;n:=10;TEM:=0;

Writeln('PEMBANGKITAN KE- ', j);

Writeln('=====');

Writeln('| NO | BIL. RANDOM | DATA |');

Writeln('=====');

FOR i:=1 TO n DO

BEGIN

U:=RANDOM;

```
IF(U>=0.000)AND(U<=0.061)THEN
    BEGIN SUM:=SUM+P1;TEM:=P1;END;
IF(U>=0.062)AND(U<=0.127)THEN
    BEGIN SUM:=SUM+P2;TEM:=P2;END;
IF(U>=0.128)AND(U<=0.188)THEN
    BEGIN SUM:=SUM+P3;TEM:=P3;END;
IF(U>=0.189)AND(U<=0.225)THEN
    BEGIN SUM:=SUM+P4;TEM:=P4;END;
IF(U>=0.226)AND(U<=0.353)THEN
    BEGIN SUM:=SUM+P5;TEM:=P5;END;
IF(U>=0.354)AND(U<=0.526)THEN
    BEGIN SUM:=SUM+P6;TEM:=P6;END;
IF(U>=0.527)AND(U<=0.613)THEN
    BEGIN SUM:=SUM+P7;TEM:=P7;END;
IF(U>=0.614)AND(U<=0.646)THEN
    BEGIN SUM:=SUM+P8;TEM:=P8;END;
IF(U>=0.647)AND(U<=0.887)THEN
    BEGIN SUM:=SUM+P9;TEM:=P9;END;
IF(U>=0.888)AND(U<=0.999)THEN
    BEGIN SUM:=SUM+P10;TEM:=P10;END;
```

```
WRITELN(' | ',1:2,' | ',U:7:3,' | ',TEM:4,' | ');  
    END;  
RATA:=SUM/I;  
WRITELN('=====');  
WRITELN(RATA - RATA : ',RATA:7:3);READLN;  
END;  
END.
```



## Lampiran 2

## OUTPUT PROGRAM PEMBANGKITAN BILANGAN RANDOM

## PEMBANGKITAN KE - 1

## PEMBANGKITAN KE - 2

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.624	59		1.	0.026	72
2.	0.210	76		2.	0.362	64
3.	0.826	45		3.	0.957	24
4.	0.565	69		4.	0.866	45
5.	0.924	24		5.	0.132	81
6.	0.168	81		6.	0.562	69
7.	0.484	64		7.	0.906	24
8.	0.089	105		8.	0.361	64
9.	0.152	81		9.	0.378	64
10.	0.170	64		10.	0.714	45

RATA - RATA : 66.800

RATA - RATA : 55.200

## PEMBANGKITAN KE - 3

## PEMBANGKITAN KE - 4

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.774	45		1.	0.576	69
2.	0.229	76		2.	0.651	45
3.	0.749	45		3.	0.489	64
4.	0.515	64		4.	0.766	45
5.	0.063	105		5.	0.302	76
6.	0.072	105		6.	0.609	69
7.	0.079	105		7.	0.810	45
8.	0.298	76		8.	0.136	81
9.	0.455	64		9.	0.580	69
10.	0.438	64		10.	0.142	81

RATA - RATA : 74.900

RATA - RATA : 64.400

## PEMBANGKITAN KE – 5

## PEMBANGKITAN KE – 6

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.957	24	1.	0.898	24
2.	0.879	45	2.	0.053	72
3.	0.338	76	3.	0.385	64
4.	0.954	24	4.	0.473	64
5.	0.179	81	5.	0.434	64
6.	0.102	105	6.	0.076	105
7.	0.146	81	7.	0.858	45
8.	0.139	81	8.	0.866	45
9.	0.240	76	9.	0.732	45
10.	0.032	72	10.	0.181	81

RATA – RATA : 66.500

RATA – RATA : 60.900

## PEMBANGKITAN KE – 7

## PEMBANGKITAN KE – 8

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.566	69	1.	0.248	76
2.	0.707	45	2.	0.349	76
3.	0.217	76	3.	0.433	64
4.	0.445	64	4.	0.948	24
5.	0.355	64	5.	0.231	76
6.	0.994	24	6.	0.589	69
7.	0.013	72	7.	0.409	64
8.	0.453	64	8.	0.490	64
9.	0.735	45	9.	0.233	76
10.	0.505	64	10.	0.948	24

