Tarea 2 Simulacion

Mauricio Arce Fernandez

September 6, 2016

1 Haskell

1.1 Promedio

$$promedio = 0.500370689921$$

1.2 Varianza

$$varianza = 0.0834313322169$$

$$desviacion\_estandar = 0.288844823767$$

1.3 Prueba de Corridas

$$corridas = 667439$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 1.83333448391$$

1.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1498544	1499999.0	-1455.0	2117025.0	1.4113509409
1	0.09	1349251	1349999.1	-748.1	559653.61	0.414558506002
2	0.081	1214131	1214999.19	-868.19	753753.8761	0.620373974159
3	0.0729	1093869	1093499.271	369.729	136699.533441	0.125011087859
4	0.06561	985008	984149.3439	858.6561	737290.298067	0.749165055728
5	0.059049	886709	885734.40951	974.59049	949826.623198	1.07236053268
6	0.0531441	796990	797160.968559	-170.968559	29230.2481666	0.0366679369907
7	0.04782969	719469	717444.871703	2024.1282969	4097095.36231	5.71067621208
8	0.043046721	645363	645700.384533	-337.38453279	113828.322966	0.176286596218
9	0.0387420489	581034	581130.34608	-96.3460795112	9282.56703718	0.015973296008
10	0.03486784401	523369	523017.311472	351.68852844	123684.821036	0.236483225934
11	0.031381059609	470100	470715.580324	-615.580324404	378939.135793	0.805027816441
12	0.0282429536481	423962	423644.022292	317.977708036	101109.822808	0.238666940846
13	0.0254186582833	381912	381279.620063	632.379937233	399904.385014	1.0488480474
14	0.022876792455	343192	343151.658056	40.3419435094	1627.47240612	0.0047427205082
15	0.0205891132095	308294	308836.492251	-542.492250842	294297.842223	0.952924442569
16	0.0185302018885	278282	277952.843026	329.156974243	108344.313693	0.389793867597
17	0.0166771816997	249822	250157.558723	-335.558723182	112599.656703	0.450114948667
18	0.0150094635297	224800	225141.802851	-341.802850863	116829.188858	0.518913801787
19	0.0135085171767	201978	202627.622566	-649.622565777	422009.477967	2.0826848414
20	0.121576654591	1823911	1823648.60309	262.396908006	68852.137331	0.0377551559079

$$Total = 14999990$$

$$X2(0) = 17.0983799477$$

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1.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	9965	10002.8	-37.8	1428.84	0.142844003679
1	0.09	9084	9002.52	81.48	6638.9904	0.737459111449
2	0.081	8144	8102.268	41.732	1741.559824	0.214947200463
3	0.0729	7151	7292.0412	-141.0412	19892.6200974	2.72799063415
4	0.06561	6627	6562.83708	64.16292	4116.88030293	0.627301920304
5	0.059049	5950	5906.553372	43.446628	1887.60948457	0.319578841617
6	0.0531441	5325	5315.8980348	9.1019652	82.845770502	0.0155845296429
7	0.04782969	4758	4784.30823132	-26.30823132	692.123035187	0.144665226763
8	0.043046721	4242	4305.87740819	-63.877408188	4080.32327682	0.947617149772
9	0.0387420489	3847	3875.28966737	-28.2896673692	800.30527986	0.206514957217
10	0.03486784401	3497	3487.76070063	9.23929936772	85.3646528063	0.024475490188
11	0.031381059609	3072	3138.98463057	-66.9846305691	4486.94073247	1.429424244
12	0.0282429536481	2899	2825.08616751	73.9138324879	5463.25463304	1.93383645988
13	0.0254186582833	2562	2542.57755076	19.4224492391	377.231534444	0.148365792946
14	0.022876792455	2276	2288.31979568	-12.3197956848	151.777365716	0.0663269906603
15	0.0205891132095	2081	2059.48781612	21.5121838836	462.774055444	0.224703468417
16	0.0185302018885	1831	1853.5390345	-22.5390345047	508.008076405	0.274074657694
17	0.0166771816997	1653	1668.18513105	-15.1851310542	230.588205135	0.138226987426
18	0.0150094635297	1519	1501.36661795	17.6333820512	310.936162563	0.207102088754
19	0.0135085171767	1366	1351.22995615	14.7700438461	218.154195214	0.161448607782
20	0.121576654591	12179	12161.0696054	17.9303946145	321.499051033	0.0264367412954

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 10.7189251041$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/
0	0.15	22357	22496.1	-139.1	19348.81	0.86009619
1	0.1275	19187	19121.685	65.315	4266.049225	0.223100063
2	0.108375	16415	16253.43225	161.56775	26104.1378401	1.60606925
3	0.09211875	13965	13815.4174125	149.5825875	22374.9504832	1.61956384
4	0.0783009375	11693	11743.1048006	-50.104800625	2510.49104567	0.21378426
5	0.066555796875	9977	9981.63908053	-4.63908053125	21.5210681754	0.002156065
6	0.0565724273437	8372	8484.39321845	-112.393218452	12632.2355539	1.48887907
7	0.0480865632422	7192	7211.73423568	-19.7342356838	389.440058025	0.054000888
8	0.0408735787559	6119	6129.97410033	-10.9741003313	120.43087808	0.019646229
9	0.0347425419425	5151	5210.47798528	-59.4779852816	3537.63073315	0.67894552
10	0.0295311606511	4365	4428.90628749	-63.9062874893	4084.01358067	0.922126889
11	0.0251014865534	3805	3764.57034437	40.4296556341	1634.55705469	0.434194849
12	0.0213362635704	3207	3199.88479271	7.11520728896	50.6261747649	0.015821249
13	0.0181358240349	2680	2719.9020738	-39.9020738044	1592.17549389	0.58537971
14	0.0154154504296	2312	2311.91676273	0.0832372662735	0.00692844249669	2.9968390767
15	0.0131031328652	2026	1965.12924832	60.8707516763	3705.24840964	1.88549858
16	0.0111376629354	1661	1670.35986108	-9.35986107512	87.6069993455	0.052447979
17	0.0094670134951	1408	1419.80588191	-11.8058819138	139.378847764	0.098167537
18	0.00804696147083	1161	1206.83499963	-45.8349996268	2100.84719079	1.74079073
19	0.00683991725021	1064	1025.80974968	38.1902503172	1458.49521929	1.42179894
20	0.0387595310845	5857	5812.92191487	44.078085131	1942.87758882	0.334234248

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 14.2567051452$$

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Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	39582	39850.4	-268.4	72038.56	1.80772489109
1	0.16	31852	31880.32	-28.32	802.0224	0.025157288258
2	0.128	25479	25504.256	-25.256	637.865536	0.025010160500
3	0.1024	20282	20403.4048	-121.4048	14739.125463	0.72238558257
4	0.08192	16482	16322.72384	159.27616	25368.8951443	1.55420721401
5	0.065536	13028	13058.179072	-30.179072	910.776386781	0.06974757979
6	0.0524288	10437	10446.5432576	-9.54325760001	91.0737656201	0.008718076723
7	0.04194304	8504	8357.23460608	146.76539392	21540.0808525	2.5774172759
8	0.033554432	6640	6685.78768486	-45.787684864	2096.51208521	0.31357742483
9	0.0268435456	5451	5348.63014789	102.369852109	10479.5866208	1.9593029114
10	0.02147483648	4266	4278.90411831	-12.904118313	166.516269435	0.03891563466
11	0.017179869184	3356	3423.12329465	-67.1232946504	4505.53668472	1.31620636971
12	0.0137438953472	2789	2738.49863572	50.5013642797	2550.38779411	0.93130876928
13	0.0109951162778	2196	2190.79890858	5.20109142376	27.0513519983	0.012347711098
14	0.00879609302221	1838	1752.63912686	85.360873139	7286.47866305	4.15743238376
15	0.00703687441777	1414	1402.11130149	11.8886985112	141.34115229	0.10080594325
16	0.00562949953421	1153	1121.68904119	31.310958809	980.376141537	0.87401775851
17	0.00450359962737	906	897.351232953	8.64876704717	74.8011714363	0.083357740747
18	0.0036028797019	705	717.880986362	-12.8809863623	165.919809665	0.23112439640
19	0.00288230376152	575	574.30478909	0.695210910191	0.483318209648	0.0008415709198
20	0.0115292150461	2317	2297.21915636	19.7808436408	391.28177514	0.17032844866

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 16.9799351321$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62258	62506.0	-248.0	61504.0	0.983969538924
1	0.1875	47050	46879.5	170.5	29070.25	0.620105803176
2	0.140625	35412	35159.625	252.375	63693.140625	1.81154209196
3	0.10546875	26383	26369.71875	13.28125	176.391601563	0.00668917265425
4	0.0791015625	19731	19777.2890625	-46.2890625	2142.67730713	0.108340293776
5	0.059326171875	14712	14832.9667969	-120.966796875	14632.9659462	0.986516463401
6	0.0444946289062	11061	11124.7250977	-63.7250976562	4060.8880713	0.365032666933
7	0.0333709716797	8231	8343.54382324	-112.543823242	12666.11215	1.51807342519
8	0.0250282287598	6286	6257.65786743	28.3421325684	803.276478523	0.128366953825
9	0.0187711715698	4754	4693.24340057	60.7565994263	3691.36437384	0.786527366851
10	0.0140783786774	3609	3519.93255043	89.0674495697	7933.01057285	2.25373937119
11	0.010558784008	2625	2639.94941282	-14.9494128227	223.484943744	0.0846550099251
12	0.00791908800602	1982	1979.96205962	2.03794038296	4.15320100449	0.00209761645902
13	0.00593931600451	1504	1484.97154471	19.0284552872	362.082110618	0.24383100936
14	0.00445448700339	1178	1113.72865853	64.2713414654	4130.80533376	3.7089871955
15	0.00334086525254	825	835.296493901	-10.2964939009	106.017786652	0.12692234126
16	0.0025056489394	586	626.472370426	-40.4723704257	1638.01276788	2.61466082975
17	0.00187923670455	456	469.854277819	-13.8542778193	191.941013894	0.408511793879
18	0.00140942752842	346	352.390708364	-6.39070836446	40.8411533996	0.115897361736
19	0.00105707064631	236	264.293031273	-28.2930312733	800.495618634	3.02881848522
20	0.00317121193893	799	792.87909382	6.12090617997	37.465492464	0.0472524660519

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 19.950537257$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/
0	0.3	90170	90215.1	-45.1	2034.01	0.022546225
1	0.21	63423	63150.57	272.43	74218.1049	1.17525629
2	0.147	44128	44205.399	-77.399	5990.605201	0.13551750
3	0.1029	30992	30943.7793	48.2207	2325.23590849	0.075143888
4	0.07203	21904	21660.64551	243.35449	59221.4078032	2.73405553
5	0.050421	15095	15162.451857	-67.451857	4549.75301275	0.300067103
6	0.0352947	10509	10613.7162999	-104.7162999	10965.5034647	1.03314457
7	0.02470629	7398	7429.60140993	-31.60140993	998.649109564	0.13441489
8	0.017294403	5180	5200.72098695	-20.720986951	429.359300223	0.082557649
9	0.0121060821	3576	3640.50469087	-64.5046908657	4160.85514368	1.14293360
10	0.00847425747	2560	2548.35328361	11.646716394	135.646002763	0.053228884
11	0.005931980229	1712	1783.84729852	-71.8472985242	5162.03430522	2.89376467
12	0.0041523861603	1219	1248.69310897	-29.6931089669	881.680720122	0.70608279
13	0.00290667031221	826	874.085176277	-48.0851762769	2312.18417758	2.64526185
14	0.00203466921855	588	611.859623394	-23.8596233938	569.281628494	0.93041215
15	0.00142426845298	428	428.301736376	-0.301736375658	0.0910448403955	0.0002125717
16	0.000996987917088	300	299.811215463	0.188784537039	0.0356396014251	0.0001188734
17	0.000697891541962	207	209.867850824	-2.86785082407	8.22456834913	0.039189272
18	0.000488524079373	133	146.907495577	-13.9074955769	193.41843322	1.31660016
19	0.000341966855561	117	102.835246904	14.1647530962	200.640230276	1.95108424
20	0.000797922662976	252	239.948909442	12.0510905578	145.228783633	0.60524877

$$Intervalo = [0.7, 1]$$

$$X2(0) = 17.9768415554$$

1.6 Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	302772	302400.0	372.0	138384.0	0.457619047619
Un Par	0.504	503841	504000.0	-159.0	25281.0	0.0501607142857
Dos Pares	0.108	107966	108000.0	-34.0	1156.0	0.0107037037037
Tercia	0.072	71841	72000.0	-159.0	25281.0	0.351125
Full House	0.009	9034	9000.0	34.0	1156.0	0.128444444444
Poker	0.0045	4445	4500.0	-55.0	3025.0	0.672222222222
Quintilla	0.0001	101	100.0	1.0	1.0	0.01

