

บรรณานุกรม



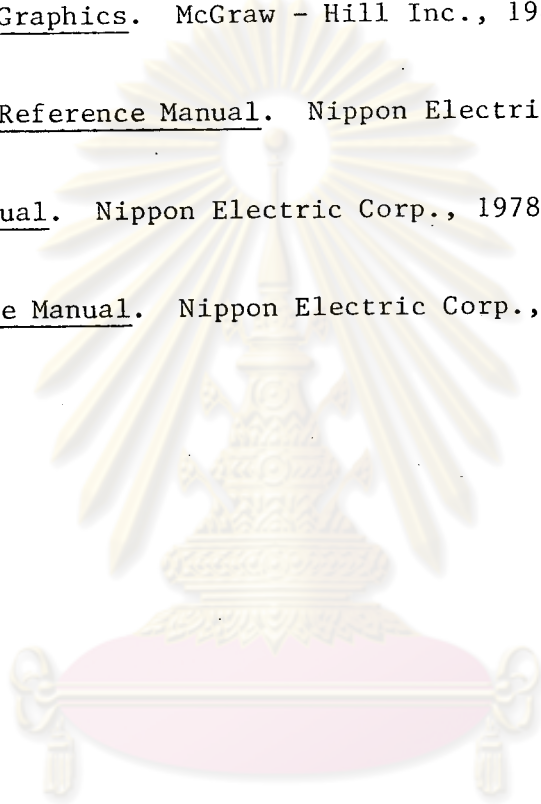
John J. Donovan : System Programming. McGraw - Hill Inc., 1972.

William M. Newman and Robert F. Sqrull : Principles of Interactive Computer Graphics. McGraw - Hill Inc., 1981.

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FGU-2200 Reference Manual. Nippon Electric Corp., 1978.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
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ภาคผนวก ก.

รายละเอียดของโปรแกรมระบบงานแปลงผังงาน เป็นโปรแกรมภาษาเบสิก

1. โปรแกรมสร้างและแก้ไขรูปผังงาน " fws.SPM "



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1.1 โปรแกรม " flow1.SPM "

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10 REMOVE2: CLEAR700: GOSUB160: CONSOLE0,1,0,0: AD=&HEEE7+65536!: D%=PEEK(AD): IF D%(<)0 THEN GOSUB3720 ELSE GOSUB230
20 COLOR0: LOCATE C1%-1,R1%: PRINT " "
30 LOCATE0,0: A$=INPUT$(1): D%=1: GOSUB3370
40 IF A$="s" THEN GOSUB280: GOSUB610: GOTO20
50 IF A$="4" THEN GOSUB140: GOSUB350: GOSUB1350: I%=NO%+1: GOSUB1450: GOSUB150: GOTO20
60 IF A$="2" THEN GOSUB140: GOSUB420: GOSUB1350: I%=NO%-10: GOSUB1920: GOSUB150: GOTO20
70 IF A$="6" THEN GOSUB140: GOSUB310: GOSUB1350: I%=NO%-1: GOSUB1450: GOSUB150: GOTO20
80 IF A$=CHR$(29) OR A$=CHR$(28) THEN GOSUB140: GOSUB1320: GOSUB310: GOSUB1350: GOTO20
90 IF A$=CHR$(31) OR A$=CHR$(30) THEN GOSUB140: GOSUB1320: GOSUB1060: GOSUB380: GOSUB1350: GOTO20
100 IF A$="/" THEN 3230
110 T$=A$: G%=C1%: J%=R1%-2: GOSUB2780: IF K%=0 THEN 130
120 GOSUB450: GOSUB610: GOSUB1170: GOTO20
130 LOCATE 0,1: COLOR 4: PRINT "INVALID COMMAND": BEEP: GOTO30
140 LOCATE C1%-1,R1%: PRINT " ": RETURN
150 B$(I%)=MID$(B$(I%),1,1): RETURN
160 DEFUSR0=&HEESC: DEFUSR1=&HEEB0: DEFUSR2=&HED00: DEFUSR3=&HEBD0: DEFUSR4=&HEC34: DEFUSR5=&HEF00
170 DEFUSR6=&HEDF5: DEFUSR7=&HFF90: DEFUSR8=&HF27A: DEFUSR9=&HFF50
180 OPEN "graph.DAT" AS #1: FIELD #1,160 AS FL$
190 OPEN "work.SWK" AS #3: FIELD #3,237 AS W$
200 DIM B$(500): DIM UR$(4): DIM LR$(4): DIM HR$(4)
210 C%=0: R%=0: C1%=3: R1%=6: NO%=1: C2%=1: R2%=1: P%=0: R3%=1
220 FD%=0: S%=0: X%=1: E%=0: E$="": UR$(0)=1: LR$(0)=1: HR$(0)=1: RETURN
230 MONGR: SET@1: ERASE@: MONGR@: PRINT CHR$(12)
240 D%=1: GOSUB3370: D%=3: GOSUB3370
250 COLOR4: FOR I%=4 TO 23: LOCATE0,I%: PRINT " ": NEXT I%
260 CH%=65: GOSUB1040: D%=1: GOSUB1430: RETURN
270 ' START & STOP
280 IF S%=1 THEN N$="ALREADY START": GOSUB720: K%=0: RETURN
290 S%=1: LOCATE C1%,R1%-2: PRINT " START": B$(NO%)="s": L=NO%: GOSUB1400: K%=6: RETURN
300 ' MOVE CURSOR RIGHT
310 IF A$=CHR$(29) OR A$="4" THEN 350
320 C1%=C1%+12: C2%=C2%+1: NO%=NO%+1: IF C1%>63 THEN C1%=63: GOSUB740
330 C%=(C1%-3) \ 12: RETURN
340 ' MOVE CURSOR LEFT
350 C1%=C1%-12: C2%=C2%-1: NO%=NO%-1: IF C1%<3 THEN C1%=3: GOSUB780
360 GOTO 330
370 ' MOVE CURSOR UP
380 IF A$=CHR$(31) OR A$="2" THEN 420
390 R1%=R1%-4: R2%=R2%-1: NO%=NO%-10: IF R1%<6 THEN R1%=6: GOSUB810
400 R%=(R1%-6) \ 4: RETURN

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410 ' MOVE CURSOR DOWN
420 R1%=R1%+4:R2%=R2%+1:NO%=NO%+10:IF R1%>22 THEN R1%=22:GOSUB870
430 GOTO 400
440 ' XXX CHECK FOR CREATE FLOW
450 IF A$="r" AND R2%<1)UR%(P%) THEN 460 ELSE 480
460 X%=X%+1:IF X%>5 THEN X%=5:N$="EXECSS 5 SUB-ROUTINES":GOSUB720:K%=0:RETURN
470 B$(NO%)="  X  ":P%=P%+1:UR%(P%)=R2%:HR%(P%)=R2%:RETURN
480 IF FD%=0 AND B$(NO%)="" THEN N$="NOT ALLOW TO CREATE BLOCK":GOSUB720:K%=0:RETURN
490 T$=MID$(B$(NO%),1,1):IF A$="f" AND T$("<" " THEN 590
500 IF T$="f" OR T$="c" THEN 590
510 IF A$="c" AND FD%>0 THEN 550
520 IF FD%>1 THEN N$="NOT LINK IN HORIZONTAL LINE":GOSUB720:K%=0:RETURN
530 IF ASC(T$)>117 THEN 590
540 FD%=1:K3=(R2%2560)+(C2%12)+35654!:GOTO580
550 IF FD%=2 THEN K3=(R2%2560)+(C2%12)+36618!:GOTO580
560 IF FD%=1 THEN MID$(B$(NO%),6,2)=MKI$(NO%-10):MID$(B$(NO%),8,2)="  ":GOTO540
570 K3=(R2%2560)+(C2%12)+36618!:MID$(B$(NO%),4,2)=MKI$(NO%-1):MID$(B$(NO%),8,2)="  "
580 GOSUB2330:FD%=0:IF R2%UR%(P%) THEN UR%(P%)=R2%:RETURN ELSE RETURN
590 N$="NOT ALLOW TO OVERWRITE":GOSUB720:K%=0:RETURN
600 ' CREATE FLOW
610 IF K%=0 THEN RETURN
620 IF R2%UR%(P%) THEN UR%(P%)=R2%
630 IF LR%(P%)<C2% THEN LR%(P%)=C2%
640 K1=(R2%2560)+(C2%12)+35971!:MID$(B$(NO%),1,1)=A$
650 POKE &HEE86,VAL("&h"+MID$(HEX$(K1),3,2))
660 POKE &HEE87,VAL("&h"+MID$(HEX$(K1),1,2))
670 GET #1,K%:AD=VARPTR(FL$):AD=AD+1
680 D%=PEEK(AD):B%=PEEK(AD+1):L=B%256+D%
690 POKE &HEE63,VAL("&h"+MID$(HEX$(L),3,2))
700 POKE &HEE64,VAL("&h"+MID$(HEX$(L),1,2))
710 A%=USR0(0):RETURN
720 COLOR4:LOCATE0,1:PRINT N$:BEEP:RETURN
730 ' check right bound & scroll to right
740 IF C2%>10 THEN A$="  ":C2%=10:NO%=NO%-1:N$="REACH RIGHT BOUND":GOSUB720:RETURN
750 D%=2:POKE &HF27F,D%:A%=USR0(0):K1=62690!:K2=62702!:I%=56
760 J%=176:D%=21:GOSUB1120:GOSUB930:GOSUB2360:CH%=CH%-5:GOSUB1040:RETURN
770 ' CHECK LEFT BOUND & SCROLL TO LEFT
780 IF C2%<1 THEN A$="  ":C2%=1:NO%=NO%+1:N$="REACH LEFT BOUND":GOSUB720:RETURN
790 D%=1:POKE &HF27F,D%:A%=USR0(0):K1=62757!:K2=62745!:I%=56
800 J%=184:D%=21:GOSUB1120:GOSUB930:GOSUB2750:CH%=CH%-7:GOSUB1040:RETURN
810 ' CHECK UPPER BOUND
820 IF R2%<1 THEN R2%=1:NO%=NO%+10:R3%=1:N$="REACH UPPER BOUND":GOSUB720:RETURN
830 R3%=R3%-1:D%=2:POKE &HEBD5,D%:A%=USR3(0):D%=17
840 GOSUB850:GOSUB980:GOSUB2970:D%=R3%:GOSUB1430:GOSUB860:RETURN
850 K1=64971!:K2=64491!:I%=70:J%=176:POKE &HFF6A,&H88:POKE &HFF6B,&HFF:GOSUB1120:RETURN
860 POKE &HFF6A,&H78:POKE &HFF6B,&H0:RETURN
870 ' CHECK LOWER BOUND
880 IF R2%>50 THEN R2%=50:NO%=NO%-10:N$="REACH LOWER BOUND":GOSUB720:RETURN
890 R3%=R3%+1:D%=1:POKE &HEBD5,D%:A%=USR3(0):K1=62691!:K2=63171!
900 I%=70:J%=176:D%=17:GOSUB1120:GOSUB980