RATA – RATA : 58.700

RATA – RATA : 61.300

## PEMBANGKITAN KE – 9

## PEMBANGKITAN KE -- 10

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.181	81		1.	0.229	76
2.	0.640	59		2.	0.055	72
3.	0.851	45		3.	0.782	45
4.	0.229	76		4.	0.183	81
5.	0.824	45		5.	0.078	105
6.	0.907	24		6.	0.663	69
7.	0.122	105		7.	0.711	45
8.	0.630	59		8.	0.121	105
9.	0.822	45		9.	0.014	72
10.	0.738	45		10.	0.368	64

RATA – RATA : 58.400

RATA – RATA : 73.400

## PEMBANGKITAN KE – 11

## PEMBANGKITAN KE – 12

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.215	76		1.	0.483	64
2.	0.592	69		2.	0.603	69
3.	0.350	76		3.	0.762	45
4.	0.821	45		4.	0.680	45
5.	0.502	64		5.	0.781	45
6.	0.314	76		6.	0.630	59
7.	0.562	69		7.	0.749	45
8.	0.810	45		8.	0.793	45
9.	0.648	45		9.	0.794	45
10.	0.876	45		10.	0.765	45

RATA – RATA : 61.000

RATA – RATA : 50.700

## PEMBANGKITAN KE - 13

## PEMBANGKITAN KE - 14

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.571	69		1.	0.260	76
2.	0.985	24		2.	0.724	45
3.	0.195	76		3.	0.208	76
4.	0.846	45		4.	0.899	24
5.	0.860	45		5.	0.297	76
6.	0.693	45		6.	0.154	81
7.	0.753	45		7.	0.790	45
8.	0.199	76		8.	0.999	24
9.	0.779	45		9.	0.907	24
10.	0.846	45		10.	0.502	64

RATA - RATA : 51.500

RATA - RATA : 53.500

## PEMBANGKITAN KE - 15

## PEMBANGKITAN KE - 16

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.841	45		1.	0.996	24
2.	0.320	76		2.	0.519	64
3.	0.626	59		3.	0.562	69
4.	0.177	81		4.	0.970	24
5.	0.625	59		5.	0.386	64
6.	0.485	64		6.	0.693	45
7.	0.884	45		7.	0.297	76
8.	0.661	45		8.	0.397	64
9.	0.155	81		9.	0.496	64
10.	0.428	64		10.	0.273	76

RATA - RATA : 61.900

RATA - RATA : 57.000

## PEMBANGKITAN KE – 17

## PEMBANGKITAN KE – 18

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.348	76	1.	0.684	45
2.	0.182	81	2.	0.378	64
3.	0.411	64	3.	0.804	45
4.	0.872	45	4.	0.291	76
5.	0.180	81	5.	0.788	45
6.	0.071	105	6.	0.108	105
7.	0.200	76	7.	0.714	45
8.	0.141	81	8.	0.298	76
9.	0.085	105	9.	0.838	45
10.	0.123	105	10.	0.124	105

RATA – RATA : 81.900

RATA – RATA : 65.100

## PEMBANGKITAN KE – 19

## PEMBANGKITAN KE – 20

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.075	105	1.	0.675	45
2.	0.0583	69	2.	0.348	76
3.	0.0913	24	3.	0.566	69
4.	0.652	45	4.	0.057	72
5.	0.907	24	5.	0.637	59
6.	0.681	45	6.	0.849	45
7.	0.827	45	7.	0.245	76
8.	0.062	105	8.	0.045	72
9.	0.679	45	9.	0.044	72
10.	0.792	45	10.	0.882	45

RATA – RATA : 55.200

RATA – RATA : 63.100



## PEMBANGKITAN KE – 21

## PEMBANGKITAN KE – 22

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.403	64		1.	0.570	69
2.	0.521	64		2.	0.638	59
3.	0.917	24		3.	0.911	24
4.	0.661	45		4.	0.663	45
5.	0.124	105		5.	0.290	76
6.	0.043	72		6.	0.658	45
7.	0.370	64		7.	0.352	76
8.	0.397	64		8.	0.838	45
9.	0.478	64		9.	0.339	76
10.	0.802	45		10.	0.391	64