$$Total = 1000000$$

$$X2(0) = 1.68027513228$$

1.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	39950	39999.96	-49.96	2496.0016	0.0624001024001
2	39757	39999.96	-242.96	59029.5616	1.47574051574
3	40153	39999.96	153.04	23421.2416	0.585531625532
4	39661	39999.96	-338.96	114893.8816	2.87234991235
5	40433	39999.96	433.04	187523.6416	4.6880957281
6	39637	39999.96	-362.96	131739.9616	3.2935023335
7	39634	39999.96	-365.96	133926.7216	3.34817138817
8	40035	39999.96	35.04	1227.8016	0.0306950706951
9	40243	39999.96	243.04	59068.4416	1.47671251671
10	39877	39999.96	-122.96	15119.1616	0.377979417979
11	40223	39999.96	223.04	49746.8416	1.24367228367
12	40220	39999.96	220.04	48417.6016	1.21044125044
13	39785	39999.96	-214.96	46207.8016	1.1551961952
14	39865	39999.96	-134.96	18214.2016	0.455355495355
15	40072	39999.96	72.04	5189.7616	0.129744169744
16	40036	39999.96	36.04	1298.8816	0.0324720724721
17	39853	39999.96	-146.96	21597.2416	0.539931579932
18	40014	39999.96	14.04	197.1216	0.00492804492805
19	40288	39999.96	288.04	82967.0416	2.07417811418
20	39998	39999.96	-1.96	3.8416	9.604009604e-05
21	40108	39999.96	108.04	11672.6416	0.291816331816
22	39962	39999.96	-37.96	1440.9616	0.0360240760241
23	40179	39999.96	179.04	32055.3216	0.801383841384
24	40131	39999.96	131.04	17171.4816	0.429287469287
25	39885	39999.96	-114.96	13215.8016	0.330395370395

$$Total = 999999$$

$$X2(0) = 26.9461009461$$

2 Java

2.1 Promedio

$$promedio = 0.49969946313$$

2.2 Varianza

$$varianza = 0.0834215178054$$

$$desviacion\_estandar = 0.288827834194$$

2.3 Prueba de Corridas

$$corridas = 667580$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 2.167746078$$

2.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1627406	1627084.4	321.6	103426.56	0.0635655777905
1	0.09	1463220	1464375.96	-1155.96	1336243.5216	0.91250031283
2	0.081	1317242	1317938.364	-696.364	484922.820496	0.367940439206
3	0.0729	1187679	1186144.5276	1534.4724	2354605.54636	1.98509160694
4	0.06561	1067657	1067530.07484	126.92516	16109.996241	0.0150909062149
5	0.059049	960115	960777.067356	-662.067356	438333.183881	0.456227775177
6	0.0531441	865027	864699.36062	327.6393796	107347.563065	0.124144376593
7	0.04782969	778407	778229.424558	177.57544164	31533.0374736	0.0405189478559
8	0.043046721	701430	700406.482103	1023.51789748	1047588.88645	1.4956870235
9	0.0387420489	629042	630365.833892	-1323.83389227	1752536.17433	2.78018902691
10	0.03486784401	567953	567329.250503	623.749496955	389063.434952	0.685780672523
11	0.031381059609	511314	510596.325453	717.67454726	515056.755785	1.00873572744
12	0.0282429536481	458973	459536.692907	-563.692907466	317749.693928	0.691456631934
13	0.0254186582833	413192	413583.023617	-391.02361672	152899.468832	0.369694741083
14	0.022876792455	374208	372224.721255	1983.27874495	3933394.58018	10.5672577762
15	0.0205891132095	336428	335002.24913	1425.75087046	2032765.54461	6.06791611069
16	0.0185302018885	300692	301502.024217	-810.024216589	656139.23146	2.17623491307
17	0.0166771816997	270323	271351.821795	-1028.82179493	1058474.28572	3.90074508703
18	0.0150094635297	243423	244216.639615	-793.639615437	629863.839191	2.57911926142
19	0.0135085171767	218847	219794.975654	-947.975653893	898657.840374	4.08861866701
20	0.121576654591	1978266	1978154.78089	111.219114962	12369.691533	0.0062531464436

$$Total = 16270844$$

$$X2(0) = 40.3827687279$$

2.5   Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	10086	10054.9	31.1	967.21	0.09619290097
1	0.09	9048	9049.41	-1.41	1.9881	0.000219693880
2	0.081	7998	8144.469	-146.469	21453.167961	2.6340781653
3	0.0729	7480	7330.0221	149.9779	22493.3704884	3.0686633930
4	0.06561	6598	6597.01989	0.98011	0.960615612099	0.000145613569
5	0.059049	5938	5937.317901	0.682098999999	0.465259045799	7.83618215425e
6	0.0531441	5318	5343.5861109	-25.5861109	654.649070987	0.12251118583
7	0.04782969	4793	4809.22749981	-16.22749981	263.331750084	0.05475551948
8	0.043046721	4448	4328.30474983	119.695250171	14326.9529135	3.3100610381
9	0.0387420489	3861	3895.47427485	-34.4742748461	1188.47562616	0.305091381
10	0.03486784401	3469	3505.92684736	-36.9268473615	1363.59205606	0.38893910660
11	0.031381059609	3210	3155.33416263	54.6658373747	2988.35377587	0.94707996739
12	0.0282429536481	2838	2839.80074636	-1.80074636281	3.24268746317	0.00114187147
13	0.0254186582833	2597	2555.82067173	41.1793282735	1695.73707705	0.66348046083
14	0.022876792455	2393	2300.23860455	92.7613954461	8604.67648511	3.7407756169
15	0.0205891132095	2051	2070.2147441	-19.2147440985	369.20639077	0.17834207384
16	0.0185302018885	1846	1863.19326969	-17.1932696886	295.608522586	0.15865692915
17	0.0166771816997	1661	1676.87394272	-15.8739427198	251.982057471	0.15026893259
18	0.0150094635297	1509	1509.18654845	-0.186548447797	0.0348003233755	2.30589938741e
19	0.0135085171767	1371	1358.2678936	12.732106397	162.106533304	0.11934798287
20	0.121576654591	12036	12224.4110424	-188.411042427	35498.7209085	2.90392075211

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 18.8437740059$$

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Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.15	22447	22518.3	-71.3	5083.69	0.22575816114
1	0.1275	19205	19140.555	64.445	4153.158025	0.216982110759
2	0.108375	16383	16269.47175	113.52825	12888.6635481	0.792199264126
3	0.09211875	13810	13829.0509875	-19.0509875	362.940124725	0.0262447600383
4	0.0783009375	11867	11754.6933394	112.306660625	12612.7860207	1.07300000575
5	0.066555796875	9942	9991.48933847	-49.4893384687	2449.19462207	0.245128082422
6	0.0565724273437	8371	8492.7659377	-121.765937698	14826.9435836	1.74583212258
7	0.0480865632422	7346	7218.85104704	127.148952956	16166.8562379	2.23953315182
8	0.0408735787559	6097	6136.02338999	-39.0233899871	1522.82496609	0.248177829402
9	0.0347425419425	5088	5215.61988149	-127.619881489	16286.8341513	3.12270344108
10	0.0295311606511	4368	4433.27689927	-65.2768992657	4261.07357774	0.961156651065
11	0.0251014865534	3746	3768.28536438	-22.2853643758	496.637465364	0.131794016997
12	0.0213362635704	3308	3203.04255972	104.957440281	11016.0642702	3.43925004581
13	0.0181358240349	2611	2722.58617576	-111.586175762	12451.4746211	4.57339963449
14	0.0154154504296	2333	2314.1982494	18.8017506027	353.505825726	0.152755204018
15	0.0131031328652	1960	1967.06851199	-7.06851198772	49.9638617205	0.0254001634493
16	0.0111376629354	1717	1672.00823519	44.9917648104	2024.25890076	1.21067519774
17	0.0094670134951	1469	1421.20699991	47.7930000889	2284.1708575	1.60720490234
18	0.00804696147083	1236	1208.02594992	27.9740500755	782.547477629	0.647790287682
19	0.00683991725021	989	1026.82205744	-37.8220574358	1430.50802868	1.3931411176
20	0.0387595310845	5829	5818.65832547	10.3416745305	106.950232096	0.0183805657788

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 24.0965067161$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	39667	39922.6	-255.6	65331.36	1.63645053178
1	0.16	31945	31938.08	6.91999999999	47.8863999999	0.00149993512446
2	0.128	25632	25550.464	81.536	6648.119296	0.260195638561
3	0.1024	20587	20440.3712	146.6288	21500.0049894	1.05184024199
4	0.08192	16189	16352.29696	-163.29696	26665.8971452	1.63071262774
5	0.065536	13043	13081.837568	-38.837568	1508.35668815	0.115301591257
6	0.0524288	10356	10465.4700544	-109.4700544	11983.6928103	1.14506971479
7	0.04194304	8473	8372.37604352	100.62395648	10125.1806177	1.20935569127
8	0.033554432	6853	6697.90083482	155.099165184	24055.7510408	3.59153586087
9	0.0268435456	5402	5358.32066785	43.6793321472	1907.88405683	0.356060074618
10	0.02147483648	4192	4286.65653428	-94.6565342822	8959.85948233	2.09017433766
11	0.017179869184	3431	3429.32522743	1.67477257421	2.80486317531	0.00081790526978
12	0.0137438953472	2753	2743.46018194	9.53981805936	91.0081286058	0.0331727535923
13	0.0109951162778	2234	2194.76814555	39.2318544475	1539.13840339	0.701276080805
14	0.00879609302221	1797	1755.81451644	41.185483558	1696.24405591	0.966072463818
15	0.00703687441777	1429	1404.65161315	24.3483868464	592.843942022	0.422057637972
16	0.00562949953421	1136	1123.72129052	12.2787094771	150.766706423	0.134167348875
17	0.00450359962737	880	898.977032418	-18.9770324183	360.127759406	0.400597286047
18	0.0036028797019	762	719.181625935	42.8183740654	1833.4131576	2.54930478128
19	0.00288230376152	573	575.345300748	-2.34530074772	5.50043559724	0.00956023381100
20	0.0115292150461	2279	2301.38120299	-22.3812029909	500.918247318	0.217659832568

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 18.5228819858$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62539	62503.0	36.0	1296.0	0.0207350047198
1	0.1875	47214	46877.25	336.75	113400.5625	2.4190958834
2	0.140625	34963	35157.9375	-194.9375	38000.6289062	1.08085489674
3	0.10546875	26391	26368.453125	22.546875	508.361572266	0.0192791579338
4	0.0791015625	19491	19776.3398437	-285.33984375	81418.8264313	4.1169815585
5	0.059326171875	14806	14832.2548828	-26.2548828125	689.318871498	0.0464743140503
6	0.0444946289062	11212	11124.1911621	87.8088378906	7710.3920117	0.693119337787
7	0.0333709716797	8132	8343.14337158	-211.143371582	44581.523363	5.34349241976
8	0.0250282287598	6337	6257.35752869	79.6424713135	6342.92323692	1.01367441573
9	0.0187711715698	4727	4693.01814651	33.9818534851	1154.76636628	0.246060494597
10	0.0140783786774	3599	3519.76360989	79.2363901138	6278.40551827	1.78375772186
11	0.010558784008	2666	2639.82270741	26.1772925854	685.2506471	0.25958207162
12	0.00791908800602	2015	1979.86703056	35.132969439	1234.3255416	0.623438606003
13	0.00593931600451	1468	1484.90027292	-16.9002729207	285.619224795	0.192349095763
14	0.00445448700339	1128	1113.67520469	14.3247953095	205.199760658	0.184254583198
15	0.00334086525254	820	835.256403518	-15.2564035179	232.757848301	0.278666344036
16	0.0025056489394	655	626.442302638	28.5576973616	815.542078595	1.30186303696
17	0.00187923670455	468	469.831726979	-1.83172697882	3.35522372495	0.00714133067711
18	0.00140942752842	339	352.373795234	-13.3737952341	178.858398964	0.507581441592
19	0.00105707064631	268	264.280346426	3.71965357441	13.8358227136	0.0523528249481
20	0.00317121193893	774	792.841039277	-18.8410392768	354.984761029	0.447737621343