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910 K1=46211!:J%=20:M%=FD%:G%=3:H%=(R%-1)*10+CH%-70:GOSUB2980:D%=R3%:GOSUB1430:RETURN
920 ' XXX CLEAR COL CONTENT IN BLOCK
930 D%=4:COLOR0:IF C%=0 THEN Y%=C1%-1:Y1%=12 ELSE Y%=C1%-7:Y1%=15
940 FOR I%=1T05
950 LOCATEY%,D%:PRINT SPC(Y1%):LOCATEY%,D%+1:PRINT SPC(Y1%):LOCATEY%,D%+3:PRINT SPC(Y1%):D%=D%+4:NEXTI%
960 RETURN
970 ' XXX CLEAR ROW CONTENT IN BLOCK
980 COLOR0:D%=3
990 FOR I%=1T06
1000 LOCATE D%,R1%-2:PRINT "          ":LOCATED%+7,R1%-1:PRINT "          "
1010 LOCATED%-1,R1%+1:PRINT "          ":D%=D%+12:NEXTI%
1020 RETURN
1030 ' adjust column label
1040 COLOR4:FOR I%=1T06:LOCATE6+(I%-1)*12,3:PRINT CHR$(CH%):CH%=CH%+1:NEXTI%:RETURN
1050 'check range
1060 IF X%=1 THEN RETURN
1070 IF A%=CHR$(31) THEN 1100
1080 IF P%=0 THEN RETURN
1090 D%=R2%-1:IF D%=UR%(P%-1) THEN P%=P%-1:RETURN ELSE RETURN
1100 D%=R2%+1:IF D%>UR%(P%) AND X%>P%+1 THEN P%=P%+1:RETURN ELSE RETURN
1110 ' scroll text
1120 POKE &HFF55,VAL("&h"+MID$(HEX$(K1),3,2)):POKE &HFF56,VAL("&h"+MID$(HEX$(K1),1,2))
1130 POKE &HFF58,VAL("&h"+MID$(HEX$(K2),3,2)):POKE &HFF59,VAL("&h"+MID$(HEX$(K2),1,2))
1140 POKE &HFF5B,I%:POKE &HFF5E,D%:POKE &HFF68,J%
1150 A%=USR9(0):RETURN
1160 ' INPUT COMMAND & OPERAND
1170 IF K%=0 THEN RETURN
1180 IF K%=6 THEN L=NO%:GOSUB1400:RETURN
1190 COLOR4:LOCATE0,1:PRINT "INPUT COMMAND & OPERAND":COLOR0
1200 LOCATE0,0:LINEINPUT A$:D%=1:GOSUB3370:D%=0:GOSUB1260:A%=LEN(A$):GOSUB4010
1210 IF K%=7 AND A%>6 THEN 1220 ELSE 1230
1220 A%=MID$(A$,1,6):LOCATE0,1:COLOR4:PRINT"TRUNCATE SUB-NAME TO 6 CHRS":COLOR0
1230 B$(NO%)=MID$(B$(NO%),1,9)+A$:LOCATE0,2:PRINT A$:T%=MID$(A$,1,9)
1240 IF LEN(T%)>3 THEN T%=MID$(T%,1,3)+" "+MID$(T%,4,9)
1250 LOCATEC1%,R1%-2:PRINT SPC(12):LOCATE C1%,R1%-2:PRINT T%:L=NO%:GOSUB1400:RETURN
1260 COLOR0:LOCATE0,D%:PRINT SPC(80):RETURN
1270 ' READ RECORD
1280 IF B$(L)="" THEN RETURN
1290 B%=(L-1)*73+1:D=L-(B%-1)*3:T%=(D-1)*79+1
1300 GET #3,B%:Q$=W$:B$(L)=MID$(Q$,T%,79):Q$="":RETURN
1310 ' CHECK FOR DEL LINE
1320 IF FD%<1 THEN RETURN
1330 GOSUB3160:FD%=0:RETURN
1340 ' CLEAR INPUT LINE & CONTENT LINE
1350 D%=0:GOSUB1260:D%=2:GOSUB1260
1360 T%=MID$(B$(NO%),1,1):IF T%="" OR T%="s" OR T%="t" THEN RETURN
1370 IF ASC(T%)>116 THEN RETURN
1380 L=NO%:GOSUB1280:T%=MID$(B$(NO%),10,70):LOCATE0,2:PRINTT$:B$(NO%)=MID$(B$(NO%),1,1):RETURN
1390 ' PUT RECORD
1400 B%=(L-1)*73+1:D=L-(B%-1)*3:T%=(D-1)*79+1:A%=LEN(B$(L)):D$=STRING$(79,32):MID$(D$,1,A%)=B$(L)

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1410 GET #3,B%:Q$=W$:MID$(Q$,T/,79)=D$:LSET W$=Q$:PUT#3,B%:B$(L)=MID$(B$(L),1,1):D$="" :Q$="" :RETURN
1420 ' ADJUST ROW LABEL
1430 COLOR4:FOR I%=1TO5:LOCATE0,6+(I%-1)*4:PRINT USING "##";D%:D%=D%+1:NEXT I%:COLOR0:RETURN
1440 ' XXX CHECK FOR ALLOW CREATE HOR-LINE
1450 K/=3:E/=8:IF FD%>0 THEN 1760
1460 IF A$="" THEN RETURN
1470 J/=2:IF A$="4" THEN E$="1":N$="2":K1=36846!:AD=36618!:Y%=2:Y1%=1:Y2%=8:Y3%=8:Q$="v":GOTO1490
1480 E$="r":N$="y":K1=36858!:AD=36618!:Y%=3:Y1%=-1:Y2%=-4:Y3%=4:Q$="w"
1490 M%=C1%+Y2%:G%=R1%-1:IF B$(I%)="" THEN N$="THIS BLOCK IS BLANK":GOSUB720:RETURN
1500 IF ASC(B$(I%))>116 THEN 1510 ELSE 1520
1510 IF B$(I%)="x" OR B$(I%)=Q$ THEN 1520 ELSE 1550
1520 L=I%:GOSUB1280:T$=MID$(B$(I%),1,1):IF T$="f" THEN GOSUB 1680 ELSE A$="" :GOTO 1540
1530 IF E%=0 THEN RETURN:ELSE IF J%=-1 THEN GOSUB1640:GOTO1560 ELSE 1560
1540 IF ASC(T$)>117 THEN 1560
1550 N$="NOT ALLOW TO DRAW HORIZONTAL LINE":GOSUB720:RETURN
1560 K2=(R%/2560)+(C%/Y1%)*12+K1:K3=(R%/2560)+(C%/12)+AD:T$=MID$(B$(NO%),1,1)
1570 IF T$="c" THEN E%=Y3%:GOSUB1610:GOSUB2330:FD%=0:GOTO1600
1580 IF T$="x" OR T$=N$ THEN GOSUB1610:FD%=0:GOTO1600
1590 IF B$(NO%)="" THEN FD%=Y%:GOSUB2280 ELSE 1630
1600 MID$(B$(I%),J/,1)=E$:LOCATEM%,G%:PRINT A$:L=I%:GOSUB1400:RETURN
1610 L=NO%:GOSUB1280:FD%=Y%:GOSUB2290:GOSUB1400:RETURN
1620 RETURN
1630 B$(I%)=MID$(B$(I%),1,1):N$="NOT ALLOW TO LINE":GOSUB720:RETURN
1640 LOCATE0,1:COLOR4:PRINT"DECISION: y(YES) n(NO)":A$=INPUT$(1):D%=1:GOSUB3370
1650 IF A$="n" THEN J/=5:K/=6:A$="NO" ELSE J/=2:K/=3:A$="YES"
1660 LOCATE M%,G%:PRINT A$:RETURN
1670 N$="ALREADY 2 LINES":GOSUB720:RETURN
1680 T$=MID$(B$(I%),2,1):A$=MID$(B$(I%),5,1):IF T$="" AND A$="" THEN J%=-1:RETURN
1690 IF T$("<" AND A$("<" THEN GOSUB1670:E%=0:RETURN
1700 IF T$="" THEN 1740
1710 IF T$=E$ THEN 1730
1720 K/=6:J/=5:A$="NO ":GOSUB1660:RETURN
1730 E%=0:N$="ALREADY LINED":GOSUB720:RETURN
1740 IF A$=E$ THEN 1730
1750 K/=3:J/=2:A$="YES":GOSUB1660:RETURN
1760 IF A$="4" THEN 1770 ELSE 1790
1770 IF FD%=3 THEN 1550
1780 K1=36846!:AD=36618!:Y%=1:Y1%=12:Y2%=2:Y3%=8:N$="v":E$="1":M$="z":GOSUB1820:RETURN
1790 IF FD%=2 THEN 1550
1800 K1=36858!:AD=36618!:Y%=-1:Y1%=13:Y2%=3:Y3%=4:N$="w":E$="r":M$="y":GOSUB1820
1810 IF C%<-1)LR%(P%) THEN LR%(P%)=C%<-1:RETURN:ELSE RETURN
1820 K2=(R%/2560)+(C%/Y%)*12+K1:K3=(R%/2560)+(C%/12)+AD:T$=MID$(B$(NO%),1,1)
1830 IF FD%=1 THEN K1=(R%/2560)+(C%/Y%)*12+35974!:D%=Y1%:FD%=Y2%:A$=N$:GOTO1850
1840 K1=(R%/2560)+(C%/Y%)*12+36851!:D%=3:FD%=Y2%:A$="x"
1850 IF T$="c" THEN E%=Y3%:GOSUB2240:L=NO%:GOSUB1280:GOSUB2290:GOSUB2330:FD%=0:GOTO1890
1860 IF T$=M$ OR T$="x" THEN GOSUB2240:L=NO%:GOSUB1280:GOSUB2290:FD%=0:GOTO1890
1870 IF B$(NO%)="" THEN GOSUB2240:GOSUB2280:GOTO1900
1880 GOSUB1630:D%=I%:I%=CVI(MID$(B$(D%),8,2)):K2=(R%/2560)+(C%/Y%)*12+35326!:GOSUB1330:RETURN
1890 GOSUB1400
1900 MID$(B$(I%),2,1)=E$:L=I%:GOSUB1400:RETURN

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1910 ' XXX CHECK FOR ALLOW DRAW VERT-LINE
1920 IF UR%(P%)=50 THEN RETURN
1930 IF P%=4 THEN 1960
1940 IF HR%(P%+1)<RZ%+2 AND HR%(P%+1)<0 THEN 1950 ELSE 1960
1950 LOCATE0,1:COLOR4:PRINT"REACH SEGMENT BOUND":BEEP:RETURN
1960 J%=2:K%=3:E%=8:IF FD%<0 THEN 2090
1970 IF B$(I%)="" OR B$(I%)="t" THEN 1630
1980 IF ASC(B$(I%))>117 AND ASC(B$(I%))<121 THEN 1630
1990 M%=C I%:G%=R I%-3:L=I%:GOSUB1280:T$=MID$(B$(I%),1,1):E$="d"
2000 IF T$="f" THEN GOSUB1680 ELSE A$="":GOTO2020
2010 IF E%=0 THEN RETURN:ELSE IF J%=-1 THEN GOSUB1640:GOTO2030 ELSE 2030
2020 IF T$="c" THEN K%=2
2030 Y%=1:K2=(R% - 1) * 2560 + (C% * 12) + 37894! : K3=(R% * 2560) + (C% * 12) + 35654! : T$=MID$(B$(NO%),1,1)
2040 IF T$="c" THEN E%=6
2050 FD%=Y%:IF B$(NO%)="" THEN GOSUB2280:GOTO2190
2060 IF ASC(T$)<117 THEN L=NO%:GOSUB1280:GOSUB2290:GOSUB2330:FD%=0:GOTO2180
2070 IF ASC(T$)<120 THEN L=NO%:GOSUB1280:GOSUB2290:FD%=0:GOTO2180
2080 GOTO1630
2090 IF FD%=1 THEN K1=((R% - 1) * 2560) + (C% * 12) + 35974! : D%=11:A$="u" : GOTO2130
2100 IF FD%=2 THEN K1=((R% - 1) * 2560) + (C% * 12) + 36854! : D%=21:FD%=1:A$="z" : GOTO2130
2110 IF LR%(P%)<CZ% THEN LR%(P%)=CZ%
2120 K1=((R% - 1) * 2560) + (C% * 12) + 36851! : D%=31:FD%=1:A$="y"
2130 K2=((R% - 1) * 2560) + (C% * 12) + 37894! : K3=(R% * 2560) + (C% * 12) + 35654! : T$=MID$(B$(NO%),1,1)
2140 IF T$="c" THEN E%=6
2150 IF B$(NO%)="" THEN FD%=1:GOSUB2240:GOSUB2280:GOTO2220
2160 IF ASC(T$)<117 THEN FD%=1:GOSUB2240:L=NO%:GOSUB1280:GOSUB2290:GOSUB2330:FD%=0:GOTO2210
2170 IF ASC(T$)<120 THEN FD%=1:GOSUB2240:L=NO%:GOSUB1280:GOSUB2290:FD%=0:GOTO2210 ELSE 1880
2180 L=NO%:GOSUB1400
2190 IF MID$(B$(I%),1,1)="c" THEN 2200 ELSE MID$(B$(I%),J%,1)="d"
2200 L=I%:GOSUB1400:RETURN
2210 L=NO%:GOSUB1400
2220 MID$(B$(I%),2,1)="d":L=I%:GOSUB1400:IF RZ%-1)UR%(P%) THEN UR%(P%)=RZ%-1:RETURN ELSE RETURN
2230 ' XXX DRAW LINE IN BLOCK
2240 MID$(B$(I%),1,1)=A$
2250 POKE &HEC39,VAL("&h"+MID$(HEX$(K1),3,2)):POKE &HEC3A,VAL("&h"+MID$(HEX$(K1),1,2))
2260 POKE &HEC3C,D%:A%=USR4(0):RETURN
2270 ' XXX DRAW LINE BETWEEN BLOCK
2280 B$(NO%)=""
2290 MID$(B$(I%),K%,2)=MK1$(NO%):MID$(B$(NO%),E%,2)=MK1$(I%)
2300 POKE &HEF05,VAL("&h"+MID$(HEX$(K2),3,2)):POKE &HEF06,VAL("&h"+MID$(HEX$(K2),1,2))
2310 POKE &HEF08,FD%:A%=USR5(0):RETURN
2320 ' XXX DRAW ARROW
2330 POKE &HFF95,VAL("&h"+MID$(HEX$(K3),3,2)):POKE &HFF96,VAL("&h"+MID$(HEX$(K3),1,2))
2340 POKE &HFF9B,FD%:A%=USR7(0):RETURN
2350 ' XXX CREATE FLOW SCROLL TO RIGHT
2360 K1=36031!:J%=4:M%=FD%:G%=62:H%=(R3%-1)*10+CZ%:Y1%=4:Y$="r"
2370 E$="y":Y2%=58:Y3%=639:Y4%=3:Y5%=875:GOSUB2380:FD%=M%:RETURN
2380 FOR I%=1TO5
2390 E%=8:IF B$(H%)="" THEN2630
2400 LOCATEG%,J%:L=H%:GOSUB1280:T$=MID$(B$(H%),10,9)

