

BIRTHDAY SPACINGS TEST, M= 512 N=2\*\*24 LAMBDA= 2.0000

randoml.rnd	using bits	1 to 24	p-value=	.593267
randoml.rnd	using bits	2 to 25	p-value=	.107447
randoml.rnd	using bits	3 to 26	p-value=	.947604
randoml.rnd	using bits	4 to 27	p-value=	.603316
randoml.rnd	using bits	5 to 28	p-value=	.404901
randoml.rnd	using bits	6 to 29	p-value=	.109261
randoml.rnd	using bits	7 to 30	p-value=	.985951
randoml.rnd	using bits	8 to 31	p-value=	.472060
randoml.rnd	using bits	9 to 32	p-value=	.625848

The 9 p-values were

.593267	.107447	.947604	.603316	.404901
.109261	.985951	.472060	.625848	

A KSTEST for the 9 p-values yields .318210

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OPERM5 test for file randoml.rnd  
chisquare for 99 degrees of freedom= 89.709; p-value= .262816  
OPERM5 test for file randoml.rnd  
chisquare for 99 degrees of freedom=152.555; p-value= .999550

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Binary rank test for randoml.rnd

Rank test for 31x31 binary matrices:

rows from leftmost 31 bits of each 32-bit integer

rank	observed	expected	(o-e)^2/e	sum
28	218	211.4	.204914	.205
29	5156	5134.0	.094185	.299
30	23053	23103.0	.108414	.408
31	11573	11551.5	.039926	.447

chisquare= .447 for 3 d. of f.; p-value= .321500

Binary rank test for randoml.rnd

Rank test for 32x32 binary matrices:

rows from leftmost 32 bits of each 32-bit integer

rank	observed	expected	(o-e)^2/e	sum
29	229	211.4	1.462156	1.462
30	5136	5134.0	.000771	1.463
31	23003	23103.0	.433249	1.896
32	11632	11551.5	.560646	2.457

chisquare= 2.457 for 3 d. of f.; p-value= .575363

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b-rank test for bits 1 to 8 p=1-exp(-SUM/2)= .20470  
b-rank test for bits 2 to 9 p=1-exp(-SUM/2)= .87377  
b-rank test for bits 3 to 10 p=1-exp(-SUM/2)= .85521  
b-rank test for bits 4 to 11 p=1-exp(-SUM/2)= .85184  
b-rank test for bits 5 to 12 p=1-exp(-SUM/2)= .47468  
b-rank test for bits 6 to 13 p=1-exp(-SUM/2)= .45049  
b-rank test for bits 7 to 14 p=1-exp(-SUM/2)= .63148  
b-rank test for bits 8 to 15 p=1-exp(-SUM/2)= .33762  
b-rank test for bits 9 to 16 p=1-exp(-SUM/2)= .70448  
b-rank test for bits 10 to 17 p=1-exp(-SUM/2)= .98693  
b-rank test for bits 11 to 18 p=1-exp(-SUM/2)= .38301  
b-rank test for bits 12 to 19 p=1-exp(-SUM/2)= .77424  
b-rank test for bits 13 to 20 p=1-exp(-SUM/2)= .19559  
b-rank test for bits 14 to 21 p=1-exp(-SUM/2)= .83643  
b-rank test for bits 15 to 22 p=1-exp(-SUM/2)= .97464  
b-rank test for bits 16 to 23 p=1-exp(-SUM/2)= .61118  
b-rank test for bits 17 to 24 p=1-exp(-SUM/2)= .39601  
b-rank test for bits 18 to 25 p=1-exp(-SUM/2)= .20623  
b-rank test for bits 19 to 26 p=1-exp(-SUM/2)= .41534  
b-rank test for bits 20 to 27 p=1-exp(-SUM/2)= .05149  
b-rank test for bits 21 to 28 p=1-exp(-SUM/2)= .60561  
b-rank test for bits 22 to 29 p=1-exp(-SUM/2)= .43207  
b-rank test for bits 23 to 30 p=1-exp(-SUM/2)= .22691  
b-rank test for bits 24 to 31 p=1-exp(-SUM/2)= .57188  
b-rank test for bits 25 to 32 p=1-exp(-SUM/2)= .18231

TEST SUMMARY, 25 tests on 100,000 random 6x8 matrices

These should be 25 uniform [0,1] random variables:

.204699	.873775	.855207	.851840	.474677
.450495	.631475	.337619	.704484	.986931
.383012	.774241	.195591	.836428	.974637
.611181	.396012	.206226	.415338	.051491
.605614	.432068	.226909	.571883	.182315

brank test summary for random1.rnd

The KS test for those 25 supposed UNI's yields

KS p-value= .216763

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No. missing words should average 141909. with sigma=428.

tst no 1:	142430 missing words,	1.22 sigmas from mean,	p-value= .88811
tst no 2:	141743 missing words,	-.39 sigmas from mean,	p-value= .34878
tst no 3:	142125 missing words,	.50 sigmas from mean,	p-value= .69284
tst no 4:	141399 missing words,	-1.19 sigmas from mean,	p-value= .11656
tst no 5:	142473 missing words,	1.32 sigmas from mean,	p-value= .90608
tst no 6:	142025 missing words,	.27 sigmas from mean,	p-value= .60652
tst no 7:	141884 missing words,	-.06 sigmas from mean,	p-value= .47641
tst no 8:	141421 missing words,	-1.14 sigmas from mean,	p-value= .12694
tst no 9:	141800 missing words,	-.26 sigmas from mean,	p-value= .39919
tst no 10:	141922 missing words,	.03 sigmas from mean,	p-value= .51181
tst no 11:	142200 missing words,	.68 sigmas from mean,	p-value= .75148
tst no 12:	141368 missing words,	-1.26 sigmas from mean,	p-value= .10297
tst no 13:	141865 missing words,	-.10 sigmas from mean,	p-value= .45876
tst no 14:	141820 missing words,	-.21 sigmas from mean,	p-value= .41734
tst no 15:	141514 missing words,	-.92 sigmas from mean,	p-value= .17783
tst no 16:	141954 missing words,	.10 sigmas from mean,	p-value= .54156
tst no 17:	141892 missing words,	-.04 sigmas from mean,	p-value= .48385
tst no 18:	142352 missing words,	1.03 sigmas from mean,	p-value= .84950
tst no 19:	141930 missing words,	.05 sigmas from mean,	p-value= .51926
tst no 20:	141494 missing words,	-.97 sigmas from mean,	p-value= .16593

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OPSO for random1.rnd	using bits 23 to 32	145604	12.740	1.0000
OPSO for random1.rnd	using bits 22 to 31	145613	12.771	1.0000
OPSO for random1.rnd	using bits 21 to 30	145280	11.623	1.0000
OPSO for random1.rnd	using bits 20 to 29	145466	12.264	1.0000
OPSO for random1.rnd	using bits 19 to 28	145499	12.378	1.0000
OPSO for random1.rnd	using bits 18 to 27	145334	11.809	1.0000
OPSO for random1.rnd	using bits 17 to 26	144227	7.992	1.0000
OPSO for random1.rnd	using bits 16 to 25	144505	8.951	1.0000
OPSO for random1.rnd	using bits 15 to 24	145465	12.261	1.0000
OPSO for random1.rnd	using bits 14 to 23	145633	12.840	1.0000
OPSO for random1.rnd	using bits 13 to 22	145240	11.485	1.0000
OPSO for random1.rnd	using bits 12 to 21	145423	12.116	1.0000
OPSO for random1.rnd	using bits 11 to 20	145343	11.840	1.0000
OPSO for random1.rnd	using bits 10 to 19	145664	12.947	1.0000
OPSO for random1.rnd	using bits 9 to 18	144932	10.423	1.0000
OPSO for random1.rnd	using bits 8 to 17	144929	10.413	1.0000
OPSO for random1.rnd	using bits 7 to 16	144836	10.092	1.0000
OPSO for random1.rnd	using bits 6 to 15	145392	12.009	1.0000
OPSO for random1.rnd	using bits 5 to 14	145535	12.502	1.0000
OPSO for random1.rnd	using bits 4 to 13	145304	11.706	1.0000
OPSO for random1.rnd	using bits 3 to 12	145508	12.409	1.0000
OPSO for random1.rnd	using bits 2 to 11	145218	11.409	1.0000
OPSO for random1.rnd	using bits 1 to 10	144918	10.375	1.0000
OQSO for random1.rnd	using bits 28 to 32	141905	-.015	.4941
OQSO for random1.rnd	using bits 27 to 31	141887	-.076	.4698
OQSO for random1.rnd	using bits 26 to 30	141739	-.577	.2818
OQSO for random1.rnd	using bits 25 to 29	142220	1.053	.8539
OQSO for random1.rnd	using bits 24 to 28	142047	.467	.6796
OQSO for random1.rnd	using bits 23 to 27	141589	-1.086	.1388
OQSO for random1.rnd	using bits 22 to 26	141701	-.706	.2400
OQSO for random1.rnd	using bits 21 to 25	142280	1.257	.8955
OQSO for random1.rnd	using bits 20 to 24	141995	.290	.6142
OQSO for random1.rnd	using bits 19 to 23	142181	.921	.8215
OQSO for random1.rnd	using bits 18 to 22	141856	-.181	.4283
OQSO for random1.rnd	using bits 17 to 21	141756	-.520	.3016
OQSO for random1.rnd	using bits 16 to 20	141993	.284	.6117