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 20.6384921612$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.3	89732	89909.7	-177.7	31577.29	0.351211159641
1	0.21	63080	62936.79	143.21	20509.1041	0.325868289438
2	0.147	43968	44055.753	-87.753	7700.589009	0.174791905361
3	0.1029	30815	30839.0271	-24.0271	577.30153441	0.0187198361523
4	0.07203	21672	21587.31897	84.68103	7170.87684186	0.332180056811
5	0.050421	15155	15111.123279	43.876721	1925.16664571	0.127400631321
6	0.0352947	10421	10577.7862953	-156.7862953	24581.9423939	2.32392125419
7	0.02470629	7475	7404.45040671	70.54959329	4977.24511338	0.672196427823
8	0.017294403	5288	5183.1152847	104.884715303	11000.8035042	2.12243079691
9	0.0121060821	3612	3628.18069929	-16.1806992879	261.815029445	0.0721615187184
10	0.00847425747	2484	2539.7264895	-55.7264895015	3105.44163216	1.22274648274
11	0.005931980229	1848	1777.80854265	70.1914573489	4926.84068477	2.77129992717
12	0.0041523861603	1263	1244.46597986	18.5340201443	343.509902708	0.276029966482
13	0.00290667031221	844	871.126185899	-27.126185899	735.829961428	0.844688144312
14	0.00203466921855	597	609.788330129	-12.7883301293	163.541387496	0.268193698396
15	0.00142426845298	449	426.851831091	22.1481689095	490.541386043	1.14920764142
16	0.000996987917088	302	298.796281763	3.20371823663	10.2638105397	0.0343505296625
17	0.000697891541962	198	209.157397234	-11.1573972344	124.487513045	0.595185801178
18	0.000488524079373	149	146.410178064	2.58982193595	6.70717765993	0.0458108701773
19	0.000341966855561	101	102.487124645	-1.48712464483	2.21153970927	0.0215787077346
20	0.000797922662976	246	239.136624171	6.86337582872	47.1059277663	0.196983326705

$$Intervalo = [0.7, 1]$$

$$X2(0) = 13.9469569723$$

2.6 Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	301985	302400.0	-415.0	172225.0	0.569527116402
Un Par	0.504	504198	504000.0	198.0	39204.0	0.0777857142857
Dos Pares	0.108	108151	108000.0	151.0	22801.0	0.21112037037
Tercia	0.072	72015	72000.0	15.0	225.0	0.003125
Full House	0.009	9033	9000.0	33.0	1089.0	0.121
Poker	0.0045	4524	4500.0	24.0	576.0	0.128
Quintilla	0.0001	94	100.0	-6.0	36.0	0.36

$$Total = 1000000$$

$$X2(0) = 1.47055820106$$

2.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	39868	39999.96	-131.96	17413.4416	0.435336475336
2	40234	39999.96	234.04	54774.7216	1.36936940937
3	40195	39999.96	195.04	38040.6016	0.951015991016
4	39821	39999.96	-178.96	32026.6816	0.800667840668
5	40153	39999.96	153.04	23421.2416	0.585531625532
6	39970	39999.96	-29.96	897.6016	0.0224400624401
7	39888	39999.96	-111.96	12535.0416	0.313376353376
8	40006	39999.96	6.04	36.4816	0.000912040912041
9	39978	39999.96	-21.96	482.2416	0.0120560520561
10	40114	39999.96	114.04	13005.1216	0.325128365128
11	40184	39999.96	184.04	33870.7216	0.846768886769
12	40043	39999.96	43.04	1852.4416	0.0463110863111
13	39938	39999.96	-61.96	3839.0416	0.0959761359761
14	40083	39999.96	83.04	6895.6416	0.172391212391
15	39921	39999.96	-78.96	6234.6816	0.155867195867
16	40116	39999.96	116.04	13465.2816	0.336632376632
17	39743	39999.96	-256.96	66028.4416	1.65071269071
18	39824	39999.96	-175.96	30961.9216	0.774048814049
19	39882	39999.96	-117.96	13914.5616	0.347864387864
20	40046	39999.96	46.04	2119.6816	0.0529920929921
21	40134	39999.96	134.04	17966.7216	0.449168489168
22	40048	39999.96	48.04	2307.8416	0.0576960976961
23	40205	39999.96	205.04	42041.4016	1.05103609104
24	39847	39999.96	-152.96	23396.7616	0.58491962492
25	39758	39999.96	-241.96	58544.6416	1.46361750362

$$Total = 999999$$

$$X2(0) = 12.9018369018$$

3 Perl

3.1 Promedio

$$promedio = 0.500276715338$$

3.2 Varianza

$$varianza = 0.0832995808976$$

$$desviacion\_estandar = 0.288616667741$$

3.3 Prueba de Corridas

$$corridas = 667635$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 2.29819031682$$

3.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1598220	1599999.0	-1779.0	3164841.0	1.97802686127
1	0.09	1440537	1439999.1	537.9	289336.41	0.20092818808
2	0.081	1294730	1295999.19	-1269.19	1610843.2561	1.24293538802
3	0.0729	1166456	1166399.271	56.7289999998	3218.17944098	0.0027590718898
4	0.06561	1049856	1049759.3439	96.6561	9342.40166721	0.0088995651446
5	0.059049	946565	944783.40951	1781.59049	3174064.67406	3.35956859753
6	0.0531441	851277	850305.068559	971.931441	944650.726004	1.11095506887
7	0.04782969	766314	765274.561703	1039.4382969	1080431.97306	1.41182266749
8	0.043046721	687497	688747.105533	-1250.10553279	1562763.84311	2.26899515157
9	0.0387420489	619642	619872.39498	-230.394979511	53081.8465839	0.0856335062085
10	0.03486784401	558352	557885.155482	466.84451844	217943.804397	0.390660698275
11	0.031381059609	501514	502096.639933	-582.639933404	339469.291997	0.67610349283
12	0.0282429536481	451362	451886.97594	-524.975940064	275599.737646	0.609886436918
13	0.0254186582833	407421	406698.278346	722.721653943	522326.589078	1.2843098112
14	0.022876792455	347230	366028.450511	-18798.4505115	353381741.631	965.448836389
15	0.0205891132095	478808	329425.60546	149382.39454	22315099798.4	67739.4210667
16	0.0185302018885	271142	296483.044914	-25341.0449143	642168557.347	2165.95373112
17	0.0166771816997	244375	266834.740423	-22459.7404228	504439939.862	1890.4582629
18	0.0150094635297	220981	240151.266381	-19170.2663806	367499113.102	1530.2818038
19	0.0135085171767	200924	216136.139743	-15212.1397425	231409195.546	1070.66405378
20	0.121576654591	1896787	1945225.25768	-48438.2576826	2346264807.32	1206.16612295

$$Total = 15999990$$

$$X2(0) = 76583.0253621$$

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3.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	9970	9973.3	-3.3	10.89	0.00109191541416
1	0.09	8950	8975.97	-25.97	674.4409	0.0751384975663
2	0.081	8018	8078.373	-60.373	3644.899129	0.451192230044
3	0.0729	7313	7270.5357	42.4643	1803.21677449	0.248017044259
4	0.06561	6493	6543.48213	-50.48213	2548.44544934	0.389463193863
5	0.059049	5894	5889.133917	4.866083	23.6787637629	0.00402075485065
6	0.0531441	5333	5300.2205253	32.7794747	1074.49396161	0.202726274592
7	0.04782969	4643	4770.19847277	-127.19847277	16179.451475	3.39177742129
8	0.043046721	4251	4293.17862549	-42.178625493	1779.03644848	0.414386775783
9	0.0387420489	3940	3863.86076294	76.1392370563	5797.18341952	1.50036033263
10	0.03486784401	3504	3477.47468665	26.5253133507	703.592248351	0.202328503225
11	0.031381059609	3161	3129.72721798	31.2727820156	977.986894995	0.31248311015
12	0.0282429536481	2828	2816.75449619	11.245503814	126.461356032	0.0448961228971
13	0.0254186582833	2548	2535.07904657	12.9209534326	166.951037608	0.065856343941
14	0.022876792455	2310	2281.57114191	28.4288580894	808.199972266	0.354229573393
15	0.0205891132095	2043	2053.41402772	-10.4140277196	108.451973344	0.0528154438802
16	0.0185302018885	1845	1848.07262495	-3.07262494761	9.44102406866	0.00510857849481
17	0.0166771816997	1646	1663.26536245	-17.2653624528	298.092740628	0.179221396271
18	0.0150094635297	1512	1496.93882621	15.0611737924	226.838956006	0.151535221102
19	0.0135085171767	1332	1347.24494359	-15.2449435868	232.408304965	0.172506347915
20	0.121576654591	12199	12125.2044923	73.7955077187	5445.77695947	0.449128669371

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 8.66828375093$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.15	22449	22482.0	-33.0	1089.0	0.0484387510008
1	0.1275	19115	19109.7	5.3	28.09	0.00146993411723
2	0.108375	16361	16243.245	117.755	13866.240025	0.853661939163
3	0.09211875	13561	13806.75825	-245.75825	60397.1174431	4.37446041637
4	0.0783009375	11683	11735.7445125	-52.7445125	2781.98359886	0.237052161105
5	0.066555796875	9984	9975.38283562	8.617164375	74.2555218658	0.00744387690071
6	0.0565724273437	8511	8479.07541028	31.9245897188	1019.17942871	0.120199358939
7	0.0480865632422	7226	7207.21409874	18.7859012609	352.910086186	0.0489662276368
8	0.0408735787559	6293	6126.13198393	166.868016072	27844.9347877	4.54527177357
9	0.0347425419425	5265	5207.21218634	57.787813661	3339.43140772	0.641308878575
10	0.0295311606511	4449	4426.13035839	22.8696416119	523.020507456	0.118166539416
11	0.0251014865534	3617	3762.21080463	-145.21080463	21086.1777813	5.60473053645
12	0.0213362635704	3206	3197.87918394	8.12081606458	65.9476535547	0.0206223092749
13	0.0181358240349	2770	2718.19730635	51.8026936549	2683.5190699	0.987242193066
14	0.0154154504296	2286	2310.46771039	-24.4677103933	598.668851892	0.259111542308
15	0.0131031328652	1961	1963.89755383	-2.89755383434	8.3958182229	0.00427507952566
16	0.0111376629354	1624	1669.31292076	-45.3129207592	2053.26078773	1.23000353151
17	0.0094670134951	1433	1418.91598265	14.0840173547	198.359544847	0.139796539946
18	0.00804696147083	1195	1206.07858525	-11.0785852485	122.735051109	0.101763726352
19	0.00683991725021	1042	1025.16679746	16.8332025388	283.356707711	0.276400590043
20	0.0387595310845	5849	5809.27851895	39.721481053	1577.79605704	0.271599313391

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 19.8919852187$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	39980	39983.4	-3.4	11.56	0.00028911998479
1	0.16	32128	31986.72	141.28	19960.0384	0.624010164218
2	0.128	25596	25589.376	6.62399999999	43.8773759999	0.00171467158871
3	0.1024	20394	20471.5008	-77.5008	6006.37400064	0.293401742223
4	0.08192	16348	16377.20064	-29.20064	852.67737641	0.0520649038351
5	0.065536	12957	13101.760512	-144.760512	20955.6058345	1.59944961712
6	0.0524288	10537	10481.4084096	55.5915904	3090.4249232	0.294848249627
7	0.04194304	8249	8385.12672768	-136.12672768	18530.4859889	2.20992318789
8	0.033554432	6905	6708.10138214	196.898617856	38769.0657136	5.7794394427
9	0.0268435456	5409	5366.48110572	42.5188942848	1807.8563712	0.33687929494
10	0.02147483648	4253	4293.18488457	-40.1848845722	1614.82494808	0.376136828833
11	0.017179869184	3458	3434.54790766	23.4520923423	550.00063523	0.160137709538
12	0.0137438953472	2693	2747.63832613	-54.6383261262	2985.34668187	1.08651369923
13	0.0109951162778	2179	2198.1106609	-19.1106609009	365.217360071	0.166150579481
14	0.00879609302221	1717	1758.48852872	-41.4885287208	1721.29801541	0.978850863853
15	0.00703687441777	1449	1406.79082298	42.2091770234	1781.61462499	1.26643890186
16	0.00562949953421	1117	1125.43265838	-8.43265838129	71.1097273755	0.0631843467896
17	0.00450359962737	859	900.346126705	-41.346126705	1709.50219351	1.8987166633
18	0.0036028797019	744	720.276901364	23.723098636	562.785408892	0.781345907146
19	0.00288230376152	585	576.221521091	8.77847890878	77.0616919519	0.133736226662
20	0.0115292150461	2360	2304.88608436	55.1139156351	3037.54369664	1.31787150664

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 19.4211036274$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62332	62456.0	-124.0	15376.0	0.246189317279
1	0.1875	46816	46842.0	-26.0	675.999999999	0.0144314931045
2	0.140625	35185	35131.5	53.5	2862.25	0.0814724677284
3	0.10546875	26445	26348.625	96.375	9288.140625	0.352509500021
4	0.0791015625	19653	19761.46875	-108.46875	11765.4697266	0.595374254586
5	0.059326171875	14802	14821.1015625	-19.1015625	364.869689941	0.024618257179
6	0.0444946289062	11267	11115.8261719	151.173828125	22853.52631	2.05594491643
7	0.0333709716797	8386	8336.86962891	49.1303710938	2413.79336381	0.289532339026
8	0.0250282287598	6221	6252.65222168	-31.6522216797	1001.86313726	0.160230107439
9	0.0187711715698	4636	4689.48916626	-53.4891662598	2861.09090716	0.610107157886
10	0.0140783786774	3574	3517.11687469	56.8831253052	3235.68994448	0.919983628569
11	0.010558784008	2618	2637.83765602	-19.8376560211	393.532596412	0.149187572447
12	0.00791908800602	1953	1978.37824202	-25.3782420158	644.055167814	0.325547033493
13	0.00593931600451	1452	1483.78368151	-31.7836815119	1010.20241045	0.680828629561
14	0.00445448700339	1129	1112.83776113	16.1622388661	261.217965165	0.234731399569
15	0.00334086525254	831	834.62832085	-3.62832085043	13.1647121937	0.0157731434038
16	0.0025056489394	593	625.971240638	-32.9712406378	1087.1027092	1.73666558241
17	0.00187923670455	492	469.478430478	22.5215695216	507.221093718	1.08039275244
18	0.00140942752842	341	352.108822859	-11.1088228588	123.405945308	0.350476719969
19	0.00105707064631	270	264.081617144	5.91838285592	35.0272556292	0.132637992784
20	0.00317121193893	828	792.244851432	35.7551485678	1278.4306491	1.61368123351