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2410 IF LEN(T$)>3 THEN T$=MID$(T$,1,3)+" "+MID$(T$,4,9)
2420 PRINTT$:T$=MID$(B$(H%),1,1):IF T$="c" THEN E%=Y1%
2430 K2=K1+Y5%:K3=K1+Y3%:FD%=Y4%
2440 IF MID$(B$(H%),E%,2)=" " THEN 2540 ELSE D%=H%+(2-Y4%)X2+1:L=D%:GOSUB1200
2450 IF T$="c" AND MID$(B$(D%),1,1)="f" THEN GOSUB2500:GOTO2540
2460 IF T$="c" AND MID$(B$(D%),2,1)=Y$ THEN GOSUB2300:GOSUB2330:GOTO2540
2470 IF T$="x" OR T$=E$ THEN GOTO2480 ELSE GOTO2540
2480 IF MID$(B$(D%),1,1)="f" THEN GOSUB2500 ELSE GOSUB2300
2490 GOTO2540
2500 IF MID$(B$(D%),2,1)=Y$ THEN GOSUB2300:LOCATEY%,J%+1:PRINT"YES":GOTO2520
2510 IF MID$(B$(D%),5,1)=Y$ THEN GOSUB2300:LOCATEY%,J%+1:PRINT"NO"
2520 IF T$="c" THEN GOSUB2330
2530 RETURN
2540 B$(D%)=MID$(B$(D%),1,1):IF ASC(T$)<117 THEN 2560
2550 GOSUB2900:GOSUB2250:K1=L:GOTO2570
2560 GOSUB2780:GOSUB650
2570 IF T$="f" THEN D%=5:A$="NO"ELSE D%=2:A$=""
2580 IF T$="c" AND MID$(B$(H%),2,2)<" " THEN T$="d":GOSUB2660:GOTO2610
2590 T$=MID$(B$(H%),D%,1)
2600 IF T$=Y$ THEN 2610 ELSE GOSUB2660
2610 IF A$="NO" THEN A$="YES" ELSE A$="NO"
2620 IF D%<2 THEN D%=2:GOTO2590
2630 B$(H%)=MID$(B$(H%),1,1):K1=K1+2560:J%=J%+4:H%=H%+10
2640 NEXT I%
2650 RETURN
2660 IF T$="1" THEN 2670 ELSE 2680
2670 FD%=2:K2=K1+875:K3=K1+635:T$=MID$(B$(H%-1),1,1):LOCATEG%-4,J%+1:PRINT A$:GOTO2720
2680 IF T$="r" THEN 2690 ELSE 2700
2690 FD%=3:K2=K1+887:K3=K1+651:T$=MID$(B$(H%+1),1,1):LOCATEG%+8,J%+1:PRINT A$:GOTO2720
2700 IF T$="d" THEN 2710 ELSE RETURN
2710 FD%=1:K2=K1+1923:K3=K1+2243:T$=MID$(B$(H%+10),1,1):LOCATEG%-1,J%+3:PRINT A$:GOTO2720
2720 GOSUB2300:IF ASC(T$)<117 THEN GOSUB2330
2730 RETURN
2740 ' CREATE FLOW TO LEFT
2750 K1=35971!:J%=4:M%=FD%:G%=3:H%=(R3%-1)X10+C2%:Y1%=8:Y$="1"
2760 E$="z":Y2%=11:Y3%=647:Y4%=2:Y5%=887:GOSUB2380:FD%=M%:RETURN
2770 ' XXX CHECK CODE OF FLOW
2780 IF T$="f" THEN K%=3:RETURN
2790 IF T$="d" THEN K%=5:RETURN
2800 IF T$="o" THEN K%=2:RETURN
2810 IF T$="p" THEN K%=1:RETURN
2820 IF T$="i" THEN K%=4:RETURN
2830 IF T$="b" THEN K%=9:RETURN
2840 IF T$="1" THEN K%=10:RETURN
2850 IF T$="r" THEN K%=7:RETURN
2860 IF T$="c" THEN K%=8:RETURN
2870 IF T$="t" THEN K%=6:LOCATE G%,J%:PRINT" ST OP ":RETURN
2880 IF T$="s" THEN K%=6:LOCATE G%,J%:PRINT" START ":RETURN ELSE K%=0:RETURN
2890 ' XXX CHECK CODE LINE IN BLOCK
2900 IF T$="u" THEN D%=11:L=K1:K1=K1+3:RETURN

```

```

2910 IF T$="x" THEN D%=22:L=K1:K1=K1+880:RETURN
2920 IF T$="v" THEN D%=12:L=K1:K1=K1+3:RETURN
2930 IF T$="w" THEN D%=13:L=K1:K1=K1+3:RETURN
2940 IF T$="y" THEN D%=31:L=K1:K1=K1+880:RETURN
2950 D%=21:L=K1:K1=K1+883:RETURN
2960 / XXX CREATE FLOW SCROLL UP
2970 K1=35971!:J%=4:M%=FD%:G%=3:H%=(R%-1)*10+CH%-70
2980 FOR I%=1T06
2990 IF B$(H%)="" THEN 3120
3000 LOCATE G%,J%:L=H%:GOSUB1280:T$=MID$(B$(H%),10,9)
3010 IF LEN(T$)>3 THEN T$=MID$(T$,1,3)+" "+MID$(T$,4,9)
3020 PRINT T$:T$=MID$(B$(H%),1,1):IF ASC(T$)<117 THEN 3040
3030 GOSUB 2900:GOSUB2250:K1=L:D%=2:A$="":GOTO3070
3040 GOSUB2780:GOSUB650
3050 IF T$="c" AND MID$(B$(H%),2,2)<>". " THEN D%=2:T$="d":A$="":GOSUB2660:GOTO3100
3060 IF T$="f" THEN D%=5:A$="NO" ELSE D%=2:A$=""
3070 T$=MID$(B$(H%),D%,1)
3080 IF T$="1" AND I%=1 THEN 3100
3090 IF T$="r" AND I%=6 THEN 3100 ELSE GOSUB2660
3100 IF A$="NO" THEN A$="YES" ELSE A$="NO"
3110 IF D%<>2 THEN D%=2:GOTO3070
3120 B$(H%)=MID$(B$(H%),1,1):K1=K1+12:G%=G%+12:H%=H%+1
3130 NEXT I%
3140 FD%=M%:RETURN
3150 / DEL LINK LINE
3160 L=I%:GOSUB1280:IF MID$(B$(I%),1,1)="c" THEN MID$(B$(I%),2,2)=" ":GOTO3200
3170 IF MID$(B$(I%),1,1)="f" THEN 3180 ELSE 3190
3180 IF NO%=CVI(MID$(B$(I%),6,2)) THEN MID$(B$(I%),5,3)=" ":GOTO3200
3190 MID$(B$(I%),2,3)=" "
3200 B$(NO%)="":K2=(R%/2560)+(C%/12)+35326!:POKE &HEDFA,VAL("&h"+MID$(HEX$(K2),3,2))
3210 POKE &HEDFB,VAL("&h"+MID$(HEX$(K2),1,2)):A%=USR6(0):GOSUB1400:RETURN
3220 / OPERATION COMMAND
3230 COLOR4:LOCATE0,1:PRINT"COMMAND : a b c d e f h i k l q s z":A%=INPUT$(1)
3240 IF A$="b" THEN 3390
3250 IF A$="c" THEN 3410
3260 IF A$="d" THEN 3450
3270 IF A$="e" THEN 4240
3280 IF A$="i" THEN 3520
3290 IF A$="k" THEN 4150
3300 IF A$="l" THEN 3880
3310 IF A$="q" THEN 4220
3320 IF A$="a" THEN 4330
3330 IF A$="f" THEN 4100
3340 IF A$="h" THEN 4130
3350 IF A$="s" THEN 3810 ELSE 20
3360 / CLEAR PROMT LINE
3370 COLOR4:LOCATE0,D%:PRINT SPC(80):COLOR0:RETURN
3380 / BLANK COMMAND
3390 B$(NO%)=MID$(B$(NO%),1,9):L=NO%:GOSUB1400:GOSUB1350:GOTO20
3400 / CLEAR WORK SHEET

```

```

3410 D%=1:GOSUB3370:LOCATE0,1:COLOR4:PRINT"CLEAR: TYPE y TO CONFIRM"
3420 LOCATE0,0:A$=INPUT$(1):COLOR0
3430 IF A$<>"y" THEN 20 ELSE D%=0:POKE &HEEE7,D%:GOTO10
3440 ' DEL COM
3450 D%=1:GOSUB3370:LOCATE0,1:COLOR4:PRINT"DELETE: b(BLOCK) c(COLUMN) r(ROW)"
3460 LOCATE0,0:A$=INPUT$(1)
3470 D%=1:GOSUB3370
3480 IF A$="b" THEN D%=11:IF B$(NO%)="" THEN 3500 ELSE A$="DELETE BLOCK":GOTO3560
3490 IF A$="r" THEN D%=12:A$="DELETE ROW":GOTO3560
3500 IF A$="c" THEN D%=13:A$="DELETE COLUMN":GOTO3560 ELSE 20
3510 ' INS COM
3520 D%=1:GOSUB3370:LOCATE0,1:COLOR4
3530 PRINT"INSERT: c(COLUMN) r(ROW)":LOCATE0,0:A$=INPUT$(1)
3540 D%=1:GOSUB3370:IF A$="r" THEN D%=21:A$="INSERT ROW":GOTO3560
3550 IF A$="c" THEN D%=22:A$="INSERT COLUMN":GOTO3560 ELSE 20
3560 N$="" : A$=A$+" " : WAIT A MINUTES":LOCATE0,1:COLOR4
3570 PRINT A$:GOSUB3580:COLOR0:RUN"flow2.SPM"
3580 POKE &HEEE7,D%:CLOSE:OPEN "temp.SWK" FOR OUTPUT AS #1
3590 PRINT#1,AR$:PRINT#1,FI$
3600 IF N$="" THEN 3610 ELSE PRINT #1,N$
3610 PRINT #1,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
3620 PRINT #1,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
3630 PRINT #1,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
3640 B%=UR%(X%-1)*10:J%=0:T$=""
3650 FOR I%=1TOB%
3660 IF B$(I%)="" THEN 3690
3670 IF I%<10 THEN T$=T$+"0":ELSE IF I%<100 THEN T$=T$+"0"
3680 T$=T$+MID$(STR$(I%),2,3)+B$(I%):J%=J%+1:IF J%=10 THEN PRINT #1,T$:J%=0:T$=""
3690 NEXT I%
3700 IF J%<>0 THEN PRINT #1,T$
3710 CLOSE:RETURN
3720 OPEN "temp.SWK" FOR INPUT AS #2
3730 LINEINPUT#2,AR$:LINEINPUT#2,FI$
3740 INPUT #2,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
3750 INPUT #2,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
3760 INPUT #2,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
3770 IF EOF(2) THEN CLOSE2:KILL "temp.SWK":RETURN
3780 LINEINPUT #2,T$:B%=LEN(T$):D%=1
3790 IF D%>B% THEN 3770 ELSE I%=VAL(MID$(T$,D%,3)):B$(I%)=MID$(T$,D%+3,1):D%=D%+4:GOTO3790
3800 ' SAVE FILE
3810 D%=1:GOSUB3370:LOCATE0,1:COLOR4
3820 PRINT"SAVE: ENTER FILE-NAME (6CHRS)":COLOR0:LINEINPUT A$
3830 D%=0:GOSUB1260:D%=1:GOSUB3370
3840 IF A$="" THEN LOCATE0,1:COLOR4:PRINT"BAD FILE-NAME":BEEP:COLOR0:GOTO20
3850 A%=LEN(A$):GOSUB4000:ON ERROR GOTO3950:MOUNT2:A$="2:"+A$+".FLW":KILL A$
3860 LOCATE0,1:COLOR4:PRINT "SAVE FILE : WAIT A MINUTES":COLOR0
3870 N$=A$:D%=1:REMOVE2:GOSUB3580:RUN"flow3.SPM"
3880 ' LOAD FILE
3890 D%=1:GOSUB3370:LOCATE0,1:COLOR4
3900 PRINT"LOAD: ENTER FILE-NAME (6CHRS)":COLOR0:LINEINPUT A$:A%=LEN(A$):GOSUB4000

```