QQSO for random1.rnd	using bits 15 to 19	142123	.724	.7656
QQSO for random1.rnd	using bits 14 to 18	141345	-1.913	.0279
QQSO for random1.rnd	using bits 13 to 17	141578	-1.123	.1307
QQSO for random1.rnd	using bits 12 to 16	142048	.470	.6808
QQSO for random1.rnd	using bits 11 to 15	141894	-.052	.4793
QQSO for random1.rnd	using bits 10 to 14	141380	-1.794	.0364
QQSO for random1.rnd	using bits 9 to 13	142128	.741	.7707
QQSO for random1.rnd	using bits 8 to 12	142013	.351	.6374
QQSO for random1.rnd	using bits 7 to 11	142072	.551	.7093
QQSO for random1.rnd	using bits 6 to 10	141935	.087	.5347
QQSO for random1.rnd	using bits 5 to 9	142196	.972	.8344
QQSO for random1.rnd	using bits 4 to 8	142523	2.080	.9812
QQSO for random1.rnd	using bits 3 to 7	141940	.104	.5414
QQSO for random1.rnd	using bits 2 to 6	142166	.870	.8079
QQSO for random1.rnd	using bits 1 to 5	141570	-1.150	.1250
DNA for random1.rnd	using bits 31 to 32	141482	-1.261	.1037
DNA for random1.rnd	using bits 30 to 31	141713	-.579	.2812
DNA for random1.rnd	using bits 29 to 30	141606	-.895	.1855
DNA for random1.rnd	using bits 28 to 29	142105	.577	.7181
DNA for random1.rnd	using bits 27 to 28	141948	.114	.5454
DNA for random1.rnd	using bits 26 to 27	141590	-.942	.1731
DNA for random1.rnd	using bits 25 to 26	141874	-.104	.4585
DNA for random1.rnd	using bits 24 to 25	142046	.403	.6566
DNA for random1.rnd	using bits 23 to 24	142384	1.400	.9193
DNA for random1.rnd	using bits 22 to 23	141913	.011	.5043
DNA for random1.rnd	using bits 21 to 22	142223	.925	.8226
DNA for random1.rnd	using bits 20 to 21	142066	.462	.6780
DNA for random1.rnd	using bits 19 to 20	142416	1.495	.9325
DNA for random1.rnd	using bits 18 to 19	141424	-1.432	.0761
DNA for random1.rnd	using bits 17 to 18	141642	-.789	.2152
DNA for random1.rnd	using bits 16 to 17	142795	2.613	.9955
DNA for random1.rnd	using bits 15 to 16	141645	-.780	.2178
DNA for random1.rnd	using bits 14 to 15	141905	-.013	.4949
DNA for random1.rnd	using bits 13 to 14	141843	-.196	.4224
DNA for random1.rnd	using bits 12 to 13	141748	-.476	.3171
DNA for random1.rnd	using bits 11 to 12	142109	.589	.7221
DNA for random1.rnd	using bits 10 to 11	141782	-.376	.3536
DNA for random1.rnd	using bits 9 to 10	141612	-.877	.1902
DNA for random1.rnd	using bits 8 to 9	142231	.949	.8287
DNA for random1.rnd	using bits 7 to 8	142133	.660	.7453
DNA for random1.rnd	using bits 6 to 7	142643	2.164	.9848
DNA for random1.rnd	using bits 5 to 6	141757	-.449	.3266
DNA for random1.rnd	using bits 4 to 5	141295	-1.812	.0350
DNA for random1.rnd	using bits 3 to 4	141590	-.942	.1731
DNA for random1.rnd	using bits 2 to 3	141929	.058	.5231
DNA for random1.rnd	using bits 1 to 2	141930	.061	.5243

