

IX, A. Programme Listing.

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1 JOB WATFIV YFAFA018MUS, LINES=60, PAGES=175, T=180
1 REAL P(1000), DUR(1000), RST(1000), AMP(1000),
1 TIM(1000), TD(1000)
2 REAL LOLEV, HILEV
3 REAL TITLE(15)
4 REAL A1(1000), A2(1000), P1(1000), P2(1000), TD1(1000),
1, TD2(1000)
5 REAL DM(1000), DMST(1000), DMD1(1000), DMD2(1000)
6 REAL DMIN
7 INTEGER ISTART(1000), IEND(1000)
8 INTEGER NEXT(10), COUNT(10), NUMBER(10)
9 INTEGER HICNT, FLAG, TEMPO1

C
C INITIALIZE AND READ IN SCORE
10 TLOG(A)=ALOG(A)/ALOG(2.0)
11 READ(5,39)TITLE
12 39 FORMAT(15A4)
13 READ(5,40)NUMBER(1), CMIN, TEMPO1
14 40 FORMAT(15, F5.2, I4)
15 TEMPC=FLOAT(TEMPO1)/50.0
C ROUNDS OFF CMIN TO PREVENT FORTRAN ACCURACY ERRORS.
16 CMIN=CMIN+.001
17 WRITE(6,41)TITLE
18 41 FORMAT(1H1,15A4)
C
19 WRITE(6,55)TEMPO1
20 55 FORMAT(1H0,'TEMPO (MM) =',I8)
21 WRITE(6,38)CMIN
22 38 FORMAT(1H0,'CMIN= ',F5.2)
C
23 EPS1=0.0001
24 N=NUMBER(1)
25 WRITE(6,59)
26 59 FORMAT(1H1,2X,'N',4X,'DUR',5X,'RST',4X,'PITCH',6X,'A1',7X,'A2',3X,'
1 TMBR',/)
27 DO 67 I=1,N
28 READ(5,60)DUR(I),RST(I),P(I),A1(I),A2(I),TIM(I)
29 60 FORMAT(5X,6F5.0)
30 WRITE(6,66)I,DUR(I),RST(I),P(I),A1(I),A2(I),TIM(I)
31 66 FORMAT(15,6F8.2)
32 67 CONTINUE
C
33 DO 9725 I=1,N
34 P1(I)=P(I)
35 DUR(I)=DUR(I)/TEMPO
36 TD(I)=3.0-TLOG(DUR(I))
37 TD1(I)=TD(I)
38 RST(I)=RST(I)/TEMPO
39 AMP(I)=(A1(I)+A2(I))/2.0
40 9725 P2(I)=P(I)
41 CMIN=CMIN/TEMPO
42 READ(5,70)NPASS
43 70 FORMAT(I4)
44 DO 9600 ILOOP=1, NPASS
45 N=NUMBER(1)
46 READ(5,72)DW,PW,AW,TDW,TW
47 72 FORMAT(5F6.2)
48 WRITE(6,74)DW,PW,AW,TDW,TW
49 74 FORMAT(1H0,'WEIGHTINGS: PROXIMITY=',
1 F5.2,' PITCH=',F5.2,' INTENSITY=',F5.2,' TEMPORAL DENSITY=',
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2 F5.2, ' TIMBRE=',F5.2)
50 WSUM=PW+DW+TDW+AW+TW
51 PW=PW/WSUM
52 DW=DW/WSUM
53 TDW=TDW/WSUM
54 AW=AW/WSUM
55 TW=TW/WSUM
56 DO 76 K=1,10
57 76 COUNT(K)=0
58 DO 78 K=1,1000
59 DM(K)=0.0
60 DMST(K)=0.
61 DMD1(K)=0
62 DMD2(K)=0
63 IEND(K)=0
64 78 ISTART(K)=0
C
65 DW=DW*10.0
C
C INITIALIZES BOUNDARIES ON FIRST LEVEL
66 DO 1777 I=2,N
67 PI=PW*(P1(I)-P2(I-1))
68 TDI=0.0
69 DI=DW*(RST(I-1))
70 IF (RST(I-1).EQ.0.)ALAST=A2(I-1)
71 IF(RST(I-1).GT.0.)ALAST=0.
72 AI=AW*(A1(I)-ALAST)
73 DM(I)=(ABS(DI)+ABS(PI)+ABS(TDI)+ABS(AI))
74 DM(I)=DM(I)*2.0
C
75 1777 CONTINUE
76 DO 80 I=501,1000
77 P(I)=0
78 DUR(I)=0
79 AMP(I)=0
80 TD(I)=0
81 TIM(I)=0
82 RST(I)=0
83 80 CONTINUE
C
84 LEVEL=0
C
C
C MAIN PROGRAM
C
C SETS NEW LEVEL, CLEARS COUNTER(CHECK), AND INITIALIZES
C FLAG, WHICH TELLS YOU IF YOU'VE FINISHED ON A LEVEL.
C CHECK IS A VARIABLE WHICH SEES IF THERE ARE ENOUGH
C TG'S CURRENTLY TO COMPUTE FOR INITIATION.
C
85 100 CHECK=0
86 ET=0.
87 FLAG=0
88 LEVEL=LEVEL+1
C
C
C SETS ARRAY INDICES.
89 LOLEV= (2.0**((LEVEL-1)))
90 HILEV= (2.0**((LEVEL)))

