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1 1010 CLS
2 1020 Print
3 1023 Print " _____"
4 1027 Print
5 1030 Print " RANK-ORDERED TEST-TO-FAILURE DATA (TTFTEST.BAS)"
6 1040 Print
7 1050 Print " ORIGINAL DATE: Circa 1986"
8 1060 Print " REVISION DATE: November 10, 2020"
9 1070 Print " AUTHOR: Phil Rutherford (www.philrutherford.com)"
10 1080 Print " RUN DATE: ";Date$;
11 1090 Print " (DD-MM-YYYY)
12 1100 Print " RUN TIME: ";TIME$
13 1110 Print " RUN WITH MMBASIC.EXE (www.mmbasic.com)"
14 1120 Print
15 1130 Print " COMPUTES FAILURE RATE FROM A BATCH OF UNITS ALL RUN UNTIL FAILURE
16 1140 Print " (E.G. LIGHT BULBS)"
17 1150 Print
18 2000 READ IMAX
19 2005 Dim TTF(IMAX)
20 2010 For I=1 To IMAX
21 2020 READ TTF(I)
22 2025 STTF=STTF+TTF(I)
23 2030 Next I
24 2100 '
25 2105 TMAX=TTF(1)
26 2110 For I=2 To IMAX
27 2120 If TTF(I)>TMAX Then TMAX=TTF(I)
28 2130 NEXT I
29 2140 READ NPERIOD
30 2145 Dim TS(NPERIOD),TE(NPERIOD),JMAX(NPERIOD),FR(NPERIOD),NBP(NPERIOD+1),NEP(NPERIOD)
31 2177 Dim R(NPERIOD),GTTF(NPERIOD,IMAX)
32 2150 PERIOD=TMAX/NPERIOD
33 2200 '
34 2205 TS(1)=0
35 2207 TE(1)=PERIOD
36 2210 FOR N=2 TO NPERIOD
37 2220 TS(N)=TE(N-1)
38 2230 TE(N)=TS(N)+PERIOD
39 2240 NEXT N
40 2300 '
41 2310 FOR N=1 TO NPERIOD
42 2315 J=0
43 2320 FOR I=1 TO IMAX
44 2330 IF TTF(I)>TS(N) AND TTF(I)<=TE(N) THEN J=J+1 : GTTF(N,J)=TTF(I)
45 2340 NEXT I
46 2345 JMAX(N)=J
47 2350 NEXT N
48 2400 '
49 2405 NBP(1)=IMAX
50 2410 FOR N=1 TO NPERIOD
51 2420 FR(N)=JMAX(N)/(NBP(N)*PERIOD)
52 2430 NEP(N)=NBP(N)-JMAX(N)
53 2435 NBP(N+1)=NEP(N)
54 2440 R(N)=NEP(N)/IMAX
55 2450 NEXT N
56 2460 FOR N=1 TO NPERIOD
57 2470 AVFR=AVFR+FR(N)/NPERIOD
58 2480 Next N
59 2490 '-----
60 2500 ' PRINT OUTPUT
61 2510 '-----
62 2530 Print
63 2540 Print " TEST ITEM TIMES-TO-FAILURE (HR)"
64 2545 Print
65 2550 For I=1 To IMAX
66 2560 Print TAB(2);TTF(I);TAB(10);TTF(I+1);TAB(20);TTF(I+2);TAB(30);TTF(I+3);TAB(40);

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67 2562 Print TTF(I+4)
68 2565 I = I + 4
69 2570 Next I
70 2580 Print
71 2590 Print " TOTAL ITEMS ="IMAX
72 2595 Print
73 2600 For N=1 To NPERIOD
74 2610 Print " FAILURE TIMES (HR) FOR PERIOD ";N
75 2611 Print TAB(2);
76 2612 For J= 1 To JMAX(N)
77 2614 PRINT GTTF(N,J);
78 2616 NEXT J
79 2618 Print : Print
80 2620 Next N
81 2700 '
82 2705 Print
83 2710 Print " LIFE(HRS)","# FAILURES","FAILURE RATE","SURVIVERS","RELIABILITY"
84 2715 Print
85 2720 For N=1 To NPERIOD
86 2725 Print TAB(2);
87 2730 Print TS(N);
88 2733 Print " -";
89 2736 Print TE(N);
90 2738 Print TAB(19);
91 2740 Print JMAX(N);
92 2745 Print TAB(33);
93 2750 Print FR(N);
94 2755 Print TAB(51);
95 2760 Print NEP(N);
96 2765 Print TAB(67);
97 2780 Print R(N)
98 2790 NEXT N
99 2800 PRINT
100 2810 Print " AVERAGE PERIOD FAILURE RATE (/HR)"TAB(38);
101 2840 Print AVFR
102 2860 PRINT
103 2862 Print " TOTAL NO. OF FAILURES";TAB(38);
104 2864 Print IMAX
105 2880 Print " TOTAL TIME ON TEST (HRS)";TAB(38);
106 2890 Print STTF
107 2900 Print " CUMULATIVE FAILURE RATE (/HR)";TAB(38);
108 2910 Print IMAX/STTF
109 2915 Print "
110 2917 Print
111 4000 End
112
113 5000 '-----
114 5020 ' Input DATA - LOW LIFETIME
115 5040 '-----
116 5060 DATA 100
117 5080 DATA 44,67,23,90,99,23,1,24,13,34
118 5100 DATA 91,87,74,35,56,13,35,2,45,67
119 5120 DATA 16,74,93,63,63,6,74,48,20,64
120 5140 DATA 17,83,65,37,92,53,64,59,26,100
121 5150 DATA 16,38,42,92,53,54,37,53,19,20
122 5160 DATA 74,3,9,45,24,23,5,66,44,22
123 5170 DATA 34,89,33,22,11,77,99,24,45,58
124 5180 DATA 76,39,10,82,63,56,34,13,11,45
125 5190 DATA 59,33,22,56,73,95,45,24,67,56
126 5200 DATA 93,74,64,75,38,29,92,74,86,64
127 5210 DATA 10
128
129 6000 '-----
130 6020 ' INPUT DATA - LONG LIFETIME
131 6040 '-----
132 6060 'DATA 100

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133 6080 'DATA 4400,6700,2300,9000,9900,2300,100,2400,1300,3400
134 6100 'DATA 9100,8700,7400,3500,5600,1300,3500,200,4500,6700
135 6120 'DATA 1600,7400,9300,6300,6300,600,7400,4800,2000,6400
136 6140 'DATA 1700,8300,6500,3700,9200,5300,6400,5900,2600,10000
137 6150 'DATA 1600,3800,4200,9200,5300,5400,3700,5300,1900,2000
138 6160 'DATA 7400,300,900,4500,2400,2300,500,6600,4400,2200
139 6170 'DATA 3400,8900,3300,2200,1100,7700,9900,2400,4500,5800
140 6180 'DATA 7600,3900,1000,8200,6300,5600,3400,1300,1100,4500
141 6190 'DATA 5900,3300,2200,5600,7300,9500,4500,2400,6700,5600
142 6200 'DATA 9300,7400,6400,7500,3800,2900,9200,7400,8600,6400
143 6210 'DATA 10
144