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 11.6703154988$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.3	89979	90192.3	-213.3	45496.89	0.504443173
1	0.21	63673	63134.61	538.39	289863.7921	4.591202703
2	0.147	44398	44194.227	203.773	41523.435529	0.939566960
3	0.1029	30878	30935.9589	-57.9589	3359.23408921	0.108586712
4	0.07203	21498	21655.17123	-157.17123	24702.7955397	1.140734251
5	0.050421	15241	15158.619861	82.380139	6786.48730166	0.447698231
6	0.0352947	10394	10611.0339027	-217.0339027	47103.7149212	4.439125852
7	0.02470629	7332	7427.72373189	-95.72373189	9163.03284695	1.233625963
8	0.017294403	5144	5199.40661232	-55.406612323	3069.89268911	0.590431354
9	0.0121060821	3712	3639.58462863	72.4153713739	5243.98601122	1.440819913
10	0.00847425747	2440	2547.70924004	-107.709240038	11601.2803896	4.553612401
11	0.005931980229	1767	1783.39646803	-16.3964680268	268.844163753	0.150748399
12	0.0041523861603	1244	1248.37752762	-4.37752761875	19.1627480529	0.015350122
13	0.00290667031221	880	873.864269333	6.13573066687	37.6471908164	0.043081279
14	0.00203466921855	612	611.704988533	0.295011466812	0.0870317655505	0.000142277
15	0.00142426845298	439	428.193491973	10.8065080268	116.780615733	0.272728609
16	0.000996987917088	320	299.735444381	20.2645556187	410.652214425	1.370048895
17	0.000697891541962	201	209.814811067	-8.81481106688	77.7008941449	0.370330834
18	0.000488524079373	153	146.870367747	6.12963225318	37.5723915592	0.255820095
19	0.000341966855561	105	102.809257423	2.19074257723	4.79935303968	0.046682109
20	0.000797922662976	231	239.88826732	-8.8882673198	79.0012959483	0.329325384

$$Intervalo = [0.7, 1]$$

$$X2(0) = 22.8441055276$$

3.6 Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	303137	302400.0	737.0	543169.0	1.79619378307
Un Par	0.504	503589	504000.0	-411.0	168921.0	0.335160714286
Dos Pares	0.108	107713	108000.0	-287.0	82369.0	0.762675925926
Tercia	0.072	71868	72000.0	-132.0	17424.0	0.242
Full House	0.009	9050	9000.0	50.0	2500.0	0.277777777778
Poker	0.0045	4529	4500.0	29.0	841.0	0.186888888889
Quintilla	0.0001	114	100.0	14.0	196.0	1.96

$$Total = 1000000$$

$$X2(0) = 5.56069708995$$

3.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	39903	39999.96	-96.96	9401.2416	0.235031275031
2	39852	39999.96	-147.96	21892.1616	0.547304587305
3	40001	39999.96	1.04	1.0816	2.70400270401e-05
4	39811	39999.96	-188.96	35705.8816	0.892647932648
5	40214	39999.96	214.04	45813.1216	1.14532918533
6	39821	39999.96	-178.96	32026.6816	0.800667840668
7	39886	39999.96	-113.96	12986.8816	0.324672364672
8	39976	39999.96	-23.96	574.0816	0.0143520543521
9	40092	39999.96	92.04	8471.3616	0.211784251784
10	40209	39999.96	209.04	43697.7216	1.09244413244
11	39824	39999.96	-175.96	30961.9216	0.774048814049
12	39833	39999.96	-166.96	27875.6416	0.696891736892
13	39910	39999.96	-89.96	8092.8016	0.20232024232
14	40198	39999.96	198.04	39219.8416	0.980497020497
15	39839	39999.96	-160.96	25908.1216	0.647703687704
16	40171	39999.96	171.04	29254.6816	0.731367771368
17	40207	39999.96	207.04	42865.5616	1.07164011164
18	39847	39999.96	-152.96	23396.7616	0.58491962492
19	40210	39999.96	210.04	44116.8016	1.10292114292
20	40073	39999.96	73.04	5334.8416	0.133371173371
21	40062	39999.96	62.04	3848.9616	0.0962241362241
22	40206	39999.96	206.04	42452.4816	1.06131310131
23	39870	39999.96	-129.96	16889.6016	0.42224046224
24	40197	39999.96	197.04	38824.7616	0.97062001062
25	39787	39999.96	-212.96	45351.9616	1.1338001738

$$Total = 999999$$

$$X2(0) = 15.8741398741$$

4 Python

4.1 Promedio

$$promedio = 0.499429555805$$

4.2 Varianza

$$varianza = 0.0832946542162$$

$$desviacion\_estandar = 0.288608132623$$

4.3 Prueba de Corridas

$$corridas = 666860$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 0.460112406051$$

4.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1601930	1599999.0	1931.0	3728761.0	2.33047708155
1	0.09	1439058	1439999.1	-941.1	885669.21	0.615048446905
2	0.081	1297883	1295999.19	1883.81	3548740.1161	2.73822710962
3	0.0729	1165829	1166399.271	-570.271	325209.013441	0.278814486194
4	0.06561	1048437	1049759.3439	-1322.3439	1748593.38987	1.66570881224
5	0.059049	944894	944783.40951	110.59049	12230.2564784	0.012945037302
6	0.0531441	851346	850305.068559	1040.931441	1083538.26486	1.27429355055
7	0.04782969	765519	765274.561703	244.4382969	59750.0809913	0.0780766589946
8	0.043046721	688381	688747.105533	-366.10553279	134033.26114	0.194604463762
9	0.0387420489	619803	619872.39498	-69.3949795112	4815.66318135	0.0077687976111
10	0.03486784401	557613	557885.155482	-272.15548156	74068.6061432	0.132766762864
11	0.031381059609	502468	502096.639933	371.360066596	137908.299062	0.274664851532
12	0.0282429536481	450121	451886.97594	-1765.97594006	3118671.02088	6.90144037543
13	0.0254186582833	406001	406698.278346	-697.278346057	486197.09188	1.19547369086
14	0.022876792455	366994	366028.450511	965.549488548	932285.814836	2.5470310123
15	0.0205891132095	328766	329425.60546	-659.605460306	435079.363266	1.32072114631
16	0.0185302018885	294926	296483.044914	-1557.04491428	2424388.86507	8.17715854805
17	0.0166771816997	267716	266834.740423	881.259577152	776618.442322	2.91048474832
18	0.0150094635297	239276	240151.266381	-875.266380563	766091.236945	3.19003621547
19	0.0135085171767	215511	216136.139743	-625.139742507	390799.697662	1.80811824495
20	0.121576654591	1947518	1945225.25768	2292.74231744	5256667.33416	2.7023437586

$$Total = 15999990$$

$$X2(0) = 40.3562037994$$

4.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	9889	9986.3	-97.3	9467.29	0.948027798083
1	0.09	9105	8987.67	117.33	13766.3289	1.53169051601
2	0.081	8097	8088.903	8.097	65.561409	0.0081051051051
3	0.0729	7275	7280.0127	-5.0127	25.12716129	0.0034515271230
4	0.06561	6450	6552.01143	-102.01143	10406.3318506	1.58826521624
5	0.059049	5867	5896.810287	-29.810287	888.653211022	0.150700661505
6	0.0531441	5321	5307.1292583	13.8707417	192.397475308	0.0362526454405
7	0.04782969	4763	4776.41633247	-13.41633247	179.997976946	0.0376847335778
8	0.043046721	4342	4298.77469922	43.225300777	1868.42662726	0.434641673033
9	0.0387420489	3959	3868.8972293	90.1027706993	8118.50928769	2.0984039654
10	0.03486784401	3514	3482.00750637	31.9924936294	1023.51964863	0.293945273453
11	0.031381059609	3134	3133.80675573	0.193244266432	0.037343346509	1.19162888524e-0
12	0.0282429536481	2829	2820.42608016	8.57391983979	73.5121014191	0.0260641829744
13	0.0254186582833	2482	2538.38347214	-56.3834721442	3179.09593103	1.2524096402
14	0.022876792455	2218	2284.54512493	-66.5451249298	4428.25365192	1.9383524552
15	0.0205891132095	2118	2056.09061244	61.9093875632	3832.77226845	1.86410669125
16	0.0185302018885	1797	1850.48155119	-53.4815511931	2860.27631802	1.54569296634
17	0.0166771816997	1645	1665.43339607	-20.4333960738	417.523675109	0.250699713416
18	0.0150094635297	1502	1498.89005647	3.10994353358	9.67174878204	0.0064526072077
19	0.0135085171767	1354	1349.00105082	4.99894918022	24.9894929064	0.0185244428766
20	0.121576654591	12202	12141.0094574	60.990542622	3719.84628932	0.306386903196

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 14.3398706339$$

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Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.15	22813	22660.8	152.2	23164.84	1.0222428157
1	0.1275	19433	19261.68	171.32	29350.5424	1.5237789434
2	0.108375	16552	16372.428	179.572	32246.103184	1.9695370279
3	0.09211875	13916	13916.5638	-0.563799999998	0.317870439998	2.28411585335e
4	0.0783009375	11797	11829.07923	-32.07923	1029.07699739	0.08699552834
5	0.066555796875	10097	10054.7173455	42.2826545	1787.82287157	0.1778093615
6	0.0565724273437	8496	8546.50974367	-50.509743675	2551.23420611	0.29851182326
7	0.0480865632422	7104	7264.53328212	-160.533282124	25770.9346694	3.5475003924
8	0.0408735787559	6163	6174.85328981	-11.8532898052	140.500479206	0.02275365463
9	0.0347425419425	5218	5248.62529633	-30.6252963344	937.90877557	0.17869608185
10	0.0295311606511	4456	4461.33150188	-5.33150188425	28.4249123417	0.006371396595
11	0.0251014865534	3872	3792.1317766	79.8682233984	6378.93310882	1.6821496415
12	0.0213362635704	3141	3223.31201011	-82.3120101114	6775.26700857	2.1019581682
13	0.0181358240349	2745	2739.81520859	5.18479140534	26.8820619169	0.009811633219
14	0.0154154504296	2276	2328.84292731	-52.8429273055	2792.37496621	1.1990396318
15	0.0131031328652	1966	1979.51648821	-13.5164882096	182.695453521	0.09229296881
16	0.0111376629354	1644	1682.58901498	-38.5890149782	1489.11207699	0.88501236114
17	0.0094670134951	1469	1430.20066273	38.7993372685	1505.38857248	1.0525715808
18	0.00804696147083	1246	1215.67056332	30.3294366783	919.87472922	0.75668092736
19	0.00683991725021	983	1033.31997882	-50.3199788235	2532.1002688	2.4504512839
20	0.0387595310845	5685	5855.47988	-170.47988	29063.3894847	4.9634513447

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 24.0276394089$$

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Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	39985	39955.2	29.8	888.04	0.0222258930002
1	0.16	31842	31964.16	-122.16	14923.0656	0.466868692936
2	0.128	25442	25571.328	-129.328	16725.731584	0.654081461237
3	0.1024	20409	20457.0624	-48.0624	2309.99429376	0.112919159584
4	0.08192	16653	16365.64992	287.35008	82570.068476	5.04532779814
5	0.065536	12903	13092.519936	-189.519936	35917.8061414	2.74338372727
6	0.0524288	10542	10474.0159488	67.9840512	4621.83121756	0.441266391053
7	0.04194304	8387	8379.21275904	7.78724096	60.6411217691	0.00723709058511
8	0.033554432	6756	6703.37020723	52.629792768	2769.8950868	0.41320932623
9	0.0268435456	5303	5362.69616579	-59.6961657856	3563.6322095	0.664522490056
10	0.02147483648	4276	4290.15693263	-14.1569326285	200.418741447	0.0467159464315
11	0.017179869184	3483	3432.1255461	50.8744538972	2588.21005934	0.754112873953
12	0.0137438953472	2743	2745.70043688	-2.70043688223	7.2923593549	0.00265591950853
13	0.0109951162778	2216	2196.56034951	19.4396504942	377.900011337	0.172041715777
14	0.00879609302221	1783	1757.2482796	25.7517203954	663.151103321	0.377380425418
15	0.00703687441777	1480	1405.79862368	74.2013763163	5505.84424723	3.91652414114
16	0.00562949953421	1121	1124.63889895	-3.63889894696	13.2415855462	0.0117740774915
17	0.00450359962737	863	899.711119158	-36.7111191576	1347.7062698	1.49793221525
18	0.0036028797019	715	719.768895326	-4.76889532606	22.7423626309	0.0315967566514
19	0.00288230376152	563	575.815116261	-12.8151162608	164.227204779	0.285208220731
20	0.0115292150461	2311	2303.26046504	7.73953495662	59.9004013448	0.0260067857083