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91      K1=1000.0-((1.0/LOLEV)*1000.0)
92      K2=1000.0-((1.0/HILEV)*1000.0)
93      WRITE(6,9375)
      C
      C
      C      IF NUMBER<4, THEN NOT ENOUGH TG'S ON THIS HIGHEST LEVEL
94      C      TO TRY AND MAKE DISTINCTIONS. SO PROGRAM TERMINATES.
95      C      IF (NUMBER(LEVEL).LT.4) GO TO 9000
96      C      HICNT=1
      C      ISTART(K2+1)=K1+1
      C
      C      SPECIFIC PLANAR COMPUTATION
97      C      500      COUNT(LEVEL)=COUNT(LEVEL)+1
98      C      TCOUNT=COUNT(LEVEL)
99      C      CHECK=CHECK+1
100     C      IF (TCOUNT.LE.NUMBER(LEVEL)) GO TO 550
101     C      FLAG=1
102     C      GO TO 700
      C
      C
      C      KEEPS TRACK OF ELAPSED TIME IN TG.
103     C      550      ET=ET+DUR(TCOUNT+K1)
      C
      C      CHECKS FOR 'ONE ELEMENT CLANGS'.
104     C      IF (CHECK.LT.2) GO TO 500
      C
      C      COMPUTE INTERVAL (DISJUNCTION MEASURE)
105     C      IND=(TCOUNT+K1)
      C
      C      MEAN INTERVALS
106     C      PI=PW*(P(IND)-P(IND-1))
107     C      DI=DW*DUR(IND-1)
108     C      IF (LEVEL.GT.1) DI=0
109     C      TDI=TDW*(TD(IND)-TD(IND-1))
110     C      AI=AW*(AMP(IND)-AMP(IND-1))
111     C      TI=TW*(TIM(IND)-TIM(IND-1))
      C      SUMS MEAN INTERVALS.
112     C      ABSUM=ABS(PI)+ABS(TDI)+ABS(AI)+ABS(TI)+DI
      C
      C
      C      "CITY-BLOCK" METRIC.
113     C      DM(IND)=.5*DM(IND)+ABSUM
      C
114     C      IF (TCOUNT.LT.4) GO TO 650
      C
      C      COMPUTES DIFFERENCE OF PEAK WITH SURROUNDING DM'S TO GIVE
      C      ROUGH IDEA OF STRENGTH OF INITIATOR.
115     C      DMD1(IND-1)=1.0-(DM(IND-2)/DM(IND-1))
116     C      DMD2(IND-1)=1.0-(DM(IND)/DM(IND-1))
      C
117     C      650      IF (CHECK.LT.4) GO TO 500
      C
      C      CHECKS MINIMUM TG LENGTH.
118     C      ETCHK=ET-(DUR(IND-1)+DUR(IND))
119     C      IF (ETCHK.LE.CMIN) GO TO 500
      C
      C      TESTS FOR PEAK.
120     C      IF ((DMD1(IND-1).LT.EPS1).OR.(DMD2(IND-1).LT.EPS1))
      C      1      GO TO 500
      C
      C      IF DMST POSITIVE, THEN PEAK. IF ZERO, THEN NOT PEAK.