```

3910 D%=0:GOSUB1260:D%=1:GOSUB3370:ON ERROR GOTO 3980
3920 MOUNT2:A$="2:"+A$+".FLW":OPEN A$ FOR INPUT AS#2
3930 COLOR4:LOCATE0,1:PRINT"LOAD FILE: WAIT A MINUTE":COLOR0
3940 N$=A$:D%=2:REMOVE2:GOSUB3580:RUN"flow3.SPM"
3950 IF ERR=53 THEN COLOR4:LOCATE0,1:PRINT"NEW FILE":RESUME3870
3960 BEEP:REMOVE2:IF ERR=62 THEN COLOR4:LOCATE0,1:PRINT"BAD FILE-NAME":RESUME20
3970 D%=1:GOSUB3370:LOCATE0,1:COLOR4:PRINT"ERROR",ERR,ERL:RESUME20
3980 IF ERR=53 THEN BEEP:REMOVE2:COLOR4:LOCATE0,1:PRINT"FILE NOT FOUND":RESUME20
3990 GOTO3960
4000 ' ALPHABETIC
4010 IF A/=0 THEN RETURN
4020 FOR I%=1TOA%
4030 T$=MID$(A$,I%,1):D%=ASC(T$)
4040 IF D%=34 THEN I%=I%+1:T$=MID$(A$,I%,1):GOSUB4080:GOTO4060
4050 IF D%<123 AND D%>96 THEN T$=CHR$(D%-32):MID$(A$,I%,1)=T$
4060 NEXT I%
4070 RETURN
4080 IF ASC(T$)=34 OR I%>A% THEN RETURN
4090 I%=I%+1:T$=MID$(A$,I%,1):GOTO4080
4100 ' DEF FILE
4110 D%=1:GOSUB3370:A$="DEFINE FILE":D%=1:GOTO3560
4120 ' SHOW FILE
4130 D%=1:GOSUB3370:A$="DISPLAY DEFINITION":D%=2:GOTO3560
4140 ' DELETE FILE
4150 ON ERROR GOTO4190:D%=1:GOSUB3370:COLOR4
4160 LOCATE0,1:PRINT"DELETE FILE: ENTER FILE-NAME"
4170 LINEINPUT A$:D%=1:GOSUB3370:MOUNT2:KILL "2:"+A$+".FLW":REMOVE2
4180 COLOR4:LOCATE0,1:PRINT"READY DELETE":COLOR0:GOTO20
4190 IF ERR=53 THEN COLOR4:LOCATE0,1:PRINT"FILE NOT FOUND":BEEP:RESUME20
4200 GOTO3960
4210 ' EXIT TO MAIN-MENU
4220 D%=1:GOSUB3370:COLOR4:LOCATE0,1
4230 PRINT "EXIT TO MAIN-MENU":REMOVE1:MOUNT1:RUN "fws.SPM"
4240 ' EDIT COMMAND
4250 D%=1:GOSUB3370:IF B$(NO%)="" THEN 4260 ELSE 4270
4260 COLOR4:LOCATE0,1:PRINT"NO CONTENT TO EDIT":BEEP:GOTO20
4270 LOCATE0,1:COLOR4:PRINT"EDIT CONTENT: ENTER WHEN READY":COLOR0
4280 L=NO%:GOSUB1280:A%=LEN(B$(NO%))-9:A$=MID$(B$(NO%),10,A%)
4290 LOCATE0,2:LINEINPUT A$:A%=LEN(A$)
4300 GOSUB4010:IF MID$(B$(NO%),1,1)="r" THEN K/=7
4310 GOSUB1210:D%=1:GOSUB3370:COLOR4:LOCATE0,1:PRINT"READY EDIT":GOTO20
4320 ' ARRAY DEFINE
4330 D%=1:GOSUB3370:A$="DEFINE ARRAY":D%=3:GOTO3560

```

1.2 โปรแกรม " flow2.SPM "

```

10 CLEAR600:DIM B$(500):DIM UR$(4):DIM LR$(4):DIM HR$(4)
20 OPEN "graph.DAT" AS #1:FIELD #1,168 AS FL$
30 OPEN "work.SWK" AS #3:FIELD #3,237 AS W$
40 DEFUSR0=&HEE5C:DEFUSR1=&HEEB0:DEFUSR2=&HED00:DEFUSR3=&HEBD0:DEFUSR4=&HEC34
50 DEFUSR5=&HEF00:DEFUSR6=&HEDF5:DEFUSR7=&HFF90:DEFUSR8=&HF27A:DEFUSR9=&HFF50
60 GOSUB3070:AD=&HEEE7+65536!:D%=PEEK(AD)
70 OPEN "dfile.SWK" AS #2:FIELD #2,160 AS DF$
80 IF D%=11 THEN 1540
90 IF D%=12 THEN 1710
100 IF D%=13 THEN 2430
110 IF D%=1 THEN 3620
120 IF D%=2 THEN 3970
130 IF D%=3 THEN 4680
140 IF D%=21 THEN 2800 ELSE 2620
150 GOSUB2940:RUN"flow1.SPM"
160 LOCATE C1%-1,R1%:PRINT "          ":RETURN
170 POKE &HEE86,VAL("&h"+MID$(HEX$(K1),3,2))
180 POKE &HEE87,VAL("&h"+MID$(HEX$(K1),1,2))
190 GET #1,KX:AD=VARPTR(FL$):AD=AD+1
200 D%=PEEK(AD):B%=PEEK(AD+1):L=B%X256+D%
210 POKE &HEE63,VAL("&h"+MID$(HEX$(L),3,2))
220 POKE &HEE64,VAL("&h"+MID$(HEX$(L),1,2))
230 A%=USR0(0):RETURN
240 COLOR4:LOCATE0,1:PRINT N$:BEEP:RETURN
250 K1=64971!:K2=64491!:I%=70:J%=176:POKE &HFF6A,&H88
260 POKE &HFF6B,&HFF:GOSUB420:RETURN
270 POKE &HFF6A,&H78:POKE &HFF6B,&H0:RETURN
280 ' *** CLEAR COL CONTENT IN BLOCK
290 COLOR0:D%=4:IF C%=0 THEN Y%=C1%-1:Y1%=12 ELSE Y%=C1%-7:Y1%=15
300 FOR I%=1TO5
310 LOCATEY%,D%:PRINT SPC(Y1%):LOCATEY%,D%+1:PRINT SPC(Y1%):LOCATEY%,D%+3
320 PRINT SPC(Y1%):D%=D%+4:NEXTI%:RETURN
330 ' *** CLEAR ROW CONTENT IN BLOCK
340 COLOR0:D%=3
350 FOR I%=1TO6:LOCATE D%,R1%-2:PRINT "          ":LOCATED%+7,R1%-1
360 PRINT "          ":LOCATED%-1,R1%+1:PRINT "          ":D%=D%+12:NEXTI%
370 RETURN
380 ' adjust column label
390 COLOR4:FOR I%=1TO6:LOCATE6+(I%-1)*12,3:PRINT CHR$(CH%):CH%=CH%+1:NEXTI%:RETURN
400 COLOR0:LOCATE0,D%:PRINT SPC(80):RETURN

```

```

410 ' scroll text
420 POKE &HFF55,VAL("&h"+MID$(HEX$(K1),3,2)):POKE &HFF56,VAL("&h"+MID$(HEX$(K1),1,2))
430 POKE &HFF58,VAL("&h"+MID$(HEX$(K2),3,2)):POKE &HFF59,VAL("&h"+MID$(HEX$(K2),1,2))
440 POKE &HFF5B,1%:POKE &HFF5E,D%:POKE &HFF6B,J%
450 A%=USR9(0):RETURN
460 ' CLEAR INPUT LINE & CONTENT LINE
470 D%=0:GOSUB400:D%=2:GOSUB400
480 T$=MID$(B$(NO%),1,1):IF T$="" OR T$="s" THEN RETURN
490 IF ASC(T$)>116 THEN RETURN
500 L=NO%:GOSUB3170:T$=MID$(B$(NO%),10,70):LOCATE0,2:PRINT T$
510 B$(NO%)=MID$(B$(NO%),1,1):RETURN
520 ' ADJUST ROW LABEL
530 COLOR4:FOR I%=1TO5:LOCATE0,6+(I%-1)*4:PRINT USING "##";D%:D%=D%+1:NEXT I%
540 COLOR0:RETURN
550 ' XXX DRAW LINE IN BLOCK
560 POKE &HEC39,VAL("&h"+MID$(HEX$(K1),3,2)):POKE &HEC3A,VAL("&h"+MID$(HEX$(K1),1,2))
570 POKE &HEC3C,D%:A%=USR4(0):RETURN
580 ' XXX DRAW LINE BETWEEN BLOCK
590 POKE &HEF05,VAL("&h"+MID$(HEX$(K2),3,2)):POKE &HEF06,VAL("&h"+MID$(HEX$(K2),1,2))
600 POKE &HEF08,F0%:A%=USR5(0):RETURN
610 ' XXX DRAW ARROW
620 POKE &HFF95,VAL("&h"+MID$(HEX$(K3),3,2)):POKE &HFF96,VAL("&h"+MID$(HEX$(K3),1,2))
630 POKE &HFF9B,F0%:A%=USR7(0):RETURN
640 ' XXX CREATE FLOW SCROLL TO RIGHT
650 K1=36031!:J%=4:M%=F0%:G%=62:H%=(R3%-1)*10+C2%:Y1%=4:Y$="r"
660 E$="y":Y2%=58:Y3%=639:Y4%=3:Y5%=875:GOSUB670:F0%=M%:RETURN
670 FOR I%=1TO5
680 E/=8:IF B$(H%)="" THEN920
690 LOCATEG%,J%:L=H%:GOSUB3170:T$=MID$(B$(H%),10,9)
700 IF LEN(T$)>3 THEN T$=MID$(T$,1,3)+" "+MID$(T$,4,9)
710 PRINT T$:T$=MID$(B$(H%),1,1):IF T$="c" THEN E/=Y1%
720 K2=K1+Y5%:K3=K1+Y3%:F0%=Y4%
730 IF MID$(B$(H%),E/,2)="" THEN 830 ELSE D%=H%+(2-Y4%)*2+1:L=D%:GOSUB3170
740 IF T$="c" AND MID$(B$(D%),1,1)="f" THEN GOSUB790:GOTO830
750 IF T$="c" AND MID$(B$(D%),2,1)=Y$ THEN GOSUB590:GOSUB620:GOTO830
760 IF T$="x" OR T$=E$ THEN GOTO770 ELSE GOTO830
770 IF MID$(B$(D%),1,1)="f" THEN GOSUB790 ELSE GOSUB590
780 GOTO830
790 IF MID$(B$(D%),2,1)=Y$ THEN GOSUB590:LOCATEY2%,J%+1:PRINT"YES":GOTO810
800 IF MID$(B$(D%),5,1)=Y$ THEN GOSUB590:LOCATEY2%,J%+1:PRINT"NO"
810 IF T$="c" THEN GOSUB620
820 RETURN
830 B$(D%)=MID$(B$(D%),1,1):IF ASC(T$)<117 THEN 850
840 GOSUB1190:GOSUB560:K1=L:GOTO860
850 GOSUB1070:GOSUB170
860 IF T$="f" THEN D%=5:A$="NO"ELSE D%=2:A$=""
870 IF T$="c" AND MID$(B$(H%),2,2)<" " THEN T$="d":GOSUB950:GOTO900
880 T$=MID$(B$(H%),D%,1)
890 IF T$=Y$ THEN 900 ELSE GOSUB950

```