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 17.6929911081$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62328	62503.0	-175.0	30625.0	0.489976481129
1	0.1875	46794	46877.25	-83.25	6930.5625	0.147844903445
2	0.140625	35360	35157.9375	202.0625	40829.2539063	1.16130970158
3	0.10546875	26410	26368.453125	41.546875	1726.14282227	0.0654624226186
4	0.0791015625	19673	19776.3398437	-103.33984375	10679.1233063	0.539994932867
5	0.059326171875	15152	14832.2548828	319.745117188	102236.939965	6.89287911872
6	0.0444946289062	11174	11124.1911621	49.8088378906	2480.92033201	0.223020289373
7	0.0333709716797	8258	8343.14337158	-85.143371582	7249.39372436	0.868904368712
8	0.0250282287598	6213	6257.35752869	-44.3575286865	1967.59035118	0.314444290926
9	0.0187711715698	4644	4693.01814651	-49.0181465149	2402.77868776	0.511990069661
10	0.0140783786774	3508	3519.76360989	-11.7636098862	138.382517554	0.0393158555209
11	0.010558784008	2635	2639.82270741	-4.82270741463	23.2585068071	0.00881063214653
12	0.00791908800602	1977	1979.86703056	-2.86703056097	8.21986423754	0.00415172539906
13	0.00593931600451	1470	1484.90027292	-14.9002729207	222.018133112	0.149517201364
14	0.00445448700339	1076	1113.67520469	-37.6752046905	1419.42104847	1.27453771306
15	0.00334086525254	808	835.256403518	-27.2564035179	742.911532731	0.889441289647
16	0.0025056489394	617	626.442302638	-9.44230263843	89.1570791157	0.142322890297
17	0.00187923670455	468	469.831726979	-1.83172697882	3.35522372495	0.00714133067711
18	0.00140942752842	339	352.373795234	-13.3737952341	178.858398964	0.507581441592
19	0.00105707064631	285	264.280346426	20.7196535744	429.304044244	1.62442667436
20	0.00317121193893	823	792.841039277	30.1589607232	909.562911906	1.14721976644

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 17.0102930995$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.3	89357	89781.6	-424.6	180285.16	2.0080412913
1	0.21	62773	62847.12	-74.12	5493.7744	0.08741489506
2	0.147	44093	43992.984	100.016	10003.200256	0.22738171747
3	0.1029	30970	30795.0888	174.9112	30593.9278854	0.99346775987
4	0.07203	21450	21556.56216	-106.56216	11355.4939439	0.52677666594
5	0.050421	15107	15089.593512	17.406488	302.985824494	0.02007912434
6	0.0352947	10647	10562.7154584	84.2845416	7103.88395272	0.67254334178
7	0.02470629	7494	7393.90082088	100.09917912	10019.8456605	1.3551501302
8	0.017294403	5250	5175.73057462	74.269425384	5515.94754687	1.06573313032
9	0.0121060821	3655	3623.01140223	31.9885977688	1023.27038721	0.28243642473
10	0.00847425747	2563	2536.10798156	26.8920184382	723.180655678	0.28515373199
11	0.005931980229	1782	1775.27558709	6.72441290671	45.21772894	0.02547082225
12	0.0041523861603	1267	1242.69291097	24.3070890347	590.834577341	0.47544696853
13	0.00290667031221	869	869.885037676	-0.88503767571	0.783291687427	0.000900454259
14	0.00203466921855	592	608.919526373	-16.919526373	286.270372687	0.47012841646
15	0.00142426845298	412	426.243668461	-14.2436684611	202.88209123	0.47597678567
16	0.000996987917088	319	298.370567923	20.6294320772	425.573467829	1.4263252263
17	0.000697891541962	199	208.859397546	-9.85939754594	97.2077199688	0.46542181539
18	0.000488524079373	140	146.201578282	-6.20157828216	38.4595731897	0.26305853633
19	0.000341966855561	108	102.341104798	5.65889520249	32.0230949128	0.31290550337
20	0.000797922662976	225	238.795911194	-13.7959111942	190.327165678	0.79702857867

$$Intervalo = [0.7, 1]$$

$$X2(0) = 12.2368413203$$

4.6   Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	302714	302400.0	314.0	98596.0	0.326044973545
Un Par	0.504	503210	504000.0	-790.0	624100.0	1.23829365079
Dos Pares	0.108	107881	108000.0	-119.0	14161.0	0.13112037037
Tercia	0.072	72534	72000.0	534.0	285156.0	3.9605
Full House	0.009	9104	9000.0	104.0	10816.0	1.20177777778
Poker	0.0045	4459	4500.0	-41.0	1681.0	0.373555555556
Quintilla	0.0001	98	100.0	-2.0	4.0	0.04

$$Total = 1000000$$

$$X2(0) = 7.27129232804$$

4.7   Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	40392	39999.96	392.04	153695.3616	3.84238788239
2	40215	39999.96	215.04	46242.2016	1.15605619606
3	39850	39999.96	-149.96	22488.0016	0.562200602201
4	40102	39999.96	102.04	10412.1616	0.260304300304
5	39912	39999.96	-87.96	7736.9616	0.193424233424
6	39790	39999.96	-209.96	44083.2016	1.10208114208
7	40320	39999.96	320.04	102425.6016	2.56064260064
8	39948	39999.96	-51.96	2699.8416	0.0674961074961
9	40431	39999.96	431.04	185795.4816	4.64489168489
10	40184	39999.96	184.04	33870.7216	0.846768886769
11	40180	39999.96	180.04	32414.4016	0.810360850361
12	39985	39999.96	-14.96	223.8016	0.00559504559504
13	39647	39999.96	-352.96	124580.7616	3.11452215452
14	39589	39999.96	-410.96	168888.1216	4.22220726221
15	39997	39999.96	-2.96	8.76159999999	0.00021904021904
16	40220	39999.96	220.04	48417.6016	1.21044125044
17	40062	39999.96	62.04	3848.9616	0.0962241362241
18	40111	39999.96	111.04	12329.8816	0.308247348247
19	39890	39999.96	-109.96	12091.2016	0.30228034228
20	39743	39999.96	-256.96	66028.4416	1.65071269071
21	39890	39999.96	-109.96	12091.2016	0.30228034228
22	40091	39999.96	91.04	8288.2816	0.207207247207
23	39842	39999.96	-157.96	24951.3616	0.623784663785
24	40013	39999.96	13.04	170.0416	0.00425104425104
25	39595	39999.96	-404.96	163992.6016	4.09981913982

$$Total = 999999$$

$$X2(0) = 32.1944061944$$

5   Prolog

5.1   Promedio

$$promedio = 0.500044705163$$

5.2   Varianza

$$varianza = 0.0832954517906$$

$$desviacion\_estandar = 0.28860951438$$

5.3 Prueba de Corridas

$$corridas = 666849$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 0.434023558286$$

5.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1597239	1599999.0	-2760.0	7617600.0	4.76100297563
1	0.09	1440024	1439999.1	24.8999999999	620.009999995	0.0004305627690
2	0.081	1294728	1295999.19	-1271.19	1615924.0161	1.24685572998
3	0.0729	1168256	1166399.271	1856.729	3447442.57944	2.95562820138
4	0.06561	1049808	1049759.3439	48.6561	2367.41606721	0.0022551988519
5	0.059049	946029	944783.40951	1245.59049	1551495.66878	1.64217073793
6	0.0531441	851734	850305.068559	1428.931441	2041845.06308	2.40130882265
7	0.04782969	767229	765274.561703	1954.4382969	3819829.05639	4.99144914459
8	0.043046721	688575	688747.105533	-172.10553279	29620.314417	0.043006081882
9	0.0387420489	619540	619872.39498	-332.394979511	110486.422404	0.17824059161
10	0.03486784401	557514	557885.155482	-371.15548156	137756.391492	0.246926074549
11	0.031381059609	500925	502096.639933	-1171.6399334	1372740.13355	2.73401577379
12	0.0282429536481	451697	451886.97594	-189.975940064	36090.8578031	0.079867001539
13	0.0254186582833	406500	406698.278346	-198.278346057	39314.3025152	0.096667000104
14	0.022876792455	365692	366028.450511	-336.450511452	113198.946656	0.30926269938
15	0.0205891132095	329409	329425.60546	-16.6054603065	275.741311989	0.0008370366705
16	0.0185302018885	296285	296483.044914	-198.044914276	39221.7880705	0.13229015535
17	0.0166771816997	267086	266834.740423	251.259577152	63131.3751105	0.23659353729
18	0.0150094635297	239885	240151.266381	-266.266380563	70897.7854183	0.29522136812
19	0.0135085171767	215815	216136.139743	-321.139742507	103130.734218	0.47715636237
20	0.121576654591	1946020	1945225.25768	794.742317436	631615.351124	0.32470036497

$$Total = 15999990$$

$$X2(0) = 23.1558854214$$

5.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	10109	9982.6	126.4	15976.96	1.60048083666
1	0.09	8980	8984.34	-4.34	18.8356	0.00209649234112
2	0.081	8028	8085.906	-57.906	3353.104836	0.414685112095
3	0.0729	7176	7277.3154	-101.3154	10264.8102772	1.4105215609
4	0.06561	6530	6549.58386	-19.58386	383.5275725	0.058557548189
5	0.059049	5850	5894.625474	-44.625474	1991.43292972	0.337838754728
6	0.0531441	5364	5305.1629266	58.8370734	3461.80120628	0.652534380974
7	0.04782969	4814	4774.64663394	39.35336606	1548.68742025	0.3243564475
8	0.043046721	4399	4297.18197055	101.818029454	10366.9111219	2.41249060267
9	0.0387420489	3877	3867.46377349	9.5362265086	90.9396160233	0.0235140188375
10	0.03486784401	3442	3480.71739614	-38.7173961423	1499.03676404	0.430668909144
11	0.031381059609	3030	3132.64565653	-102.645656528	10536.1308041	3.36333309263
12	0.0282429536481	2827	2819.38109088	7.61890912477	58.0477762515	0.0205888364788
13	0.0254186582833	2475	2537.44298179	-62.4429817877	3899.12597454	1.53663589784
14	0.022876792455	2303	2283.69868361	19.3013163911	372.540814428	0.163130458979
15	0.0205891132095	2074	2055.32881525	18.671184752	348.613140042	0.169614291132
16	0.0185302018885	1858	1849.79593372	8.20406627676	67.3067034735	0.0363860154769
17	0.0166771816997	1606	1664.81634035	-58.8163403509	3459.36189227	2.07792403788
18	0.0150094635297	1493	1498.33470632	-5.33470631582	28.4590914761	0.0189938145036
19	0.0135085171767	1386	1348.50123568	37.4987643158	1406.15732521	1.04275568164
20	0.121576654591	12205	12136.5111212	68.4888788418	4690.72652501	0.386497114219

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 16.4836039048$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.15	22645	22476.15	168.85	28510.3225	1.26847002267
1	0.1275	19136	19104.7275	31.2725	977.96925625	0.0511899086888
2	0.108375	15982	16239.018375	-257.018375	66058.4450876	4.06788412712
3	0.09211875	13726	13803.1656187	-77.16561875	5954.53271707	0.431388920595
4	0.0783009375	11748	11732.6907759	15.3092240625	234.372341396	0.0199760094144
5	0.066555796875	9870	9972.78715955	-102.787159547	10565.2001677	1.05940295313
6	0.0565724273437	8571	8476.86908561	94.1309143852	8860.62904299	1.04527142669
7	0.0480865632422	7134	7205.33872277	-71.3387227726	5089.21336683	0.70631146746
8	0.0408735787559	6089	6124.53791436	-35.5379143567	1262.94335683	0.206210390806
9	0.0347425419425	5286	5205.8572272	80.1427727968	6422.86403156	1.23377644665
10	0.0295311606511	4574	4424.97864312	149.021356877	22207.3648055	5.01863773739
11	0.0251014865534	3743	3761.23184665	-18.2318466543	332.400232427	0.0883753637049
12	0.0213362635704	3146	3197.04706966	-51.0470696562	2605.80332048	0.8150656727
13	0.0181358240349	2715	2717.49000921	-2.49000920775	6.20014585467	0.00228157080014
14	0.0154154504296	2313	2309.86650783	3.13349217341	9.81877320085	0.00425079681773
15	0.0131031328652	1943	1963.38653165	-20.3865316526	415.610672822	0.211680515335
16	0.0111376629354	1723	1668.8785519	54.1214480953	2929.13114393	1.75514937297
17	0.0094670134951	1489	1418.54676912	70.453230881	4963.65774157	3.49911462183
18	0.00804696147083	1238	1205.76475375	32.2352462488	1039.11110072	0.861785930872
19	0.00683991725021	975	1024.90004069	-49.9000406885	2490.01406071	2.42951894025
20	0.0387595310845	5795	5807.76689723	-12.7668972347	162.993665002	0.0280647739287