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      C          COMPUTE PEAK STRENGTH.
121      DMST(IND-1)=(DMD1(IND-1)+DMD2(IND-1))/2.
      C
      C          IF PEAK, VALUES ARE STORED FOR NEXT LEVEL STATES.
122      700      PITSUM=0
123              TIMSUM=0
124              AMPSUM=0
125              DURSUM=0
126              TDSUM=0
127              JEND=TCOUNT+K1-2
128              IF(FLAG.EQ.1)JEND=TCOUNT+K1-1
129              HYIND=HICNT+K2
130              JBEGIN=ISTART(HYIND)

      C
      C
131      DO 800 I=JBEGIN,JEND
132              DURSUM=DURSUM+DUR(I)
133              TIMSUM=TIMSUM+(DUR(I)*TIM(I))
134              AMPSUM=AMPSUM+(DUR(I)*AMP(I))
135              PITSUM=PITSUM+(DUR(I)*P(I))
136              IF(LEVEL.EQ.1)TDSUM=TDSUM+TD(I)
137              IF(LEVEL.NE.1)TDSUM=TDSUM+(DUR(I)*TD(I))
138      800      CONTINUE
      C
      C          ADJUSTS ELAPSED TIME W.R.T NEW TG JUST COMPUTED.
139      ET=ET-DURSUM
      C
      C          STORE VALUES AS NEXT LEVEL STATES.
140      DUR(HYIND)=DURSUM
141      P(HYIND)=PITSUM/DURSUM
142      AMP(HYIND)=AMPSUM/DURSUM
143      TIM(HYIND)=TIMSUM/DURSUM
144      IF(LEVEL.EQ.1)TD(HYIND)=TDSUM/(JEND-JBEGIN+1)
145      IF(LEVEL.NE.1)TD(HYIND)=TDSUM/DURSUM
146      P1(HYIND)=P(JBEGIN)
147      P2(HYIND)=P(JEND)
148      RST(HYIND)=DUR(JEND)
149      A1(HYIND)=AMP(JBEGIN)
150      A2(HYIND)=AMP(JEND)
151      TD1(HYIND)=TD(JBEGIN)
152      TD2(HYIND)=TD(JEND)
153      DM(HYIND)=DM(JBEGIN)

      C
      C          RESETS COUNTERS FOR NEW TG, REMAINING ON CURRENT LEVEL.
154      NUMBER(LEVEL+1)=HICNT
155      IEND(HYIND)=TCOUNT+K1-2
156      IF(FLAG.EQ.1)IEND(HYIND)=TCOUNT+K1-1
157      IF(FLAG.EQ.1)GO TO 100
158      HICNT=HICNT+1
159      CHECK=2
160      HYIND=HICNT+K2
161      ISTART(HYIND)=TCOUNT+K1-1
162      GO TO 500