```

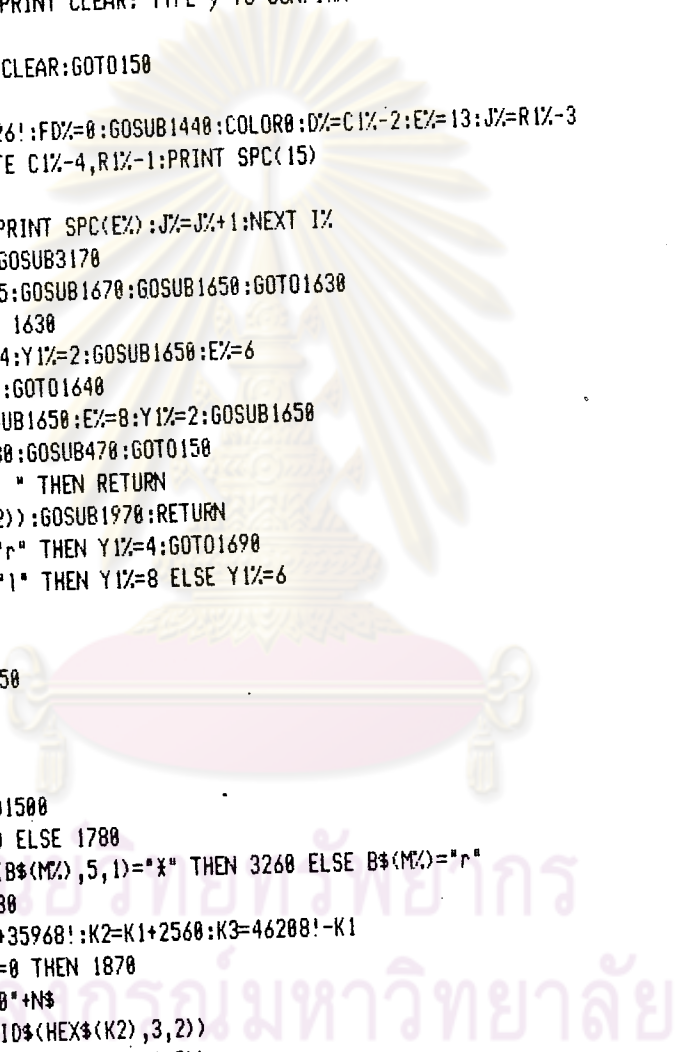
900 IF A$="NO" THEN A$="YES" ELSE A$="NO"
910 IF D%<>2 THEN D%=2:GOTO880
920 B$(H%)=MID$(B$(H%),1,1):K1=K1+2560:J%=J%+4:H%=H%+10
930 NEXT I%
940 RETURN
950 IF T$="1" THEN 960 ELSE 980
960 FD%=2:K2=K1+875:K3=K1+635:T$=MID$(B$(H%-1),1,1)
970 LOCATEG%-4,J%+1:PRINT A$:GOTO1040
980 IF T$="r" THEN 990 ELSE 1010
990 FD%=3:K2=K1+887:K3=K1+651:T$=MID$(B$(H%+1),1,1)
1000 LOCATEG%+8,J%+1:PRINT A$:GOTO1040
1010 IF T$="d" THEN 1020 ELSE RETURN
1020 FD%=1:K2=K1+1923:K3=K1+2243:T$=MID$(B$(H%+10),1,1):LOCATEG%-1,J%+3
1030 PRINT A$:GOTO1040
1040 GOSUB590:IF ASC(T%)<117 THEN GOSUB620
1050 RETURN
1060 ' XXX CHECK CODE OF FLOW
1070 IF T$="f" THEN K%=3:RETURN
1080 IF T$="d" THEN K%=5:RETURN
1090 IF T$="o" THEN K%=2:RETURN
1100 IF T$="p" THEN K%=1:RETURN
1110 IF T$="i" THEN K%=4:RETURN
1120 IF T$="b" THEN K%=9:RETURN
1130 IF T$="1" THEN K%=10:RETURN
1140 IF T$="r" THEN K%=7:RETURN
1150 IF T$="c" THEN K%=8:RETURN
1160 IF T$="t" THEN K%=6:LOCATE G%,J%:PRINT " ST OP ":RETURN
1170 IF T$="s" THEN K%=6:LOCATE G%,J%:PRINT " START ":RETURN ELSE K%=0:RETURN
1180 ' XXX CHECK CODE LINE IN BLOCK
1190 IF T$="u" THEN D%=11:L=K1:K1=K1+3:RETURN
1200 IF T$="x" THEN D%=22:L=K1:K1=K1+880:RETURN
1210 IF T$="v" THEN D%=12:L=K1:K1=K1+3:RETURN
1220 IF T$="w" THEN D%=13:L=K1:K1=K1+3:RETURN
1230 IF T$="y" THEN D%=31:L=K1:K1=K1+880:RETURN
1240 D%=21:L=K1:K1=K1+883:RETURN
1250 ' XXX CREATE FLOW SCROLL UP
1260 FOR I%=1TO6
1270 IF B$(H%)="" THEN 1400
1280 LOCATE G%,J%:L=H%:GOSUB3170:T$=MID$(B$(H%),10,9)
1290 IF LEN(T%)>3 THEN T$=MID$(T$,1,3)+" "+MID$(T$,4,9)
1300 PRINT T$:T$=MID$(B$(H%),1,1):IF ASC(T%)<117 THEN 1320
1310 GOSUB 1190:GOSUB560:K1=L:D%=2:A$="":GOTO1350
1320 GOSUB1070:GOSUB170
1330 IF T$="c" AND MID$(B$(H%),2,2)<>" " THEN D%=2:T$="d":A$="":GOSUB950:GOTO1380
1340 IF T$="f" THEN D%=5:A$="NO" ELSE D%=2:A$=""
1350 T$=MID$(B$(H%),D%,1)
1360 IF T$="1" AND I%=1 THEN 1380
1370 IF T$="r" AND I%=6 THEN 1380 ELSE GOSUB950
1380 IF A$="NO" THEN A$="YES" ELSE A$="NO"
1390 IF D%<>2 THEN D%=2:GOTO1350
1400 B$(H%)=MID$(B$(H%),1,1):K1=K1+12:G%=G%+12:H%=H%+1

```

```

1410 NEXT I%
1420 FD%=M%:RETURN
1430 ' DEL LINK LINE
1440 POKE &HEDFA,VAL("&h"+MID$(HEX$(K2),3,2))
1450 POKE &HEDFB,VAL("&h"+MID$(HEX$(K2),1,2))
1460 A%=USR6(0):RETURN
1470 ' CLEAR PROMT LINE
1480 COLOR4:LOCATE0,D%:PRINT SPC(80):COLOR0:RETURN
1490 ' CLEAR WORK SHEET
1500 D%=1:GOSUB1480:LOCATE0,1:PRINT"CLEAR: TYPE y TO CONFIRM"
1510 LOCATE0,0:A$=INPUT$(1)
1520 IF A$(">")="y" THEN 150 ELSE CLEAR:GOTO150
1530 ' DEL COM
1540 K2=(R2%2560)+(C2%12)+353261:FD%=0:GOSUB1440:COLOR0:D%=C1%-2:E%=13:J%=R1%-3
1550 IF B$(NO%)="f" THEN LOCATE C1%-4,R1%-1:PRINT SPC(15)
1560 IF C1%<4 THEN D%=2:E%=12
1570 FOR I%=1TO5:LOCATED%,J%:PRINT SPC(E%):J%=J%+1:NEXT I%
1580 J%=NO%:T$=B$(NO%):L=NO%:GOSUB3170
1590 IF T$="f" THEN E%=6:Y2%=5:GOSUB1670:GOSUB1650:GOTO1630
1600 IF T$="c" THEN 1610 ELSE 1630
1610 E%=2:Y1%=6:GOSUB1650:E%=4:Y1%=2:GOSUB1650:E%=6
1620 GOSUB1650:E%=8:GOSUB1650:GOTO1640
1630 E%=3:Y2%=2:GOSUB1670:GOSUB1650:E%=8:Y1%=2:GOSUB1650
1640 B$(NO%)="":D%=1:GOSUB1480:GOSUB470:GOTO150
1650 IF MID$(B$(NO%),E%,2)=" " THEN RETURN
1660 D%=CVI(MID$(B$(NO%),E%,2)):GOSUB1970:RETURN
1670 IF MID$(B$(NO%),Y2%,1)="r" THEN Y1%=4:GOTO1690
1680 IF MID$(B$(NO%),Y2%,1)="1" THEN Y1%=8 ELSE Y1%=6
1690 RETURN
1700 ' DELETE ROW
1710 IF R2%>UR%(X%-1) THEN 150
1720 I%=1:M%=10*(R2%-1)+1
1730 IF I%>10 THEN 1790
1740 IF B$(M%)="" THEN 1780
1750 IF B$(M%)="s" THEN GOTO1500
1760 IF B$(M%)="r" THEN 1770 ELSE 1780
1770 L=M%:GOSUB3170:IF MID$(B$(M%),5,1)="x" THEN 3260 ELSE B$(M%)="r"
1780 M%=M%+1:I%=I%+1:GOTO1730
1790 GOSUB2060:K1=(R2%2560)+35968!:K2=K1+2560:K3=46208!-K1
1800 N$=HEX$(K3):D%=1:IF K3=0 THEN 1870
1810 IF LEN(N$)<4 THEN N$="0"+N$
1820 POKE &HEEBF,VAL("&h"+MID$(HEX$(K2),3,2))
1830 POKE &HEEC0,VAL("&h"+MID$(HEX$(K2),1,2))
1840 POKE &HEEC2,VAL("&h"+MID$(N$,3,2)):POKE &HEEC3,VAL("&h"+MID$(N$,1,2))
1850 K2=46208!:Y%=252:Y1%=9:GOSUB2100
1860 K1=(R2%480)+62691!:K2=K1+480:J%=176:I%=70:D%=(64611!-K1)/120:GOSUB420
1870 J%=10*(R2%-1)+1:G%=UR%(X%-1)-R2%-1:H%=R2%:B%=50
1880 Y2%=2:Y3%=6:Y4%=10:Y5%=1:K%=10:GOSUB1930:D%=1:GOSUB1480
1890 Y%=R1%:R1%=22:GOSUB340:R1%=Y%:K1=46211!:J%=20:G%=3
1900 H%=(R3%+3)*10+CH%-70:GOSUB1260:FD%=0:UR%(P%)=UR%(P%)-1

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1910 GOSUB470:D%=P%+2:Y%=-1:IF D%>X% THEN 150
1920 UR%(D%-1)=UR%(D%-1)+Y%:HR%(D%-1)=HR%(D%-1)+Y%:D%=D%+1:GOTO1910
1930 FOR I%=1 TO K%
1940 IF B$(J%)="" THEN 2160
1950 IF H%=1 THEN 2160 ELSE D%=J%-Y4%:Y1%=Y2%
1960 GOSUB1970:GOTO2160
1970 IF B$(D%)-="" THEN RETURN
1980 L=D%:GOSUB3170:IF MID$(B$(D%),1,1)="c" THEN 1990 ELSE 2010
1990 M%=CVI(MID$(B$(D%),Y1%,2))
2000 IF M%=J% THEN MID$(B$(D%),Y1%,2)=" ":GOTO2040 ELSE 2050
2010 M%=CVI(MID$(B$(D%),3,2)):IF M%=J% THEN MID$(B$(D%),2,3)=" ":GOTO2040
2020 M%=CVI(MID$(B$(D%),6,2)):IF M%=J% THEN MID$(B$(D%),5,3)=" ":GOTO2040
2030 M%=CVI(MID$(B$(D%),8,2)):IF M%=J% THEN MID$(B$(D%),8,2)=" " ELSE 2050
2040 L=D%:GOSUB3210:RETURN
2050 B$(D%)=MID$(B$(D%),1,1):RETURN
2060 K1=(R%/2560)+35327!:Y%=2:D%=3
2070 POKE &HEC17,VAL("&h"+MID$(HEX$(K1),3,2))
2080 POKE &HEC18,VAL("&h"+MID$(HEX$(K1),1,2))
2090 POKE &HEBD5,D%:POKE &HEC1F,Y%:A%=USR3(0):RETURN
2100 POKE &HEEBC,VAL("&h"+MID$(HEX$(K1),3,2))
2110 POKE &HEEBD,VAL("&h"+MID$(HEX$(K1),1,2))
2120 POKE &HEED5,VAL("&h"+MID$(HEX$(K2),3,2))
2130 POKE &HEED6,VAL("&h"+MID$(HEX$(K2),1,2))
2140 POKE &HEEDD,Y%:POKE &HEEDE,Y1%
2150 POKE &HEEB5,D%:A%=USR1(0):RETURN
2160 IF H%=B% THEN B$(J%)="" :GOTO2310 ELSE D%=J%+Y4%:Y1%=Y3%:GOSUB1970
2170 L=D%:GOSUB3170:B$(J%)=B$(D%):B$(D%)="" :L=J%:GOSUB3210
2180 A%=1:M%=J%+2*Y4%:GOSUB2190:GOTO2310
2190 IF A%>G% THEN RETURN
2200 IF B$(M%)="" THEN 2300
2210 L=M%:GOSUB3170
2220 IF MID$(B$(M%),1,1)="f" THEN 2230 ELSE 2240
2230 D%=3:GOSUB2270:D%=6:GOSUB2270:D%=8:GOSUB2270:GOTO2290
2240 IF MID$(B$(M%),1,1)="c" THEN 2250 ELSE 2260
2250 D%=2:GOSUB2270:D%=4:GOSUB2270:D%=6:GOSUB2270:D%=8:GOSUB2270:GOTO2290
2260 D%=3:GOSUB2270:D%=8:GOSUB2270:GOTO2290
2270 IF MID$(B$(M%),D%,2)=" " THEN RETURN
2280 Y%=CVI(MID$(B$(M%),D%,2)):MID$(B$(M%),D%,2)=MKI$(Y%-Y4%):RETURN
2290 B$(M%-Y4%)=B$(M%):L=M%-Y4%:GOSUB3210:B$(M%)=""
2300 M%=M%+Y4%:A%=A%+1:GOTO2190
2310 J%=J%+Y5%
2320 NEXT I%
2330 RETURN
2340 POKE &HED08,VAL("&h"+MID$(HEX$(K2),3,2))
2350 POKE &HED09,VAL("&h"+MID$(HEX$(K2),1,2))
2360 POKE &HED05,VAL("&h"+MID$(HEX$(K3),3,2))
2370 POKE &HED06,VAL("&h"+MID$(HEX$(K3),1,2))
2380 POKE &HED0B,VAL("&h"+MID$(HEX$(K1),3,2))
2390 POKE &HED0C,VAL("&h"+MID$(HEX$(K1),1,2))
2400 POKE &HED19,D%:POKE &HED44,Y%:POKE &HED4C,Y1%:POKE &HED0D,Y4%