RATA – RATA : 61.100

RATA – RATA : 57.900

## PEMBANGKITAN KE – 23

## PEMBANGKITAN KE – 24

NO	BIL.RANDOM	DATA		NO	BIL.RANDOM	DATA
1.	0.252	76		1.	0.013	72
2.	0.424	64		2.	0.089	105
3.	0.549	69		3.	0.170	81
4.	0.791	45		4.	0.381	64
5.	0.870	45		5.	0.240	76
6.	0.661	45		6.	0.624	59
7.	0.242	76		7.	0.603	69
8.	0.610	69		8.	0.152	81
9.	0.842	45		9.	0.224	76
10.	0.495	64		10.	0.768	45

RATA – RATA : 59.800

RATA – RATA : 72.800

## PEMBANGKITAN KE – 25

NO	BIL.RANDOM	DATA
1.	0.345	76
2.	0.951	24
3.	0.332	76
4.	0.836	45
5.	0.966	24
6.	0.939	24
7.	0.938	24
8.	0.604	69
9.	0.390	64
10.	0.515	64

RATA – RATA : 49.000

## PEMBANGKITAN KE – 26

NO	BIL.RANDOM	DATA
1.	0.333	76
2.	0.144	81
3.	0.545	69
4.	0.151	81
5.	0.795	45
6.	0.330	76
7.	0.148	81
8.	0.900	24
9.	0.120	105
10.	0.418	64

RATA – RATA : 70.200

## PEMBANGKITAN KE – 27

NO	BIL.RANDOM	DATA
1.	0.849	45
2.	0.553	69
3.	0.562	69
4.	0.506	64
5.	0.148	81
6.	0.407	64
7.	0.422	64
8.	0.672	45
9.	0.013	72
10.	0.426	64

RATA – RATA : 63.700

## PEMBANGKITAN KE – 28

NO	BIL.RANDOM	DATA
1.	0.804	45
2.	0.265	76
3.	0.813	45
4.	0.196	76
5.	0.784	45
6.	0.523	64
7.	0.689	45
8.	0.444	64
9.	0.064	105
10.	0.617	59

RATA – RATA : 62.400

## PEMBANGKITAN KE - 29

## PEMBANGKITAN KE - 30

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.302	76	1.	0.088	105
2.	0.649	45	2.	0.517	64
3.	0.017	72	3.	0.881	45
4.	0.049	72	4.	0.373	64
5.	0.439	64	5.	0.309	76
6.	0.172	81	6.	0.191	76
7.	0.133	81	7.	0.913	24
8.	0.631	59	8.	0.914	24
9.	0.843	45	9.	0.213	76
10.	0.121	105	10.	0.126	105

RATA - RATA : 70.000

RATA - RATA : 65.900

## PEMBANGKITAN KE - 31

## PEMBANGKITAN KE - 32

NO	BIL.RANDOM	DATA	NO	BIL.RANDOM	DATA
1.	0.261	76	1.	0.921	24
2.	0.364	64	2.	0.136	81
3.	0.871	45	3.	0.074	105
4.	0.497	64	4.	0.230	76
5.	0.039	72	5.	0.298	76
6.	0.807	45	6.	0.070	105
7.	0.165	81	7.	0.322	76
8.	0.982	24	8.	0.983	24
9.	0.616	59	9.	0.715	45
10.	0.845	45	10.	0.809	45

RATA - RATA : 57.500

RATA - RATA : 65.700

## Lampiran 3

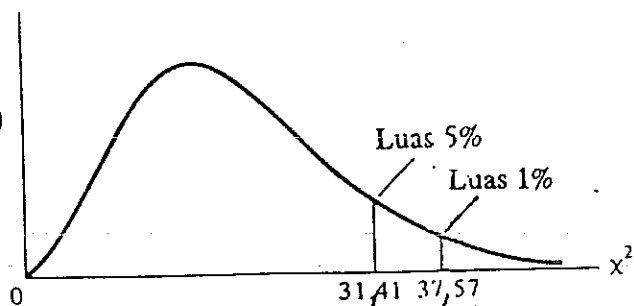
Titik persentasi atas distribusi  $\chi^2$ 