      C
      C          PRINTING SUBROUTINE.
163      9000      K1=LEVEL

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164         J=NUMBER(1)
165         DO 9010 K=1,10
166     9010     NEXT(K)=1
           C
           C     PRINTS ELEMENTS.
           C
167         DO 9500 I=1,J
168         WRITE(6,9050)I,DUR(I),RST(I),P(I),TD(I),
           1     A1(I),A2(I),TIM(I),DM(I),DMST(I),DMD1(I),DMD2(I)
169     9050     FORMAT(1H ,I4,9F6.2,5X,2F6.2)
           C
170         IREF=I
           C
171         DO 9400 M=2,K1
172         N=NEXT(M)
173         W5=INT(2.0**{(M-1)})
174         K6=1000-((1/W5)*1000)
175         INDX=N+K6
176         INDX=1000-((1/W5)*1000)+N
177         IF (IEND(INDX).NE.IREF)GO TO 9500
178         GO TO (9500,9100,9150,9200,9250,9300),M
           C
           C
           C
           C
179     9100     CLANGS
           WRITE(6,9125)
           1     NEXT(M),DUR(INDX),RST(INDX),P1(INDX),P2(INDX),
           2     P(INDX),TD1(INDX),TD2(INDX),TD(INDX),
           3     A1(INDX),A2(INDX),AMP(INDX),TIM(INDX),
           4     DM(INDX),DMST(INDX),DMD1(INDX),DMD2(INDX)
180     9125     FORMAT(1H0,8X,I4,14F6.2,4X,2F6.2)
181         IREF=NEXT(M)+K6
182         NEXT(M)=NEXT(M)+1
183         WRITE(6,9375)
184         GO TO 9400
           C
           C
           C     SEQUENCES
185     9150     WRITE(6,9175)
           1     NEXT(M),DUR(INDX),RST(INDX),P1(INDX),P2(INDX),
           2     P(INDX),TD1(INDX),TD2(INDX),TD(INDX),
           3     A1(INDX),A2(INDX),AMP(INDX),TIM(INDX),
           4     DM(INDX),DMST(INDX),DMD1(INDX),DMD2(INDX)
186     9175     FORMAT(1H0,16X,I4,14F6.2,4X,2F6.2)
187         IREF=NEXT(M)+K6
188         NEXT(M)=NEXT(M)+1
189         WRITE(6,9375)
190         GO TO 9400
           C
           C
           C     SEGMENTS.
191     9200     WRITE(6,9225)
           1     NEXT(M),DUR(INDX),RST(INDX),P1(INDX),P2(INDX),
           2     P(INDX),TD1(INDX),TD2(INDX),TD(INDX),
           3     A1(INDX),A2(INDX),AMP(INDX),TIM(INDX),
           4     DM(INDX),DMST(INDX),DMD1(INDX),DMD2(INDX)
192     9225     FORMAT(1H0,24X,I4,14F6.2,4X,2F6.2)
193         IREF=NEXT(M)+K6
194         NEXT(M)=NEXT(M)+1

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195      WRITE(6,9375)
196      GO TO 9400
      C
      C
      C
197 9250  WRITE(6,9275)
      1  NEXT(M), DUR(INDX), RST(INDX), P1(INDX), P2(INDX),
      2  P(INDX), TD1(INDX), TD2(INDX), TD(INDX),
      3  A1(INDX), A2(INDX), AMP(INDX), TIM(INDX),
      4  DM(INDX), DMST(INDX)
198 9275  FORMAT(1H0,I5,14F6.2)
199      IREF=NEXT(M)+K6
200      NEXT(M)=NEXT(M)+1
201      WRITE(6,9375)
202      GO TO 9400
      C
      C
203 9300  WRITE(6,9325)
      1  NEXT(M), DUR(INDX), RST(INDX), P1(INDX), P2(INDX),
      2  P(INDX), TD1(INDX), TD2(INDX), TD(INDX),
      3  A1(INDX), A2(INDX), AMP(INDX), TIM(INDX),
      4  DM(INDX), DMST(INDX)
204 9325  FORMAT(1H0,I5,14F6.2)
205      IREF=NEXT(M)+K6
206      NEXT(M)=NEXT(M)+1
207      WRITE(6,9375)
208      GO TO 9400
      C
      C
209 9375  FORMAT(' ')
      C
210 9400  CONTINUE
211 9500  CONTINUE
212 9600  CONTINUE
213 5080  STOP
214      END

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\$ENTRY