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 24.8038069698$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	40132	40018.6	113.4	12859.56	0.321339577097
1	0.16	31918	32014.88	-96.88	9385.7344	0.293167876937
2	0.128	25684	25611.904	72.096	5197.833216	0.202945990115
3	0.1024	20564	20489.5232	74.4768	5546.79373824	0.27071365615
4	0.08192	16361	16391.61856	-30.61856	937.496216474	0.0571936330169
5	0.065536	13019	13113.294848	-94.294848	8891.51835934	0.678053720473
6	0.0524288	10376	10490.6358784	-114.6358784	13141.3846165	1.252677604
7	0.04194304	8452	8392.50870272	59.49129728	3539.21445206	0.421711144715
8	0.033554432	6700	6714.00696218	-14.006962176	196.1949894	0.029221743514
9	0.0268435456	5373	5371.20556974	1.7944302592	3.21997995512	0.00059948924190
10	0.02147483648	4276	4296.96445579	-20.9644557926	439.508406682	0.102283463408
11	0.017179869184	3448	3437.57156463	10.4284353659	108.75226418	0.0316363636758
12	0.0137438953472	2822	2750.05725171	71.9427482927	5175.75903191	1.88205501129
13	0.0109951162778	2145	2200.04580137	-55.0458013658	3030.04024801	1.37726234887
14	0.00879609302221	1789	1760.03664109	28.9633589073	838.876159195	0.476624258614
15	0.00703687441777	1455	1408.02931287	46.9706871259	2206.24544908	1.56690306722
16	0.00562949953421	1120	1126.4234503	-6.42345029931	41.2607137477	0.0366298426553
17	0.00450359962737	884	901.138760239	-17.1387602394	293.737102545	0.325962122046
18	0.0036028797019	716	720.911008192	-4.91100819156	24.1180014575	0.0334548941319
19	0.00288230376152	581	576.728806553	4.27119344675	18.2430934596	0.0316320136125
20	0.0115292150461	2278	2306.91522621	-28.915226213	836.090306948	0.362427841928

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 9.7544956627$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62728	62598.25	129.75	16835.0625	0.268938229104
1	0.1875	47226	46948.6875	277.3125	76902.2226563	1.63800580487
2	0.140625	35126	35211.515625	-85.515625	7312.92211914	0.207685525299
3	0.10546875	26423	26408.6367187	14.36328125	206.303848267	0.00781198402871
4	0.0791015625	19841	19806.4775391	34.5224609375	1191.80030918	0.0601722495497
5	0.059326171875	14793	14854.8581543	-61.8581542969	3826.43125302	0.257587868781
6	0.0444946289062	11039	11141.1436157	-102.143615723	10433.3182329	0.936467439319
7	0.0333709716797	8229	8355.85771179	-126.857711792	16092.8790411	1.92593981326
8	0.0250282287598	6206	6266.89328384	-60.893283844	3707.99201731	0.591679457326
9	0.0187711715698	4661	4700.16996288	-39.169962883	1534.28599226	0.326432023602
10	0.0140783786774	3549	3525.12747216	23.8725278378	569.897585364	0.161667227601
11	0.010558784008	2661	2643.84560412	17.1543958783	294.27329795	0.111305023823
12	0.00791908800602	1916	1982.88420309	-66.8842030913	4473.49662315	2.25605540464
13	0.00593931600451	1519	1487.16315232	31.8368476816	1013.5848703	0.681555933334
14	0.00445448700339	1090	1115.37236424	-25.3723642388	643.756867068	0.577167668582
15	0.00334086525254	862	836.529273179	25.4707268209	648.757924784	0.775535232997
16	0.0025056489394	611	627.396954884	-16.3969548843	268.860129479	0.428532729377
17	0.00187923670455	449	470.547716163	-21.5477161633	464.304071852	0.986731113346
18	0.00140942752842	360	352.910787122	7.08921287756	50.2569392233	0.142406922818
19	0.00105707064631	248	264.683090342	-16.6830903418	278.325503354	1.05154244268
20	0.00317121193893	856	794.049271025	61.9507289745	3837.89282047	4.83331823416

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 18.2265383285$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)
0	0.3	90016	89952.6	63.4	4019.56	0.0446853
1	0.21	63175	62966.82	208.18	43338.9124	0.6882817
2	0.147	44046	44076.774	-30.774	947.039076	0.0214861
3	0.1029	30548	30853.7418	-305.7418	93478.0482672	3.029715
4	0.07203	21558	21597.61926	-39.61926	1569.68576295	0.0726786
5	0.050421	15148	15118.333482	29.666518	880.102290245	0.058214
6	0.0352947	10449	10582.8334374	-133.8334374	17911.3889663	1.692494
7	0.02470629	7423	7407.98340618	15.01659382	225.498089955	0.0304398
8	0.017294403	5274	5185.58838433	88.411615674	7816.61378609	1.507372
9	0.0121060821	3614	3629.91186903	-15.9118690282	253.187575971	0.0697503
10	0.00847425747	2528	2540.93830832	-12.9383083197	167.399822177	0.0658811
11	0.005931980229	1808	1778.65681582	29.3431841762	861.022457597	0.484085
12	0.0041523861603	1284	1245.05977108	38.9402289233	1516.3414286	1.217886
13	0.00290667031221	918	871.541839754	46.4581602463	2158.36065347	2.476485
14	0.00203466921855	619	610.079287828	8.92071217243	79.5791056634	0.1304405
15	0.00142426845298	427	427.055501479	-0.0555014792984	0.00308041420431	7.21314722
16	0.000996987917088	316	298.938851036	17.0611489645	291.082803989	0.9737202
17	0.000697891541962	219	209.257195725	9.74280427514	94.9222351438	0.453615
18	0.000488524079373	140	146.480037007	-6.4800370074	41.9908796173	0.2866662
19	0.000341966855561	113	102.536025905	10.4639740948	109.494753857	1.067866
20	0.000797922662976	219	239.250727112	-20.2507271121	410.091948568	1.71406

$$Intervalo = [0.7, 1]$$

$$X2(0) = 16.0858406925$$

5.6 Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	302859	302400.0	459.0	210681.0	0.696696428571
Un Par	0.504	504021	504000.0	21.0	441.0	0.000875
Dos Pares	0.108	107626	108000.0	-374.0	139876.0	1.29514814815
Tercia	0.072	71873	72000.0	-127.0	16129.0	0.224013888889
Full House	0.009	9016	9000.0	16.0	256.0	0.0284444444444
Poker	0.0045	4499	4500.0	-1.0	1.0	0.000222222222222
Quintilla	0.0001	106	100.0	6.0	36.0	0.36

$$Total = 1000000$$

$$X2(0) = 2.60540013228$$

5.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	40153	39999.96	153.04	23421.2416	0.585531625532
2	39973	39999.96	-26.96	726.8416	0.0181710581711
3	39737	39999.96	-262.96	69147.9616	1.7287007687
4	39979	39999.96	-20.96	439.3216	0.0109830509831
5	40030	39999.96	30.04	902.4016	0.0225600625601
6	39977	39999.96	-22.96	527.1616	0.0131790531791
7	40036	39999.96	36.04	1298.8816	0.0324720724721
8	40013	39999.96	13.04	170.0416	0.00425104425104
9	40079	39999.96	79.04	6247.3216	0.156183196183
10	39970	39999.96	-29.96	897.6016	0.0224400624401
11	39858	39999.96	-141.96	20152.6416	0.503816543817
12	40111	39999.96	111.04	12329.8816	0.308247348247
13	40083	39999.96	83.04	6895.6416	0.172391212391
14	39959	39999.96	-40.96	1677.7216	0.0419430819431
15	39856	39999.96	-143.96	20724.4816	0.518112558113
16	39930	39999.96	-69.96	4894.4016	0.12236016236
17	39945	39999.96	-54.96	3020.6016	0.0755151155151
18	40234	39999.96	234.04	54774.7216	1.36936940937
19	40099	39999.96	99.04	9808.9216	0.245223285223
20	39974	39999.96	-25.96	673.9216	0.0168480568481
21	39954	39999.96	-45.96	2112.3216	0.0528080928081
22	40011	39999.96	11.04	121.8816	0.00304704304704
23	39800	39999.96	-199.96	39984.0016	0.999601039601
24	40066	39999.96	66.04	4361.2816	0.109032149032
25	40172	39999.96	172.04	29597.7616	0.739944779945

$$Total = 999999$$

$$X2(0) = 7.87273187273$$

6 Scala

6.1 Promedio

$$promedio = 0.499626834451$$

6.2 Varianza

$$varianza = 0.083313704172$$

$$desviacion\_estandar = 0.288641133888$$

6.3 Prueba de Corridas

$$corridas = 667168$$

$$E(h) = 666666$$

$$S(h)2 = 177777$$

$$S(h) = 421.636099024$$

$$Z(0) = 1.19060014349$$

6.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	1600638	1599999.0	639.0	408321.0	0.2552007845
1	0.09	1441742	1439999.1	1742.9	3037700.41	2.10951549206
2	0.081	1293967	1295999.19	-2032.19	4129796.1961	3.18657313057
3	0.0729	1165932	1166399.271	-467.271	218342.187441	0.187193350399
4	0.06561	1049644	1049759.3439	-115.3439	13304.2152672	0.012673585945
5	0.059049	944514	944783.40951	-269.40951	72581.4840785	0.0768234108981
6	0.0531441	850279	850305.068559	-26.0685590002	679.569768344	0.0007992070063
7	0.04782969	765366	765274.561703	91.4382968999	8360.96213995	0.0109254410879
8	0.043046721	690185	688747.105533	1437.89446721	2067540.49883	3.00188629792
9	0.0387420489	618588	619872.39498	-1284.39497951	1649670.46339	2.66130654753
10	0.03486784401	557202	557885.155482	-683.15548156	466701.411986	0.83655463387
11	0.031381059609	501609	502096.639933	-487.639933404	237792.70465	0.473599474161
12	0.0282429536481	452873	451886.97594	986.024059936	972243.446773	2.15151907123
13	0.0254186582833	407272	406698.278346	573.721653943	329156.536203	0.809338405713
14	0.022876792455	366807	366028.450511	778.549488548	606139.306119	1.65598959663
15	0.0205891132095	329227	329425.60546	-198.605460306	39444.1288635	0.119736074579
16	0.0185302018885	296352	296483.044914	-131.044914276	17172.7695576	0.0579215906344
17	0.0166771816997	266747	266834.740423	-87.7404228483	7698.38180159	0.0288507478051
18	0.0150094635297	240470	240151.266381	318.733619437	101591.120159	0.423029708276
19	0.0135085171767	215806	216136.139743	-330.139742507	108992.249583	0.504275914766
20	0.121576654591	1944770	1945225.25768	-455.257682564	207259.557533	0.10654784412

$$Total = 15999990$$

$$X2(0) = 18.6702603097$$

6.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	10065	10021.9	43.1	1857.61	0.185355072391
1	0.09	8989	9019.71	-30.71	943.1041	0.104560357262
2	0.081	8289	8117.739	171.261	29330.330121	3.61311568665
3	0.0729	7220	7305.9651	-85.9651	7389.99841801	1.0115020147
4	0.06561	6407	6575.36859	-168.36859	28347.9820986	4.31123848201
5	0.059049	6008	5917.831731	90.168269	8130.31673446	1.37386750824
6	0.0531441	5301	5326.0485579	-25.0485579	627.43025287	0.117804080464
7	0.04782969	4863	4793.44370211	69.55629789	4838.07857616	1.00931165084
8	0.043046721	4304	4314.0993319	-10.099331899	101.996504806	0.0236425953506
9	0.0387420489	3820	3882.68939871	-62.6893987091	3929.96071051	1.01217488883
10	0.03486784401	3578	3494.42045884	83.5795411618	6985.53970082	1.99905528917
11	0.031381059609	3155	3144.97841295	10.0215870456	100.432206913	0.0319341482598
12	0.0282429536481	2869	2830.48057166	38.5194283411	1483.74635972	0.52420298326
13	0.0254186582833	2536	2547.43251449	-11.432514493	130.702387634	0.051307497604
14	0.022876792455	2225	2292.68926304	-67.6892630437	4581.8363314	1.99845500446
15	0.0205891132095	1989	2063.42033674	-74.4203367394	5538.3865204	2.68408061207
16	0.0185302018885	1922	1857.07830307	64.9216969346	4214.82673286	2.269600978
17	0.0166771816997	1698	1671.37047276	26.6295272411	709.131721085	0.424281589655
18	0.0150094635297	1519	1504.23342548	14.766574517	218.051722966	0.144958700739
19	0.0135085171767	1362	1353.81008293	8.1899170653	67.0747415365	0.0495451632264
20	0.121576654591	12100	12184.2907464	-84.2907464123	7104.92993074	0.583122159394

