Correlation

In learning the fundamental ideas about the Pearson Product-Moment correlation, it is useful to have a graphic image of the plot between two, approximately normally distributed variables. It is even more helpful if that image shows the straight line of "best fit" for the "least-squares" solution of the relationship between the two variables and if the marginal distributions are shown along with the means, standard deviations and correlation of the variables.

This procedure provides a specification form with default values already provided for generating pairs of sample data points from a specified population in which there is a specified correlation between the points. As a user, you can modify these specifications to demonstrate various correlations and distributions. Shown below is a sample of the simulation:

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POPULATION PARAMETERS FOR THE SIMULATION

Mean X :=   100.000, Std. Dev. X :=    15.000
Mean Y :=   100.000, Std. Dev. Y :=    15.000
Product-Moment Correlation :=     0.800
Regression line slope :=     0.800, constant :=    20.000


SAMPLE STATISTICS FOR 100 OBSERVATIONS FROM THE POPULATION

Mean X :=    99.303, Std. Dev. X :=    14.412
Mean Y :=    98.348, Std. Dev. Y :=    14.572
Product-Moment Correlation :=     0.763
Regression line slope :=     0.772, constant :=    21.710

Pair No.      X         Y
    1    76.326    63.521
    2    96.923    94.804
    3    96.468    83.822
    4   123.493   115.552
    5   104.048   111.817
    6    99.862   105.296
    7    98.762   113.732
    8   100.631   101.352
    9    74.902    70.318
   10    87.333    94.821
   11    87.957    65.748
   12   117.485   110.957
   13    92.002    96.929
   14    92.471    91.480
   15   116.979   100.267
   16   115.108   115.528
   17   109.463   101.988
   18    93.584   101.521
   19    89.905   101.952
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20	98.314	101.735
21	57.338	47.145
22	98.369	100.846
23	105.659	105.743
24	97.439	99.553
25	105.714	100.464
26	79.615	86.450
27	86.963	91.092
28	83.483	90.999
29	118.644	110.233
30	80.548	98.412
31	91.443	103.371
32	91.480	99.474
33	83.123	110.874
34	94.865	97.024
35	114.961	115.670
36	122.085	122.098
37	113.075	103.285
38	96.672	90.023
39	102.999	127.149
40	123.522	106.874
41	106.788	113.011
42	79.170	64.146
43	101.295	96.466
44	95.715	92.980
45	93.781	85.636
46	110.869	116.048
47	102.500	109.590
48	115.212	117.969
49	110.783	106.141
50	96.000	96.773
51	71.083	72.516
52	102.136	96.702
53	110.998	109.571
54	57.130	68.980
55	112.845	95.252
56	84.428	90.700
57	106.661	104.731
58	96.744	89.394
59	113.338	107.210
60	104.346	95.561
61	109.740	116.756
62	67.445	73.214
63	114.758	106.962
64	100.334	107.004
65	90.866	95.656
66	105.183	90.356
67	114.849	130.287
68	94.240	82.784
69	89.869	95.986
70	100.945	85.498
71	110.605	114.671
72	116.127	117.198
73	96.226	90.778
74	79.468	83.157
75	75.420	78.301
76	75.185	95.766

77	101.798	104.224
78	110.074	104.721
79	88.229	85.668
80	78.567	89.042
81	110.488	98.420
82	99.189	102.735
83	108.482	92.451
84	92.235	111.237
85	93.946	88.717
86	107.312	97.611
87	125.444	125.543
88	99.937	90.294
89	107.165	95.632
90	111.503	110.579
91	97.084	86.826
92	97.962	89.850
93	99.584	111.347
94	134.977	121.138
95	93.301	82.457
96	108.328	95.897
97	116.796	98.365
98	102.115	108.197
99	109.147	93.715
100	103.583	106.450

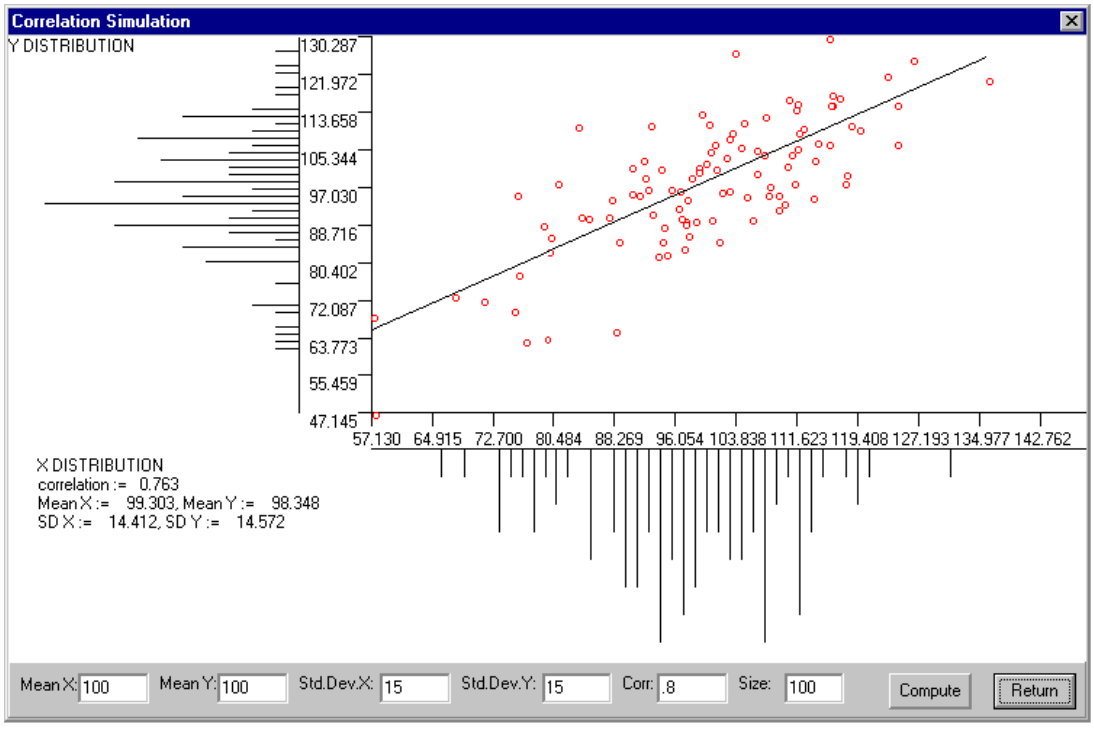

Figure 1 Correlation Simulation Dialog