## Contoh

$$\Pr(\chi^2 > 23,8277) = 0,25$$

$$\Pr(\chi^2 > 31,4104) = 0,05 \quad \text{untuk } df = 20$$

$$\Pr(\chi^2 > 37,5662) = 0,01$$



df \ Pr	0,250	0,100	0,050	0,025	0,010	0,005	0,001
1	1,32330	2,70554	3,84146	5,02389	6,63490	7,87944	10,828
2	2,77259	4,60517	5,99146	7,37776	9,21034	10,5966	13,816
3	4,10834	6,25139	7,81473	9,34840	11,3449	12,8382	16,266
4	5,38527	7,77944	9,48773	11,1433	13,2767	14,8603	18,467
5	6,62568	9,23636	11,0705	12,8325	15,0863	16,7496	20,515
6	7,84080	10,6446	12,5916	14,4494	16,8119	18,5476	22,458
7	9,03715	12,0170	14,0671	16,0128	18,4753	20,2777	24,322
8	10,2189	13,3616	15,5073	17,5345	20,0902	21,9550	26,125
9	11,3888	14,6837	16,9190	19,0228	21,6660	23,5854	27,877
10	12,5489	15,9872	18,3070	20,4832	23,2093	25,1882	29,588
11	13,7007	17,2750	19,6751	21,9200	24,7250	26,7568	31,264
12	14,8454	18,5493	21,0261	23,3367	26,2170	28,2995	32,909
13	15,9839	19,8119	22,3620	24,7356	27,6882	29,8195	34,528
14	17,1169	21,0641	23,6848	26,1189	29,1412	31,3194	36,123
15	18,2451	22,3071	24,9958	27,4884	30,5779	32,8013	37,697
16	19,3689	23,5418	26,2962	28,8454	31,9999	34,2672	39,252
17	20,4887	24,7690	27,5871	30,1910	33,4087	35,7185	40,790
18	21,6049	25,9894	28,8693	31,5264	34,8053	37,1565	42,312
19	22,7178	27,2036	30,1435	32,8523	36,1909	38,5823	43,820
20	23,8277	28,4120	31,4104	34,1696	37,5662	39,9968	45,315
21	24,9348	29,6151	32,6706	35,4789	38,9322	41,4011	46,797
22	26,0393	30,8133	33,9244	36,7807	40,2894	42,7957	48,268
23	27,1413	32,0069	35,1725	38,0756	41,6384	44,1813	49,728
24	28,2412	33,1962	36,4150	39,3641	42,9798	45,5585	51,179
25	29,3389	34,3816	37,6525	40,6465	44,3141	46,9279	52,618
26	30,4346	35,5632	38,8851	41,9232	45,6417	48,2899	54,052
27	31,5284	36,7412	40,1133	43,1945	46,9629	49,6449	55,476
28	32,6205	37,9159	41,3371	44,4608	48,2782	50,9934	56,892
29	33,7109	39,0875	42,5570	45,7223	49,5879	52,3356	58,301

(lanjutan)

Lanjutan (Lampiran 3 : Titik persentasi atas distribusi  $\chi^2$ )

$r$	0,250	0,100	0,050	0,025	0,010	0,005	0,001
30	34,7997	40,2560	43,7730	46,9792	50,8922	53,6720	59,703
40	45,6160	51,8051	55,7585	59,3417	63,6907	66,7660	73,402
50	56,3336	63,1671	67,5048	71,4202	76,1539	79,4900	86,661
60	66,9815	74,3970	79,0819	83,2977	88,3794	91,9517	99,607
70	77,5767	85,5270	90,5312	95,0232	100,425	104,215	112,317
80	88,1303	96,5782	101,879	106,629	112,329	116,321	124,839
90	98,6499	107,565	113,145	118,136	124,116	128,299	137,208
100	109,141	118,498	124,342	129,561	135,807	140,169	149,449
Z†	+0,6745	+1,2816	+1,6449	+1,9600	+2,3263	+2,5758	+3,0902

† Untuk df yang lebih besar dari 100, pernyataan

$$\sqrt{2\chi^2} - \sqrt{(2k-1)} = Z$$

mengikuti distribusi normal yang distandardisasikan, di mana  $k$  menyatakan derajat kebebasan.

Sumber: Dari E. S. Pearson dan H. O. Hartley, editor, *Biometrika Tables for Statisticians*, volume 1, edisi ketiga, tabel 8, Cambridge University Press, New York, 1966. Direproduksi dengan seizin editor dan trustee *Biometrika*.