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 23.5231164626$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.15	22549	22569.0	-20.0	400.0	0.01772342593
1	0.1275	19176	19183.65	-7.65	58.5225	0.003050644689
2	0.108375	16359	16306.1025	52.8975	2798.14550625	0.17160112333
3	0.09211875	13796	13860.187125	-64.187125	4119.98701577	0.29725334720
4	0.0783009375	11839	11781.1590562	57.84094375	3345.57477389	0.28397670873
5	0.066555796875	10074	10013.9851978	60.0148021875	3601.7764816	0.35967463600
6	0.0565724273437	8655	8511.88741814	143.112581859	20481.2110865	2.4061891423
7	0.0480865632422	7237	7235.10430542	1.89569458047	3.59365794243	0.000496697461
8	0.0408735787559	6171	6149.83865961	21.1613403934	447.802327245	0.07281529679
9	0.0347425419425	5227	5227.36286067	-0.362860665609	0.131667862646	2.51882002754e
10	0.0295311606511	4545	4443.25843157	101.741568434	10351.3467475	2.3296746986
11	0.0251014865534	3689	3776.76966683	-87.7696668309	7703.51441561	2.03970988330
12	0.0213362635704	3168	3210.25421681	-42.2542168063	1785.41883791	0.55616120012
13	0.0181358240349	2726	2728.71608429	-2.71608428533	7.377113845	0.00270351096
14	0.0154154504296	2241	2319.40867164	-78.4086716425	6147.91978875	2.6506410292
15	0.0131031328652	1947	1971.4973709	-24.4973708961	600.121180823	0.3043986716
16	0.0111376629354	1631	1675.77276526	-44.7727652617	2004.60050918	1.1962245423
17	0.0094670134951	1407	1424.40685047	-17.4068504725	302.998443371	0.21271902980
18	0.00804696147083	1209	1210.7458229	-1.7458229016	3.04789760374	0.00251737197
19	0.00683991725021	1021	1029.13394947	-8.13394946636	66.1611339213	0.06428816574
20	0.0387595310845	5793	5831.75904698	-38.759046976	1502.26372249	0.25760044440

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 13.2294447589$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	39963	39859.2	103.8	10774.44	0.2703125
1	0.16	31663	31887.36	-224.36	50337.4096	1.57860072455
2	0.128	25406	25509.888	-103.888	10792.716544	0.423079730652
3	0.1024	20420	20407.9104	12.0896	146.15842816	0.0071618517180
4	0.08192	16329	16326.32832	2.67168	7.13787402238	0.00043720020095
5	0.065536	12984	13061.062656	-77.062656	5938.65294978	0.454683750181
6	0.0524288	10388	10448.8501248	-60.8501248	3702.73768818	0.354367958574
7	0.04194304	8383	8359.08009984	23.91990016	572.161623664	0.0684479173343
8	0.033554432	6728	6687.26407987	40.735920128	1659.41518867	0.248145604668
9	0.0268435456	5328	5349.8112639	-21.8112638976	475.731232811	0.0889248628304
10	0.02147483648	4436	4279.84901112	156.150988882	24383.1313288	5.69719428547
11	0.017179869184	3563	3423.87920889	139.120791106	19354.5945178	5.65282632271
12	0.0137438953472	2712	2739.10336712	-27.1033671156	734.592509002	0.268187216963
13	0.0109951162778	2155	2191.28269369	-36.2826936925	1316.43386158	0.600759484557
14	0.00879609302221	1743	1753.02615495	-10.026154954	100.523783161	0.0573430024857
15	0.00703687441777	1415	1402.42092396	12.5790760368	158.23315394	0.112828574671
16	0.00562949953421	1123	1121.93673917	1.06326082946	1.13052359147	0.0010076535975
17	0.00450359962737	890	897.549391336	-7.54939133643	56.9933095506	0.0634988002897
18	0.0036028797019	714	718.039513069	-4.03951306915	16.3176658358	0.022725303467
19	0.00288230376152	581	574.431610455	6.56838954468	43.1437412107	0.0751068367852
20	0.0115292150461	2372	2297.72644182	74.2735581787	5516.56144453	2.40087825257

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 18.4465178343$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	62977	62662.75	314.25	98753.0625	1.5759452386
1	0.1875	47391	46997.0625	393.9375	155186.753906	3.30205220606
2	0.140625	35102	35247.796875	-145.796875	21256.7287598	0.603065457826
3	0.10546875	26104	26435.8476562	-331.84765625	110122.866959	4.16566430517
4	0.0791015625	19783	19826.8857422	-43.8857421875	1925.95836735	0.0971387232665
5	0.059326171875	14939	14870.1643066	68.8356933594	4738.35268027	0.318648306942
6	0.0444946289062	10958	11152.62323	-194.62322998	37878.201648	3.39634908012
7	0.0333709716797	8340	8364.46742249	-24.4674224853	598.654763077	0.0715711751674
8	0.0250282287598	6261	6273.35056686	-12.350566864	152.536501862	0.0243149972629
9	0.0187711715698	4724	4705.01292515	18.987074852	360.509011435	0.0766223211648
10	0.0140783786774	3572	3528.75969386	43.240306139	1869.72407499	0.529853046737
11	0.010558784008	2605	2646.5697704	-41.5697703958	1728.04581076	0.652937938794
12	0.00791908800602	1952	1984.9273278	-32.9273277968	1084.20891584	0.54622096268
13	0.00593931600451	1481	1488.69549585	-7.69549584761	59.2206563406	0.0397802347799
14	0.00445448700339	1092	1116.52162189	-24.5216218857	601.309939906	0.538556466905
15	0.00334086525254	849	837.391216414	11.6087835857	134.76385634	0.160932970992
16	0.0025056489394	625	628.043412311	-3.04341231071	9.26235849299	0.0147479589968
17	0.00187923670455	485	471.032559233	13.967440767	195.089401579	0.414173920156
18	0.00140942752842	344	353.274419425	-9.27441942478	86.0148556666	0.243478867807
19	0.00105707064631	275	264.955814569	10.0441854314	100.885660981	0.380764095119
20	0.00317121193893	792	794.867443706	-2.86744370574	8.22223340561	0.0103441567153

$Intervalo = [0.45, 0.7]$

$X2(0) = 17.1631624313$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.3	89394	89810.7	-416.7	173638.89	1.9333875585
1	0.21	62846	62867.49	-21.49	461.8201	0.007345928714!
2	0.147	44271	44007.243	263.757	69567.755049	1.58082511665
3	0.1029	30768	30805.0701	-37.0701	1374.19231401	0.044609290274
4	0.07203	21562	21563.54907	-1.54907	2.39961786489	0.0001112812115
5	0.050421	15199	15094.484349	104.515651	10923.521304	0.72367634769
6	0.0352947	10575	10566.1390443	8.8609557	78.5165359174	0.0074309580433
7	0.02470629	7427	7396.29733101	30.70266899	942.65388311	0.12744943056!
8	0.017294403	5201	5177.40813171	23.591868293	556.576249554	0.10750094167'
9	0.0121060821	3682	3624.18569219	57.8143078051	3342.49418698	0.922274538576
10	0.00847425747	2477	2536.92998454	-59.9299845364	3591.60304654	1.415728092
11	0.005931980229	1749	1775.85098918	-26.8509891755	720.975619703	0.405988804296
12	0.0041523861603	1312	1243.09569242	68.9043075772	4747.80360269	3.81933879397
13	0.00290667031221	833	870.166984696	-37.166984696	1381.38475139	1.58749386691
14	0.00203466921855	612	609.116889287	2.8831107128	8.31232738228	0.013646522578
15	0.00142426845298	420	426.381822501	-6.38182250104	40.7276584347	0.095519218422
16	0.000996987917088	311	298.467275751	12.5327242493	157.069177108	0.526252590718
17	0.000697891541962	215	208.927093026	6.07290697449	36.8801991208	0.176521860260
18	0.000488524079373	176	146.248965118	29.7510348821	885.124076559	6.05217326389
19	0.000341966855561	113	102.374275582	10.6257244175	112.906019397	1.10287490441
20	0.000797922662976	226	238.873309692	-12.8733096925	165.722102439	0.69376567291

$$Intervalo = [0.7, 1]$$

$$X2(0) = 21.3439149823$$

6.6   Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	302100	302400.0	-300.0	90000.0	0.297619047619
Un Par	0.504	504010	504000.0	10.0	100.0	0.000198412698413
Dos Pares	0.108	108371	108000.0	371.0	137641.0	1.2744537037
Tercia	0.072	71873	72000.0	-127.0	16129.0	0.224013888889
Full House	0.009	9083	9000.0	83.0	6889.0	0.765444444444
Poker	0.0045	4465	4500.0	-35.0	1225.0	0.272222222222
Quintilla	0.0001	98	100.0	-2.0	4.0	0.04

$$Total = 1000000$$

$$X2(0) = 2.87395171958$$

6.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	40203	39999.96	203.04	41225.2416	1.03063207063
2	40151	39999.96	151.04	22813.0816	0.570327610328
3	40166	39999.96	166.04	27569.2816	0.689232729233
4	40108	39999.96	108.04	11672.6416	0.291816331816
5	39867	39999.96	-132.96	17678.3616	0.441959481959
6	39813	39999.96	-186.96	34954.0416	0.873851913852
7	40247	39999.96	247.04	61028.7616	1.52572056572
8	40203	39999.96	203.04	41225.2416	1.03063207063
9	40208	39999.96	208.04	43280.6416	1.08201712202
10	39564	39999.96	-435.96	190061.1216	4.75153279153
11	39683	39999.96	-316.96	100463.6416	2.51159355159
12	40160	39999.96	160.04	25612.8016	0.640320680321
13	39703	39999.96	-296.96	88185.2416	2.20463324463
14	39977	39999.96	-22.96	527.1616	0.0131790531791
15	40523	39999.96	523.04	273570.8416	6.83927787928
16	40432	39999.96	432.04	186658.5616	4.66646870647
17	39624	39999.96	-375.96	141345.9216	3.53365157365
18	40090	39999.96	90.04	8107.2016	0.20268024268
19	39863	39999.96	-136.96	18758.0416	0.468951508952
20	39846	39999.96	-153.96	23703.6816	0.592592632593
21	40363	39999.96	363.04	131798.0416	3.29495433495
22	39853	39999.96	-146.96	21597.2416	0.539931579932
23	39885	39999.96	-114.96	13215.8016	0.330395370395
24	39699	39999.96	-300.96	90576.9216	2.26442530443
25	39768	39999.96	-231.96	53805.4416	1.34513738514

$$Total = 999999$$

$$X2(0) = 41.7359157359$$

7 Random.org

7.1 Promedio

$$promedio = 0.499087130649$$

7.2 Varianza

$$varianza = 0.0833585145977$$

$$desviacion\_estandar = 0.28871874653$$

7.3 Prueba de Corridas

$$corridas = 66854$$

$$E(h) = 66666$$

$$S(h)2 = 17777$$

$$S(h) = 133.330416635$$

$$Z(0) = 1.41003084476$$

7.4 Prueba de Huecos Digitos

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	159624	159998.9	-374.9	140550.01	0.8784436018
1	0.09	143916	143999.01	-83.01	6890.6601	0.0478521352334
2	0.081	129215	129599.109	-384.109	147539.723881	1.1384316221
3	0.0729	116797	116639.1981	157.8019	24901.4396436	0.213491176631
4	0.06561	104954	104975.27829	-21.27829	452.765625324	0.00431306906445
5	0.059049	94167	94477.750461	-310.750461	96565.8490117	1.02210148464
6	0.0531441	85316	85029.9754149	286.0245851	81810.0632816	0.962132034996
7	0.04782969	76597	76526.9778734	70.02212659	4903.09821218	0.0640701926097
8	0.043046721	69053	68874.2800861	178.719913931	31940.8076355	0.463755230481
9	0.0387420489	61852	61986.8520775	-134.852077462	18185.0827958	0.29337000003
10	0.03486784401	56126	55788.1668697	337.833130284	114131.223918	2.04579627404
11	0.031381059609	50316	50209.3501827	106.649817256	11374.1835207	0.226535166842
12	0.0282429536481	45304	45188.4151645	115.58483553	13359.8542045	0.295647770693
13	0.0254186582833	40713	40669.573648	43.4263519771	1885.84804604	0.0463699979341
14	0.022876792455	36814	36602.6162832	211.383716779	44683.0757195	1.22076179948
15	0.0205891132095	32827	32942.3546549	-115.354654899	13306.6964068	0.403938836375
16	0.0185302018885	29818	29648.1191894	169.880810591	28859.4898072	0.973400357129
17	0.0166771816997	26581	26683.3072705	-102.307270468	10466.7775906	0.392259380911
18	0.0150094635297	24053	24014.9765434	38.023456579	1445.78325021	0.0602034004738
19	0.0135085171767	21506	21613.4788891	-107.478889079	11551.7115976	0.534467942756
20	0.121576654591	194440	194521.310002	-81.3100017105	6611.31637815	0.0339876200613

