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1
2 SCOREGEN ... GENERIC COMPONENTS
3 ORIGINAL DATE: Circa 1985
4 REVISION DATE: October 22, 2020
5 AUTHOR: Phil Rutherford
6 RUN DATE: 25-10-2020 (DD-MM-YYYY)
7 RUN TIME: 23:22:45
8 RUN WITH MMBASIC (www.mmbasic.com)
9
10 MODELS COMMOM CAUSE FAILURES IN PARALLEL REPLICATE OR DIVERSE REDUNDANT
11 SYSTEMS USING VARYING DEGREES OF STATISTICAL CORRELATION
12
13 INPUT MAXIMUM NO. OF PARALLEL COMPONENTS? 6
14 INPUT COMPONENT UNAVAILABILITY? 0.01
15 ARE COMPONENTS REPLICATE (R) OR DIVERSE (D). USE CAPS? R
16 DEGREE OF DEPENDENCE
17 ZERO (Z), SMALL (S), MODERATE (M), LARGE (L) OR COMPLETE (C). USE CAPS? M
18
19 COMPONENTS ARE REPLICATE
20 COMPONENTS HAVE MODERATE DEPENDENCE
21 NORMALIZED CORRELATION COEFFICIENT = 0.4
22 NORMALIZED VARIANCE = 0.15
23
24 NUMBER OF PARALLEL COMPONENTS = 6
25
26 COMPONENT UNAVAILABILITY = 0.01
27
28 SYSTEM LOGIC          ----- SYSTEM UNAVAILABILITY -----
29                        INDEPENDENT                CORRELATED
30
31 ( 0/ 0.F)              1                          1
32 ( 1/ 1.F)              0.01                      0.01
33 ( 2/ 2.F)              0.0001                    0.000694
34 ( 3/ 3.F)              1e-06                      0.00027485776
35 ( 4/ 4.F)              1e-08                      0.0001738322465
36 ( 5/ 5.F)              1e-10                      0.0001351529486
37 ( 6/ 6.F)              1e-12                      0.0001169777632
38
39 SYSTEM LOGIC          ----- SYSTEM UNAVAILABILITY -----
40                        INDEPENDENT                CORRELATED
41
42 ( 0/ 6.F)              0.9414801494                0.9468263886
43 ( 1/ 6.F)              0.05705940299                0.04859425269
44 ( 2/ 6.F)              0.001440894015                0.003208926118
45 ( 3/ 6.F)              1.940598e-05                  0.0008368420619
46 ( 4/ 6.F)              1.47015e-07                   0.0003075616874
47 ( 5/ 6.F)              5.94e-10                      0.0001090511124
48 ( 6/ 6.F)              1e-12                          0.0001169777632
49
50 SYSTEM LOGIC          ----- SYSTEM UNAVAILABILITY -----
51                        INDEPENDENT                CORRELATED
52
53 (>= 0/ 6.F)            1                              1
54 (>= 1/ 6.F)            0.0585198506                  0.05317361143
55 (>= 2/ 6.F)            0.001460447605                0.004579358742
56 (>= 3/ 6.F)            1.955359e-05                  0.001370432625
57 (>= 4/ 6.F)            1.4761e-07                     0.000533590563
58 (>= 5/ 6.F)            5.95e-10                       0.0002260288756
59 (>= 6/ 6.F)            1e-12                          0.0001169777632
60
61 ?

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