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Test results for random1.rnd

Chi-square with  $5^5-5^4=2500$  d.of f. for sample size:2560000

chisquare equiv normal p-value

Results fo COUNT-THE-1's in successive bytes:

byte stream for random1.rnd	20226.84	250.695	1.000000
byte stream for random1.rnd	20142.94	249.509	1.000000

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Chi-square with  $5^5-5^4=2500$  d.of f. for sample size: 256000

chisquare equiv normal p value

Results for COUNT-THE-1's in specified bytes:

bits 1 to 8	2619.11	1.685	.953960
bits 2 to 9	2472.59	-.388	.349153
bits 3 to 10	2526.35	.373	.645308
bits 4 to 11	2527.80	.393	.652921
bits 5 to 12	2551.06	.722	.764896
bits 6 to 13	2625.23	1.771	.961724
bits 7 to 14	2466.64	-.472	.318558
bits 8 to 15	2448.36	-.730	.232594
bits 9 to 16	2577.81	1.100	.864412
bits 10 to 17	2572.70	1.028	.848041
bits 11 to 18	2514.17	.200	.579402

bits 12 to 19	2551.31	.726	.765986
bits 13 to 20	2464.16	-.507	.306138
bits 14 to 21	2522.68	.321	.625780
bits 15 to 22	2550.75	.718	.763542
bits 16 to 23	2417.05	-1.173	.120371
bits 17 to 24	2418.23	-1.156	.123752
bits 18 to 25	2442.21	-.817	.206895
bits 19 to 26	2376.93	-1.741	.040885
bits 20 to 27	2511.59	.164	.565110
bits 21 to 28	2489.77	-.145	.442470
bits 22 to 29	2529.89	.423	.663761
bits 23 to 30	2558.46	.827	.795805
bits 24 to 31	2614.30	1.616	.947002
bits 25 to 32	2414.73	-1.206	.113925

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CDPARK: result of ten tests on file random1.rnd  
 Of 12,000 tries, the average no. of successes  
 should be 3523 with sigma=21.9

Successes: 3492	z-score: -1.416	p-value: .078457
Successes: 3500	z-score: -1.050	p-value: .146807
Successes: 3509	z-score: -.639	p-value: .261324
Successes: 3534	z-score: .502	p-value: .692266
Successes: 3504	z-score: -.868	p-value: .192812
Successes: 3551	z-score: 1.279	p-value: .899470
Successes: 3534	z-score: .502	p-value: .692266
Successes: 3553	z-score: 1.370	p-value: .914635
Successes: 3540	z-score: .776	p-value: .781201
Successes: 3528	z-score: .228	p-value: .590298

square size	avg. no. parked	sample sigma
100.	3524.500	20.643

KSTEST for the above 10: p= .124157

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This is the MINIMUM DISTANCE test  
 for random integers in the file random1.rnd

Sample no.	d^2	avg	equiv uni
5	1.2827	1.4229	.724501
10	.9545	1.1590	.616833
15	.1435	.9816	.134262
20	.2530	.9616	.224531
25	5.5192	1.1333	.996101
30	1.7530	1.1817	.828268
35	.1209	1.1443	.114420
40	.3892	1.0964	.323752
45	.0698	1.0960	.067789
50	1.1561	1.1091	.687101
55	.3429	1.0802	.291497
60	1.1106	1.0624	.672460
65	.1068	1.0068	.101809
70	.8425	.9585	.571187
75	.8776	.9427	.586040
80	1.9094	.9381	.853238
85	.5327	.9477	.414562
90	.2417	.9515	.215641
95	.1957	.9256	.178521
100	.6721	.9252	.491088

MINIMUM DISTANCE TEST for random1.rnd

Result of KS test on 20 transformed mindist^2's:  
 p-value= .662928

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The 3DSPHERES test for file random1.rnd

sample no: 1	r^3= 89.198	p-value= .94886
sample no: 2	r^3= 4.867	p-value= .14976
sample no: 3	r^3= 16.298	p-value= .41915
sample no: 4	r^3= 41.684	p-value= .75079
sample no: 5	r^3= 8.161	p-value= .23816
sample no: 6	r^3= .295	p-value= .00979
sample no: 7	r^3= 37.863	p-value= .71694