$$Total = 1599989$$

$$X2(0) = 11.3213290943$$

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7.5 Prueba con Numeros

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.1	970	1000.9	-30.9	954.81	0.953951443701
1	0.09	947	900.81	46.19	2133.5161	2.36844184678
2	0.081	827	810.729	16.271	264.745441	0.326552326363
3	0.0729	712	729.6561	-17.6561	311.73786721	0.427239445007
4	0.06561	609	656.69049	-47.69049	2274.38283644	3.4634015127
5	0.059049	650	591.021441	58.978559	3478.47042172	5.88552323217
6	0.0531441	550	531.9192969	18.0807031	326.91182459	0.614589142555
7	0.04782969	465	478.72736721	-13.72736721	188.440610518	0.393628239005
8	0.043046721	436	430.854630489	5.145369511	26.4748274047	0.0614472388858
9	0.0387420489	381	387.76916744	-6.7691674401	45.8216278321	0.118167280123
10	0.03486784401	350	348.992250696	1.00774930391	1.01555865953	0.00290997481321
11	0.031381059609	323	314.093025626	8.90697437352	79.3341924905	0.252581834099
12	0.0282429536481	282	282.683723064	-0.683723063833	0.467477228017	0.00165371116154
13	0.0254186582833	211	254.415350757	-43.4153507574	1884.89268139	7.40872229518
14	0.022876792455	230	228.973815682	1.0261843183	1.05305425512	0.00459901605771
15	0.0205891132095	215	206.076434114	8.92356588647	79.6300281301	0.386410161223
16	0.0185302018885	190	185.468790702	4.53120929782	20.5318577006	0.110702494058
17	0.0166771816997	168	166.921911632	1.07808836804	1.1622745293	0.00696298357677
18	0.0150094635297	147	150.229720469	-3.22972046877	10.4310943064	0.0694342921881
19	0.0135085171767	138	135.206748422	2.79325157811	7.80225437861	0.057706101727
20	0.121576654591	1208	1216.8607358	-8.86073579701	78.5126388644	0.0645206444376

$$Intervalo = [0.0, 0.1]$$

$$X2(0) = 22.9791452158$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/
0	0.15	2285	2249.55	35.45	1256.7025	0.55864617
1	0.1275	1916	1912.1175	3.8825	15.07380625	0.00788330
2	0.108375	1594	1625.299875	-31.299875	979.682175016	0.60277010
3	0.09211875	1332	1381.50489375	-49.50489375	2450.7345052	1.77396006
4	0.0783009375	1204	1174.27915969	29.7208403125	883.328348881	0.75223028
5	0.066555796875	934	998.137285734	-64.1372857344	4113.59142137	4.12126816
6	0.0565724273437	881	848.416692874	32.5833071258	1061.67190325	1.25135668
7	0.0480865632422	702	721.154188943	-19.1541889431	366.882954067	0.50874412
8	0.0408735787559	641	612.981060602	28.0189393984	785.06096501	1.28072629
9	0.0347425419425	536	521.033901511	14.9660984886	223.984103971	0.42988393
10	0.0295311606511	454	442.878816285	11.1211837153	123.68072723	0.27926539
11	0.0251014865534	359	376.446993842	-17.446993842	304.397594122	0.80860678
12	0.0213362635704	320	319.979944766	0.0200552343242	0.000402212423797	1.25699260
13	0.0181358240349	274	271.982953051	2.01704694918	4.06847839518	0.01495857
14	0.0154154504296	253	231.185510093	21.8144899068	475.871969894	2.05839877
15	0.0131031328652	192	196.507683579	-4.50768357922	20.3192112504	0.10340161
16	0.0111376629354	187	167.031531042	19.9684689577	398.739752513	2.38721246
17	0.0094670134951	128	141.976801386	-13.976801386	195.350976983	1.37593589
18	0.00804696147083	128	120.680281178	7.31971882191	53.5782836318	0.44396883
19	0.00683991725021	98	102.578239001	-4.57823900138	20.9602723537	0.20433449
20	0.0387595310845	579	581.276687674	-2.27668767446	5.18330676704	0.00891710

$$Intervalo = [0.1, 0.25]$$

$$X2(0) = 18.9724703288$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.2	4152	4049.6	102.4	10485.76	2.58933227973
1	0.16	3230	3239.68	-9.68	93.7024	0.028923350454
2	0.128	2604	2591.744	12.256	150.209536	0.0579569340183
3	0.1024	2104	2073.3952	30.6048	936.65378304	0.451748794943
4	0.08192	1671	1658.71616	12.28384	150.892725146	0.0909695876753
5	0.065536	1304	1326.972928	-22.972928	527.755420893	0.397713781312
6	0.0524288	1003	1061.5783424	-58.5783424	3431.42219833	3.23237773538
7	0.04194304	825	849.26267392	-24.26267392	588.677345748	0.693162862123
8	0.033554432	736	679.410139136	56.589860864	3202.41235261	4.71351863644
9	0.0268435456	520	543.528111309	-23.5281113088	553.572021759	1.01847910024
10	0.02147483648	414	434.822489047	-20.822489047	433.576050114	0.997133453388
11	0.017179869184	347	347.857991238	-0.857991237632	0.736148963854	0.00211623415999
12	0.0137438953472	273	278.28639299	-5.28639299011	27.9459508458	0.100421549705
13	0.0109951162778	216	222.629114392	-6.62911439208	43.9451576233	0.197391782038
14	0.00879609302221	169	178.103291514	-9.10329151367	82.8699163828	0.465291324369
15	0.00703687441777	144	142.482633211	1.51736678907	2.30240197256	0.0161591761794
16	0.00562949953421	97	113.986106569	-16.9861065687	288.527816365	2.53125424712
17	0.00450359962737	85	91.188885255	-6.188885255	38.3023006995	0.420032557613
18	0.0036028797019	65	72.951108204	-7.951108204	63.2201216717	0.866609476239
19	0.00288230376152	62	58.3608865632	3.6391134368	13.2431466059	0.226918187604
20	0.0115292150461	227	233.443546253	-6.44354625279	41.5192883119	0.17785579845

$$Intervalo = [0.25, 0.45]$$

$$X2(0) = 19.2753668492$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.25	6250	6221.25	28.75	826.5625	0.132861161342
1	0.1875	4479	4665.9375	-186.9375	34945.6289062	7.48951928873
2	0.140625	3579	3499.453125	79.546875	6327.70532227	1.80819833735
3	0.10546875	2664	2624.58984375	39.41015625	1553.16041565	0.591772622815
4	0.0791015625	2015	1968.44238281	46.5576171875	2167.61171818	1.10118118625
5	0.059326171875	1442	1476.33178711	-34.3317871094	1178.67160612	0.798378532803
6	0.0444946289062	1115	1107.24884033	7.75115966797	60.0804761983	0.0542610423329
7	0.0333709716797	880	830.436630249	49.563369751	2456.52762107	2.95811568468
8	0.0250282287598	572	622.827472687	-50.8274726868	2583.43197972	4.14790948219
9	0.0187711715698	463	467.120604515	-4.12060451508	16.9793815697	0.0363490315039
10	0.0140783786774	337	350.340453386	-13.3404533863	177.967696552	0.507985003821
11	0.010558784008	274	262.75534004	11.2446599603	126.442377622	0.481217156626
12	0.00791908800602	181	197.06650503	-16.0665050298	258.132583873	1.3098754851
13	0.00593931600451	166	147.799878772	18.2001212277	331.244412701	2.24116836531
14	0.00445448700339	109	110.849909079	-1.84990907926	3.42216360153	0.0308720469864
15	0.00334086525254	102	83.1374318094	18.8625681906	355.796478743	4.27961835
16	0.0025056489394	76	62.3530738571	13.6469261429	186.23859315	2.98683900616
17	0.00187923670455	45	46.7648053928	-1.76480539281	3.1145380745	0.0666000435229
18	0.00140942752842	30	35.0736040446	-5.07360404461	25.7414580015	0.733926800586
19	0.00105707064631	30	26.3052030335	3.69479696654	13.651524624	0.518966708092
20	0.00317121193893	76	78.9156091004	-2.91560910037	8.50077642617	0.107719835443

$$Intervalo = [0.45, 0.7]$$

$$X2(0) = 32.3833351716$$

Huecos	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
0	0.3	8833	8956.8	-123.8	15326.44	1.71115130404
1	0.21	6443	6269.76	173.24	30012.0976	4.78680166386
2	0.147	4318	4388.832	-70.832	5017.172224	1.14316798273
3	0.1029	3074	3072.1824	1.8176	3.30366976	0.00107534948444
4	0.07203	2106	2150.52768	-44.52768	1982.71428618	0.921966410673
5	0.050421	1538	1505.369376	32.630624	1064.75762263	0.70730655187
6	0.0352947	1042	1053.7585632	-11.7585632	138.263808528	0.131210139929
7	0.02470629	705	737.63099424	-32.63099424	1064.78178509	1.44351551576
8	0.017294403	561	516.341695968	44.658304032	1994.36411901	3.86248899631
9	0.0121060821	371	361.439187178	9.5608128224	91.409141825	0.252903240899
10	0.00847425747	249	253.007431024	-4.00743102432	16.0595034147	0.063474433733
11	0.005931980229	172	177.105201717	-5.10520171702	26.0630845715	0.147161598411
12	0.0041523861603	130	123.973641202	6.02635879808	36.3170003632	0.292941306
13	0.00290667031221	105	86.7815488413	18.2184511587	331.91196262	3.82468355373
14	0.00203466921855	63	60.7470841889	2.25291581106	5.07562965173	0.083553469594
15	0.00142426845298	43	42.5229589323	0.477041067743	0.227568180313	0.0053516544009
16	0.000996987917088	31	29.7660712526	1.23392874742	1.52258015371	0.051151532252
17	0.000697891541962	17	20.8362498768	-3.83624987681	14.7168131173	0.706308150666
18	0.000488524079373	15	14.5853749138	0.414625086236	0.171913962136	0.011786735901
19	0.000341966855561	12	10.2097624396	1.79023756036	3.20495052254	0.313391039130
20	0.000797922662976	28	23.8227790258	4.17722097418	17.4491750672	0.732457579708

$$Intervalo = [0.7, 1]$$

$$X2(0) = 21.1943675613$$

7.6   Prueba de Poker

Clase	Pe	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
Diferentes	0.3024	30385	30240.0	145.0	21025.0	0.695271164021
Un Par	0.504	50431	50400.0	31.0	961.0	0.0190674603175
Dos Pares	0.108	10796	10800.0	-4.0	16.0	0.00148148148148
Tercia	0.072	7083	7200.0	-117.0	13689.0	1.90125
Full House	0.009	868	900.0	-32.0	1024.0	1.13777777778
Poker	0.0045	434	450.0	-16.0	256.0	0.568888888889
Quintilla	0.0001	3	10.0	-7.0	49.0	4.9

$$Total = 100000$$

$$X2(0) = 9.22373677249$$

7.7 Prueba de Series

Celda	Fo	Fe	(Fo-Fe)	(Fo-Fe)2	(Fo-Fe)2/Fe
1	3917	3999.96	-82.96	6882.3616	1.72060760608
2	4099	3999.96	99.04	9808.9216	2.45225492255
3	3943	3999.96	-56.96	3244.4416	0.811118511185
4	3987	3999.96	-12.96	167.9616	0.0419908199082
5	4011	3999.96	11.04	121.8816	0.030470704707
6	4089	3999.96	89.04	7928.1216	1.9820502205
7	4089	3999.96	89.04	7928.1216	1.9820502205
8	4017	3999.96	17.04	290.3616	0.0725911259113
9	4132	3999.96	132.04	17434.5616	4.35868398684
10	4030	3999.96	30.04	902.4016	0.225602656027
11	3990	3999.96	-9.96	99.2016	0.0248006480065
12	4014	3999.96	14.04	197.1216	0.0492808928089
13	3911	3999.96	-88.96	7913.8816	1.9784901849
14	3918	3999.96	-81.96	6717.4416	1.67937719377
15	3899	3999.96	-100.96	10192.9216	2.54825588256
16	3922	3999.96	-77.96	6077.7616	1.51945559456
17	4067	3999.96	67.04	4494.3616	1.12360163602
18	3944	3999.96	-55.96	3131.5216	0.782888228882
19	3948	3999.96	-51.96	2699.8416	0.674967149671
20	4062	3999.96	62.04	3848.9616	0.9622500225
21	4039	3999.96	39.04	1524.1216	0.381034210342
22	4087	3999.96	87.04	7575.9616	1.89400934009
23	3917	3999.96	-82.96	6882.3616	1.72060760608
24	3958	3999.96	-41.96	1760.6416	0.440164801648
25	4009	3999.96	9.04	81.7216	0.020430604306

$$Total = 99999$$

$$X2(0) = 29.4770347703$$