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2410 POKE &HED6C,Y%:POKE &HED89,Y2%:A/=USR2(0):RETURN
2420 ' DEL COL
2430 IF RZ%>UR%(X%-1) OR CZ%>LR%(P%) THEN 150
2440 M%=10*(HR%(P%)-1)+CZ%:IF B$(M%)="" THEN 2480
2450 T$=B$(M%):IF T$="s" THEN 1500
2460 IF T$="r" THEN 2470 ELSE 2480
2470 L=I%:GOSUB3170:IF MID$(B$(M%),5,1)="x" THEN 3260 ELSE B$(M%)=MID$(B$(M%),1,1)
2480 FD%=0:FOR I%=0TO4:K2=(I%*2560)+(C%*12)+35326!:GOSUB1440:NEXT I%
2490 GOSUB2560:K2=K1+12:D%=2:Y I%=&HB0:Y4%=&HC5:GOSUB2340:IF C%=5 THEN 2510
2500 GOSUB2690:K1=K1+(C%*12)+62691!:K2=K1+12:J%=176:I%=(5-C%)*12:GOSUB420
2510 J%=(HR%(P%)-1)*10+CZ%:G%=LR%(P%)-CZ%-1:H%=CZ%:B%=10:Y2%=6
2520 Y3%=2:Y4%=1:Y5%=10:K%=UR%(P%)-HR%(P%)+1:GOSUB1930:D%=1:GOSUB1480
2530 B%=C I%:C I%=&3:GOSUB290:C I%=B%:B%=CZ%:CZ%=CH%&64:GOSUB650
2540 CZ%=B%:FD%=0:GOSUB470:Y%=-1
2550 LR%(P%)=LR%(P%)+Y%:GOTO150
2560 IF R3%<HR%(P%) THEN 2570 ELSE K1=(C%*12)+35971!:K3=36031!:D%=0:GOTO2580
2570 D%=HR%(P%)-R3%:K1=D%*2560+C%*12+35971!:K3=D%*2560+36031!
2580 IF R3%+4<UR%(P%) THEN Y2%=160-(D%*32) ELSE Y2%=(UR%(P%)-R3%-D%+1)*32
2590 IF Y2%>112 THEN Y%=Y2%-112:Y2%=144 ELSE Y%=1:Y2%=256-Y2%
2600 RETURN
2610 ' INSERT COL
2620 IF CZ%>LR%(P%) THEN 150
2630 IF LR%(P%)=10 THEN N$="INSERT REACH RIGHT BOUND":GOSUB240:GOTO150
2640 GOSUB2560:K2=K3-6:L=K3+6:POKE &HED3D,VAL("&h"+MID$(HEX$(L),3,2))
2650 POKE &HED3E,VAL("&h"+MID$(HEX$(L),1,2)):D%=1:Y I%=&HB0
2660 Y4%=&HD5:GOSUB2340:GOSUB160
2670 IF C%=5 THEN 2720 ELSE 2680
2680 GOSUB2690:K1=K1+62761!:K2=K1-12:J%=&HB0:I%=(5-C%)*12:GOSUB420:GOTO2720
2690 IF R3%<HR%(P%) THEN K1=(HR%(P%)-R3%)*480:D%=HR%(P%)-R3% ELSE K1=0:D%=0
2700 IF R3%+4<UR%(P%) THEN D%=(5-D%)*4+1 ELSE D%=(UR%(P%)-R3%-D%+1)*4+1
2710 RETURN
2720 K%=UR%(P%)-HR%(P%)+1:J%=(HR%(P%)-1)*10+CZ%:G%=LR%(P%)-CZ%+1:Y4%=-1
2730 FOR I%=1TOK%
2740 IF B$(J%)="" THEN 2760
2750 D%=J%-1:Y I%=8:GOSUB1970:D%=J%:J%=J%-1:Y I%=4:GOSUB1970:J%=D%
2760 A%=1:M%=J%+G%-1:GOSUB2190
2770 J%=J%+10:NEXT I%
2780 D%=1:GOSUB1480:GOSUB290:GOSUB470:Y%=1:GOTO2550
2790 ' INSERT ROW
2800 IF UR%(X%-1)=50 THEN N$="INSERT REACH BOTTOM":GOSUB240:GOTO150
2810 IF RZ%>UR%(X%-1) THEN 150
2820 GOSUB160:IF R%=4 THEN GOSUB2060:GOTO2870
2830 K1=R%*2560+35971!:K2=2560*(4-R%):T$=HEX$(K2):IF LEN(T$)<4 THEN T$="0"+T$
2840 POKE &HEED0,VAL("&h"+MID$(T$,3,2)):POKE &HEED1,VAL("&h"+MID$(T$,1,2))
2850 K2=K1-640:D%=2:Y%=124:Y I%=12:GOSUB2120
2860 D%=(4-R%)*4+1:GOSUB250:GOSUB270
2870 GOSUB340:J%=(RZ%-1)*10:G%=(UR%(P%)-RZ%)+1:Y4%=-10
2880 FOR I%=1TO10
2890 IF B$(J%)="" THEN 2910
2900 D%=J%-10:Y I%=2:GOSUB1970:D%=J%:J%=J%-10:Y I%=6:GOSUB1970:J%=D%

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2910 A%=1:M%=J%+10*(G%-1):GOSUB2190
2920 J%=J%+1:NEXT I%
2930 D%=1:GOSUB1480:GOSUB470:D%=P%+2:Y%=1:UR%(P%)=UR%(P%)+1:GOTO1910
2940 CLOSE:KILL"temp.SWK":OPEN "temp.SWK" FOR OUTPUT AS #1
2950 PRINT #1,AR$:PRINT#1,F1$
2960 PRINT #1,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
2970 PRINT #1,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
2980 PRINT #1,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
2990 B%=UR%(X%-1)*10:J%=0:T$=""
3000 FOR I%=1TOB%
3010 IF B%(I%)="" THEN 3040
3020 IF I%<10 THEN T$=T$+"00":ELSE IF I%<100 THEN T$=T$+"0"
3030 T$=T$+MID$(STR$(I%),2,3)+B%(I%):J%=J%+1:IF J%=10 THEN PRINT #1,T$:J%=0:T$=""
3040 NEXT I%
3050 IF J%<0 THEN PRINT #1,T$
3060 CLOSE:RETURN
3070 OPEN "temp.SWK" FOR INPUT AS #2
3080 LINEINPUT#2,AR$:LINEINPUT#2,F1$
3090 INPUT #2,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
3100 INPUT #2,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
3110 INPUT #2,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
3120 IF EOF(2) THEN CLOSE2:RETURN
3130 INPUT #2,T$:B%=LEN(T%):J%=1
3140 IF J%>B% THEN 3120 ELSE 3150
3150 I%=VAL(MID$(T$,J%,3)):B%(I%)=MID$(T$,J%+3,1):J%=J%+4:GOTO3140
3160 ' READ RECORD
3170 IF B%(L)="" THEN RETURN
3180 B1%=(L-1)*3+1:D=(B1%-1)*3:T%=(D-1)*79+1
3190 GET #3,B1%:Q$=W$:B%(L)=MID$(Q$,T%,79):Q$="":RETURN
3200 ' PUT RECORD
3210 IF B%(L)="" THEN RETURN
3220 B1%=(L-1)*3+1:D=(B1%-1)*3:T%=(D-1)*79+1
3230 L%=LEN(B%(L)):D$=STRING$(79,32):MID$(D$,1,L%)=B%(L)
3240 GET #3,B1%:Q$=W$:MID$(Q$,T%,79)=D$:LSET W$=Q$
3250 PUT #3,B1%:B%(L)=MID$(B%(L),1,1):D$="":Q$="":RETURN
3260 ' DELETE SUBROUTINE
3270 COLOR4:LOCATE0,1:PRINT"DELETE SUBROUTINE: TYPE y TO CONFIRM"
3280 COLOR0:A%=INPUT$(1):D%=1:GOSUB1480:IF A%<>"y" THEN 150
3290 COLOR4:LOCATE0,1:PRINT"DELETE SUBROUTINE"
3300 K%=(UR%(P%)-HR%(P%)+1)*10:J%=(HR%(P%)-1)*10+1
3310 FOR I%=1TOK%:B%(J%)="":J%=J%+1:NEXT I%
3320 IF X%<P%+1 THEN N1%=1:GOTO3480 ELSE N1%=0
3330 G%=(UR%(X%-1)-HR%(P%+1)+1)*10:M%=(HR%(P%+1)-1)*10+1
3340 Y4%=(HR%(P%+1)-HR%(P%))*10:A%=1
3350 IF A%>G% THEN 3440
3360 IF B%(M%)="" THEN 3430
3370 L=M%:GOSUB3170:IF MID$(B%(M%),1,1)="" THEN 3380 ELSE 3390
3380 D%=3:GOSUB2270:D%=6:GOSUB2270:D%=8:GOSUB2270:GOTO3420
3390 IF MID$(B%(M%),1,1)="" THEN 3400 ELSE 3410
3400 D%=2:GOSUB2270:D%=4:GOSUB2270:D%=6:GOSUB2270:D%=8:GOSUB2270:GOTO3420

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3410 D%=3:GOSUB2270:D%=8:GOSUB2270
3420 B$(M%-Y4%)=B$(M%):L=M%-Y4%:GOSUB3210:B$(M%)=""
3430 M%=M%+1:A%=A%+1:GOTO3350
3440 G%=X%-1:A%=P%+1:D%=HR%(P%+1)-HR%(P%)
3450 IF A%>G% THEN 3480 ELSE 3460
3460 HR%(A%-1)=HR%(A%)-D%:UR%(A%-1)=UR%(A%)-D%
3470 LR%(A%-1)=LR%(A%):A%=A%+1:GOTO3450
3480 COLOR0:IF R3%<HR%(P%) THEN B%=HR%(P%)-R3%:K1=B%*2560+359711:GOTO3500
3490 K1=359711:B%=0
3500 N%=(R3%+B%-1)*10+CH%-70:J%=B%*4+4:M%=J%+2:B%=5-B%
3510 Y%=B%+1:D%=3:GOSUB2070:A%=R1%
3520 FOR K%=1TOB%:R1%=M%:GOSUB340:A%=M%+4:NEXT K%
3530 R1%=A%
3540 FOR B2%=1TOB%
3550 G%=3:L1=K1:H%=N%:GOSUB1260:J%=J%+4:K1=L1+2560:N%=N%+10
3560 NEXT B2%
3570 D%=X%-1:HR%(D%)=0:UR%(D%)=0:LR%(D%)=0:X%=X%-1:P%=P%-N1%
3580 GOSUB470:D%=1:GOSUB1480:COLOR4:LOCATE0,1
3590 PRINT"READY DELETE SUBROUTINE":COLOR0
3600 GOTO150
3610 ' DEF FILE
3620 D%=1:GOSUB1480:COLOR4:LOCATE0,1
3630 PRINT"DEFINE FILE: ENTER FILE-NAME (9 CHR$)":COLOR0:LINEINPUT A$
3640 IF A$="" THEN 150:ELSE A%=LEN(A$):B%=11-A%:IF A%>11 THEN A$=MID$(A$,1,11):B%=0
3650 D%=0:GOSUB400:D%=1:GOSUB1480:T$=A$+STRING$(B%,32):GOSUB3860
3660 IF Y%=-1 THEN GOTO150
3670 COLOR4:LOCATE0,1:PRINT"FILE TYPE: r(RANDOM) s(SEQUENTIAL)":A$=INPUT$(1)
3680 IF A$="r" THEN T$=T$+N$:G$="":B%=1:GOTO3730
3690 IF A$="s" THEN T$=T$+"s" ELSE 150
3700 D%=1:GOSUB1480:COLOR4:LOCATE0,1
3710 PRINT"FILE OPERATION: a(APPEND) i(INPUT) o(OUTPUT)":COLOR0:A$=INPUT$(1):A%=0
3720 IF A$="i" OR A$="o" OR A$="a" THEN F1$=F1$+T$+A$:GOTO3810 ELSE 150
3730 D%=1:GOSUB1480:COLOR4:LOCATE0,1
3740 PRINT"INPUT FILED-FORMAT":COLOR0:LINEINPUT A$:D%=0:GOSUB400
3750 IF A$="" THEN 3790:ELSE N%=1:A%=LEN(A$):GOSUB4440:G$=G$+A$:IF B%>1 THEN 3790
3760 B%=B%+1:COLOR4:LOCATE0,1
3770 PRINT"CONTINUE INPUT FILED-FORMAT: y(YES)":COLOR0:A$=INPUT$(1)
3780 IF A$="y" THEN 3730
3790 IF G$="" THEN 150
3800 F1$=F1$+T$:A$=G%:A%=LEN(A$):GOSUB4480:LSET DF$=A$:PUT #2,Y%
3810 D%=0:GOSUB400:D%=1:GOSUB1480:COLOR4:LOCATE0,1
3820 PRINT"TYPE c CONTINUE TO DEFINE FILE"
3830 LOCATE0,0,0:A$=INPUT$(1):IF A$="c" THEN 3620
3840 D%=1:GOSUB1480:COLOR4:LOCATE0,1:PRINT"READY DEFINE FILE":GOTO150
3850 ' SEARCH FILE
3860 B%=1:Y%=1:A%=LEN(F1$):IF A%=0 THEN N$="01":Y%=1:RETURN
3870 IF A%>195 THEN 3880 ELSE 3890
3880 D%=1:GOSUB1480:COLOR4:LOCATE0,1:PRINT"EXECSS 15 FILES":BEEP:Y%=-1:RETURN
3890 IF B%>A% THEN RETURN
3900 Q$=MID$(F1$,B%,1):IF Q$=T$ THEN 3910 ELSE 3930

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3910 COLOR4:LOCATE0,1:PRINT T$;" :THIS FILE ALREADY DEFINED"
3920 BEEP:COLOR0:Y%=-1:RETURN
3930 B%=B%+11:IF MID$(F1$,B%,1)<>"s" THEN 3940 ELSE 3960
3940 N%=MID$(F1$,B%,2):Y%=VAL(N%)+1 ELSE 3960
3950 N%=MID$(STR$(Y%),2,2):IF Y%<10 THEN N%="0"+N%
3960 B%=B%+2:GOTO3890
3970 ' SHOW DEFINITION
3980 D%=1:GOSUB1480:COLOR4:LOCATE0,1
3990 PRINT"DISPLAY DEFINITION: TYPE a<ARRAY> f<FILE>"
4000 COLOR0:LOCATE0,0,0:A%=INPUT$(1)
4010 IF A%="a" THEN 4770
4020 IF A%="f" THEN 4040
4030 D%=1:GOSUB1480:COLOR4:LOCATE0,1:PRINT"CANCEL DISPLAY COMMAND"GOTO150
4040 T%=LEN(F1$):Y%=1
4050 IF Y%>T% THEN 4050 ELSE 4070
4060 D%=1:GOSUB1480:COLOR4:LOCATE0,1:PRINT"NO FILES TO SHOW":GOTO150
4070 COLOR0:G%=MID$(F1$,Y%,11):Y%=Y%+11:T%=MID$(F1$,Y%,1):N%=MID$(F1$,Y%+1,1)
4080 IF T%<>"s" THEN 4110
4090 IF N%="a" THEN N%="APPEND":ELSE IF N%="i" THEN N%="INPUT" ELSE N%="OUTPUT"
4100 PRINT CHR$(34);G%;CHR$(34);" IS SEQUENTIAL FILE FOR ";N%:GOTO4120
4110 T%=MID$(F1$,Y%,2):B%=VAL(T%):PRINT CHR$(34);G%;CHR$(34);" IS RANDOM FILE"
4120 D%=1:GOSUB1480:LOCATE0,1:COLOR4
4130 PRINT"TYPE c<CONTINUE> d<DELETE DEF> e<EDIT>"
4140 LOCATE0,0,0:A%=INPUT$(1):COLOR0
4150 IF A%="e" THEN GOSUB4550:IF Y%=0 THEN 150 ELSE 4080
4160 IF A%="d" THEN GOSUB4350:GOTO4290
4170 IF A%="c" THEN 4180 ELSE 150
4180 IF T%<>"s" THEN 4190 ELSE 4290
4190 GET#2,B%:A%=DF$:N%=1:A%=LEN(A%):GOSUB4470:A%=MID$(A%,1,N%)
4200 IF N%>80 THEN G%=MID$(A%,80,N%-80):A%=MID$(A%,1,80):E%=1 ELSE G%="" :E%=2
4210 D%=0:GOSUB400:D%=1:GOSUB1480:PRINT A%:LOCATE0,1:COLOR4
4220 PRINT"TYPE c<CONTINUE> e<EDIT>":LOCATE0,0,0:COLOR0
4230 LOCATE0,0,0:A%=INPUT$(1):IF A%<>"e" THEN 4280
4240 D%=1:GOSUB1480:COLOR4:LOCATE0,1:PRINT"EDIT FIELD-FORMAT: ENTER WHEN READY"
4250 COLOR0:LOCATE0,0,0:LINEINPUT A%:N%=1:A%=LEN(A%):GOSUB4440:A%=LEN(A%):GOSUB4490
4260 IF E%=1 THEN N%=A% ELSE G%=A%
4270 Q%=N%+G%:PUT #2,B%:Q%="" :GOTO4210
4280 IF A%="c" AND E%<2 THEN A%=G%:E%=2:GOTO4210
4290 D%=0:GOSUB400:D%=1:GOSUB1480:LOCATE0,1:COLOR4
4300 PRINT"TYPE n CONTINUE TO SHOW NEXT FILE"
4310 LOCATE0,0,0:A%=INPUT$(1):D%=1:GOSUB1480
4320 IF A%="n" THEN Y%=Y%+2:GOTO4050 ELSE 150
4330 ' DEL BLANK
4340 IF MID$(A%,N%,1)<>" " OR N%>A% THEN RETURN ELSE N%=N%+1:GOTO4340
4350 COLOR4:LOCATE0,1:PRINT"DELETE FILE DEFINITION":COLOR0
4360 IF MID$(F1$,Y%,1)<>"s" THEN E%=1 ELSE E%=0
4370 Y%=Y%-12:B%=T%-Y%-13:A%=Y%+14
4380 IF B%<1 THEN F1%=MID$(F1$,1,Y%) ELSE F1%=MID$(F1$,1,Y%)+MID$(F1$,A%,B%)
4390 T%=T%-13:Y%=Y%+1:Y2%=Y%:IF E%=0 THEN Y2%=T%+1
4400 IF Y2%>T% THEN RETURN

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4410 Y2%=Y2%+11:IF MID$(F1$,Y2%,1)="s" THEN 4430
4420 T$=MID$(F1$,Y2%,2):D%=VAL(T$):GET #2,D%:D%=D%-1:PUT #2,D%
4430 Y2%=Y2%+2:GOTO4400
4440 GOSUB4340:IF N%>A%. THEN A$="":RETURN
4450 Y1%=N%:GOSUB4470
4460 D%=N%-Y1%+1:A$=MID$(A$,Y1%,D%):RETURN
4470 IF MID$(A$,N%,1)=" " OR N%>A%. THEN N%=N%-1:RETURN ELSE N%=N%+1:GOTO4470
4480 ' LARGE LETTER
4490 IF A%<0 THEN RETURN
4500 FOR I%=1TOA%
4510 T$=MID$(A$,I%,1):D%=ASC(T$)
4520 IF D%<123 AND D%>96 THEN T$=CHR$(D%-32):MID$(A$,I%,1)=T$
4530 NEXT I%
4540 RETURN
4550 ' EDIT ROUTINE
4560 D%=0:GOSUB400:D%=1:GOSUB1480:COLOR4:LOCATE0,1
4570 PRINT"EDIT FILE DEFINITION: ENTER WHEN READY"
4580 COLOR0:PRINT G$:LOCATE0,0:LINEINPUT A$:D%=0:GOSUB400:D%=1:GOSUB1480
4590 IF A$="" THEN 4600 ELSE 4610
4600 Y%=0:COLOR4:LOCATE0,1:PRINT"CANCEL EDIT FILE DEFINITION":RETURN
4610 A%=LEN(A$):IF A%>11 THEN A%=11
4620 A%=11-A%:G$=A$+STRING$(A%,32):IF T$<>"s" THEN 4660
4630 COLOR4:LOCATE0,1:PRINT"FILE OPERATION: a(APPEND) i(INPUT) o(OUTPUT)"
4640 COLOR0:A$=INPUT$(1)
4650 IF A$="a" OR A$="i" OR A$="o" THEN N$=A$ ELSE A$="":GOTO4590
4660 Y%=Y%+11:MID$(F1$,Y%,13)=G$+T$+N$:Y%=Y%+11:RETURN
4670 ' DEF ARRAY
4680 D%=1:GOSUB1480:COLOR4:LOCATE0,1
4690 PRINT"DEFINE ARRAY VARIABLE":COLOR0:LINEINPUT A$
4700 D%=1:GOSUB1480:D%=0:GOSUB400
4710 IF A$="" THEN 4760 ELSE N%=1:A%=LEN(A$):GOSUB4490:GOSUB4440
4720 B%=LEN(AR$)+LEN(A$):IF B%<257 THEN 4740
4730 COLOR4:LOCATE0,1:PRINT"ARRAY DEFINITION EXCESS 256 CHRS":BEEP:GOTO150
4740 AR$=AR$+A$:COLOR4:LOCATE0,1
4750 PRINT"TYPE n TO CONTINUE DEFINE ARRAY":A$=INPUT$(1)
4760 IF A$="n" THEN 4680 ELSE D%=1:GOSUB1480:GOTO150
4770 ' SHOW ARRAY
4780 T%=LEN(AR$):D%=1:GOSUB1480:B%=1
4790 IF B%>T% THEN 4800 ELSE 4820
4800 D%=1:GOSUB1480:D%=0:GOSUB400:COLOR4:LOCATE0,1
4810 PRINT"NO ARRAY DEFINITION":GOTO150
4820 A$=MID$(AR$,B%,80):PRINT A$:LOCATE0,1:COLOR4
4830 PRINT"TYPE c(CONTINUE) e(EDIT) d(DELETE)"
4840 COLOR0:LOCATE0,0,0:A$=INPUT$(1):D%=1:GOSUB1480
4850 IF A$="e" THEN 4860 ELSE 4900
4860 LOCATE0,1:COLOR4:PRINT"EDIT ARRAY DEFINITION: ENTER WHEN READY"
4870 COLOR0:LOCATE0,0,1:LINEINPUT A$:IF B%=1 THEN G$="" ELSE G$=MID$(AR$,1,B%-1)
4880 IF T%<B%+80 THEN N$="" ELSE D%=B%+80:Y%=T%-D%+1:N$=MID$(AR$,D%,Y%)
4890 AR$=G$+A$+N$:D%=1:GOSUB1480:GOTO4790
4900 IF A$="d" THEN D%=1:GOSUB1480 ELSE 4920

```

```
4910 COLOR4:LOCATE0,1:PRINT"READY DELETE ARRAY DEFINITION":AR$="":GOTO150
4920 IF A$="c" THEN B%=B%+80:GOTO4790
4930 D%=0:GOSUB400:LOCATE0,1:COLOR4:PRINT"CANCEL ARRAY DEFINITION":GOTO150
```



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1.3 โปรแกรม " flow3.SPM "

```

10 CLEAR900:GOSUB40:CONSOLE0,1,0,0:AD=&HEEE7+65536!:A%:=PEEK(AD)
20 DIM B$(500):DIM UR%(4):DIM LR%(4):DIM HR%(4):GOSUB1100
30 IF A%=1 THEN 1290 ELSE 1590
40 DEFUSR0=&HEE5C:DEFUSR1=&HEEB0:DEFUSR2=&HED00
50 DEFUSR3=&HEBD0:DEFUSR4=&HEC34:DEFUSR5=&HEF00
60 DEFUSR6=&HEDF5:DEFUSR7=&HFF90:DEFUSR8=&HF27A:DEFUSR9=&HFF50
70 OPEN "dfile.SWK" AS #1:FIELD #1,165 AS DF$
80 OPEN "work.SWK" AS #3:FIELD #3,237 AS W$:RETURN
90 MONGR:SET@1:ERASE@:MONGR@:PRINT CHR$(12)
100 C%=0:R%=0:C1%=3:R1%=6:NO%=1:C2%=1:R2%=1:P%=0:R3%=1
110 FD%=0:S%=0:X%=1:E%=0:E$="" :UR%(0)=1:LR%(0)=1:HR%(0)=1
120 D%=1:GOSUB1020:D%=3:GOSUB1020
130 COLOR4:FOR I%=4TO23:LOCATE0,I%:PRINT " " :NEXT I%
140 CH%=&65:GOSUB230:D%=1:GOSUB350:RETURN
150 POKE &HEEB6,VAL("&h"+MID$(HEX$(K1),3,2))
160 POKE &HEEB7,VAL("&h"+MID$(HEX$(K1),1,2))
170 GET #1,K%:AD=VARPTR(FL$):AD=AD+1
180 D%=PEEK(AD):B%=PEEK(AD+1):L=B%*256+D%
190 POKE &HEE63,VAL("&h"+MID$(HEX$(L),3,2))
200 POKE &HEE64,VAL("&h"+MID$(HEX$(L),1,2))
210 A%:=USR0(0):RETURN
220 ' adjust column label
230 COLOR4:FOR I%=1TO6:LOCATE6+(I%-1)*12,3:PRINT CHR$(CH%):CH%=CH%+1:NEXTI%:RETURN
240 COLOR0:LOCATE0,D%:PRINT SPC(80):RETURN
250 ' READ RECORD
260 IF B$(L)="" THEN RETURN
270 B%=(L-1)*73+1:D=L-(B%-1)*3:T%=(D-1)*79+1
280 GET #3,B%:Q$=W$:B$(L)=MID$(Q$,T%,79):Q$="" :RETURN
290 ' PUT RECORD
300 B%=(L-1)*73+1:D=L-(B%-1)*3:T%=(D-1)*79+1:A%=LEN(B$(L))
310 D$=STRING$(79,32):MID$(D$,1,A%)=B$(L)
320 GET #3,B%:Q$=W$:MID$(Q$,T%,79)=D$:LSET W$=Q$
330 PUT#3,B%:B$(L)=MID$(B$(L),1,1):D$="" :Q$="" :RETURN
340 ' ADJUST ROW LABEL
350 COLOR4:FOR I%=1TO5:LOCATE0,6+(I%-1)*4
360 PRINT USING "##";D%:D%=D%+1
370 NEXT I%:COLOR0:RETURN
380 ' *** DRAW LINE IN BLOCK
390 MID$(B$(I%),1,1)=A$
400 POKE &HEC39,VAL("&h"+MID$(HEX$(K1),3,2))

```



```

410 POKE &HEC3A,VAL("&h"+MID$(HEX$(K1),1,2))
420 POKE &HEC3C,D%:A%=USR4(0):RETURN
430 / DRAW LINE BETWEEN BLOCK
440 B$(NO%)=""
450 MID$(B$(I%),K%,2)=MK1$(NO%):MID$(B$(NO%),E%,2)=MK1$(I%)
460 POKE &HEF05,VAL("&h"+MID$(HEX$(K2),3,2))
470 POKE &HEF06,VAL("&h"+MID$(HEX$(K2),1,2))
480 POKE &HEF08,FD%:A%=USR5(0):RETURN
490 / DRAW ARROW
500 POKE &HFF95,VAL("&h"+MID$(HEX$(K3),3,2))
510 POKE &HFF96,VAL("&h"+MID$(HEX$(K3),1,2))
520 POKE &HFF9B,FD%:A%=USR7(0):RETURN
530 IF T$="1" THEN 540 ELSE 560
540 FD%=2:K2=K1+875:K3=K1+635:T$=MID$(B$(H%-1),1,1)
550 LOCATEG%-4,J%+1:PRINT A$:GOTO620
560 IF T$="r" THEN 540 ELSE 590
570 FD%=3:K2=K1+887:K3=K1+651:T$=MID$(B$(H%+1),1,1)
580 LOCATEG%+8,J%+1:PRINT A$:GOTO620
590 IF T$="d" THEN 600 ELSE RETURN
600 FD%=1:K2=K1+1923:K3=K1+2243:T$=MID$(B$(H%+10),1,1)
610 LOCATEG%-1,J%+3:PRINT A$:GOTO620 ELSE RETURN
620 GOSUB460:IF ASC(T$)<117 THEN GOSUB500
630 RETURN
640 / XXX CHECK CODE OF FLOW
650 IF T$="f" THEN K%=3:RETURN
660 IF T$="d" THEN K%=5:RETURN
670 IF T$="o" THEN K%=2:RETURN
680 IF T$="p" THEN K%=1:RETURN
690 IF T$="i" THEN K%=4:RETURN
700 IF T$="b" THEN K%=9:RETURN
710 IF T$="1" THEN K%=10:RETURN
720 IF T$="r" THEN K%=7:RETURN
730 IF T$="c" THEN K%=8:RETURN
740 IF T$="t" THEN K%=6:LOCATE G%,J%:PRINT" ST OP ":RETURN
750 IF T$="s" THEN K%=6:LOCATE G%,J%:PRINT" START ":RETURN ELSE K%=0:RETURN
760 / XXX CHECK CODE LINE IN BLOCK
770 IF T$="u" THEN D%=11:L=K1:K1=K1+3:RETURN
780 IF T$="x" THEN D%=22:L=K1:K1=K1+880:RETURN
790 IF T$="v" THEN D%=12:L=K1:K1=K1+3:RETURN
800 IF T$="w" THEN D%=13:L=K1:K1=K1+3:RETURN
810 IF T$="y" THEN D%=31:L=K1:K1=K1+880:RETURN
820 D%=21:L=K1:K1=K1+883:RETURN
830 / XXX CREATE FLOW SCROLL UP
840 FOR I%=1TO6
850 IF B$(H%)="" THEN 980
860 LOCATE G%,J%:L=H%:GOSUB260:T$=MID$(B$(H%),10,9)
870 IF LEN(T$)>3 THEN T$=MID$(T$,1,3)+" "+MID$(T$,4,9)
880 PRINT T$:T$=MID$(B$(H%),1,1):IF ASC(T$)<117 THEN 900
890 GOSUB 770:GOSUB400:K1=L:D%=2:A$="":GOTO930

```

```

900 GOSUB650:GOSUB150
910 IF T$="c" AND MID$(B$(H%),2,2)<>" " THEN D%=2:T$="d":A$="":GOSUB530:GOTO960
920 IF T$="f" THEN D%=5:A$="NO" ELSE D%=2:A$=""
930 T$=MID$(B$(H%),D%,1)
940 IF T$="1" AND I%=1 THEN 960
950 IF T$="r" AND I%=6 THEN 960 ELSE GOSUB530
960 IF A$="NO" THEN A$="YES" ELSE A$="NO"
970 IF D%<>2 THEN D%=2:GOTO930
980 B$(H%)=MID$(B$(H%),1,1):K1=K1+12:G%=G%+12:H%=H%+1
990 NEXT I%
1000 FD%=M%:RETURN
1010 ' CLEAR PROMT LINE
1020 COLOR4:LOCATE0,D%:PRINT SPC(80):COLOR0:RETURN
1030 ' SAVE VAR & EXIT
1040 D%=1:POKE &HEEE7,D%:CLOSE:OPEN "temp.SWK" FOR OUTPUT AS #1
1050 PRINT#1,AR$:PRINT#1,F1$
1060 PRINT #1,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
1070 PRINT #1,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
1080 PRINT #1,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
1090 B%=UR%(X%-1)*10:J%=0:T$=""
1100 FOR I%=1TOB%
1110 IF B$(I%)="" THEN 1140
1120 IF I%<10 THEN T$=T$+"00":ELSE IF I%<100 THEN T$=T$+"0"
1130 T$=T$+MID$(STR$(I%),2,3)+B$(I%):J%=J%+1:IF J%=10 THEN PRINT #1,T$:J%=0:T$=""
1140 NEXT I%
1150 IF J%<>0 THEN PRINT #1,T$
1160 CLOSE:RUN"flow1.SPM"
1170 ' LOAD VAR
1180 OPEN "temp.SWK" FOR INPUT AS #2
1190 LINEINPUT#2,AR$:LINEINPUT#2,F1$
1200 LINEINPUT #2,N$
1210 INPUT #2,C%,R%,C1%,R1%,C2%,R2%,R3%,NO%,CH%,X%,S%,P%
1220 INPUT #2,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
1230 INPUT #2,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
1240 IF EOF(2) THEN CLOSE2:KILL "temp.SWK":RETURN
1250 LINEINPUT #2,T$:B%=LEN(T$):D%=1
1260 IF D%>B% THEN 1240
1270 I%=VAL(MID$(T$,D%,3)):B$(I%)=MID$(T$,D%+3,1):D%=D%+4:GOTO1260
1280 ' SAVE FILE
1290 ON ERROR GOTO1500:MOUNT2
1300 OPEN N$ FOR OUTPUT AS#2
1310 PRINT#2,AR$:PRINT#2,F1$:A%=LEN(F1$):D%=A%/13:L=12:Y%=1
1320 IF A%=0 THEN 1380
1330 FOR I%=1TOD%
1340 IF MID$(F1$,L,1)="s" THEN 1360
1350 GET#1,Y%:T$=DF$:N%=1:GOSUB2030:N%=N%-1:T$=MID$(T$,1,N%):PRINT#2,T$:Y%=Y%+1
1360 L=L+13
1370 NEXT I%
1380 PRINT #2,X%,S%,P%,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
1390 PRINT #2,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)

```

```

1400 FOR I%=1TOUR%(X%-1)
1410 J%=(I%-1)*10+1
1420 FOR N%=1TO10
1430 IF B$(J%)="" THEN 1450
1440 L=J%:GOSUB260:GOSUB1530:GOSUB1790:B$(J%)=MID$(B$(J%),1,1):PRINT#2,Q$
1450 J%=J%+1
1460 NEXT N%
1470 NEXT I%
1480 CLOSE2:REMOVE2:D%=0:GOSUB240:D%=1:GOSUB1020
1490 COLOR4:LOCATE0,1:PRINT"READY SAVED":GOTO1040
1500 IF ERR=53 THEN COLOR4:LOCATE0,1:PRINT"NEW FILE":RESUME1300
1510 IF ERR=62 THEN COLOR4:LOCATE0,1:PRINT"BAD FILE-NAME":RESUME1040
1520 D%=1:GOSUB1020:LOCATE0,1:COLOR4:PRINT"ERROR",ERR,ERL:RESUME1040
1530 FOR K%=1TO79
1540 IF MID$(B$(L),K%,1)<" " THEN D%=K%
1550 NEXT K%
1560 IF D%<9 THEN D%=9
1570 B$(L)=MID$(B$(L),1,D%):RETURN
1580 ' LOAD FILE
1590 ON ERROR GOTO1990:MOUNT2:OPEN N$ FOR INPUT AS#2:ERASE B$:DIM B$(500)
1600 LINEINPUT#2,AR$:LINEINPUT#2,FI$:A%=LEN(FI$):D%=A%/13:Y%=12:Y1%=1
1610 IF A%=0 THEN 1670
1620 FOR I%=1TOD%
1630 IF MID$(FI$,Y%,1)="s" THEN 1650
1640 LINEINPUT#2,N$:LSET DF$=N$:PUT#1,Y1%:Y1%=Y1%+1
1650 Y%=Y%+13
1660 NEXT I%
1670 GOSUB90:INPUT #2,X%,S%,P%,UR%(0),UR%(1),UR%(2),UR%(3),UR%(4)
1680 INPUT #2,HR%(0),HR%(1),HR%(2),HR%(3),HR%(4),LR%(0),LR%(1),LR%(2),LR%(3),LR%(4)
1690 COLOR4:LOCATE0,1:PRINT "LOADING FILE":COLOR0
1700 CLOSE1:OPEN "graph.DAT" AS #1:FIELD #1,168 AS FL$
1710 IF EOF(2) THEN 1740
1720 LINEINPUT #2,N$:GOSUB1910:N$=""
1730 L=D%:GOSUB300:GOTO1710
1740 KI=35971!:J%=4
1750 FOR N%=1TO5:G%=3:L=KI:H%=(N%-1)*10+1:GOSUB840:J%=J%+4:KI=L+2560:NEXT N%
1760 FD%=0:CLOSE2:REMOVE2:D%=1:GOSUB1020
1770 COLOR4:LOCATE0,1:PRINT"READY LOAD":GOTO1040
1780 ' CONVERT TO SAVE
1790 IF L<10 THEN Q$="00":ELSE IF L<100 THEN Q$="0" ELSE Q$=""
1800 Q$=Q$+MID$(STR$(L),2,3):IF MID$(B$(L),1,1)="c" THEN 1810 ELSE 1830
1810 M%=2:GOSUB1860:Q$=Q$+MID$(B$(L),1,1)+T$
1820 M%=4:GOSUB1860:Q$=Q$+T$:M%=6:GOSUB1860:Q$=Q$+T$:GOTO1850
1830 M%=3:GOSUB1860:Q$=Q$+MID$(B$(L),1,2)+T$
1840 M%=6:GOSUB1860:Q$=Q$+MID$(B$(L),5,1)+T$
1850 M%=8:GOSUB1860:Q$=Q$+T$:A%=LEN(B$(L))-9:Q$=Q$+MID$(B$(L),10,A%):RETURN
1860 IF MID$(B$(L),M%,2)=" " THEN T$=" ":RETURN
1870 D%=CUI(MID$(B$(L),M%,2))
1880 IF D%<10 THEN T$="00":ELSE IF D%<100 THEN T$="0" ELSE T$=""
1890 T$=T$+MID$(STR$(D%),2,3):RETURN

```



```

1900 ' CONVERT TO LOAD
1910 T$=MID$(N$,1,3):D%=VAL(T$):Q$=MID$(N$,4,1):IF Q$="c" THEN 1920 ELSE 1940
1920 M%=5:GOSUB1970:M%=8:GOSUB1970:M%=11:GOSUB1970
1930 M%=14:GOSUB1970:M%=17:GOTO1960
1940 Q$=Q$+MID$(N$,5,1):M%=6:GOSUB1970:Q$=Q$+MID$(N$,9,1)
1950 M%=10:GOSUB1970:M%=13:GOSUB1970:M%=16
1960 G%=LEN(N$)-M%+1:B$(D%)=Q$+MID$(N$,M%,G%):RETURN
1970 IF MID$(N$,M%,3)=" " THEN Q$=Q$+" ":RETURN
1980 T$=MID$(N$,M%,3):G%=VAL(T$):Q$=Q$+MKI$(G%):RETURN
1990 IF ERR=53 THEN COLOR4:LOCATE0,1:PRINT"FILE NOT FOUND":RESUME1040
2000 IF ERR=62 THEN COLOR4:LOCATE0,1:PRINT"BAD FILE-NAME":RESUME1040
2010 D%=1:GOSUB1020:LOCATE0,1:COLOR4:PRINT"ERROR",ERR,ERL:RESUME1040
2020 ' DEL BLANK
2030 IF MID$(T$,N%,1)=" " OR N%>A% THEN RETURN ELSE N%=N%+1:GOTO2030

```



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2. โปรแกรมแปลงผังงาน เป็นโปรแกรมภาษาเบสิก " conv.SPM "

```

10 ' CONVERT PROGRAM
20 CLEAR700:PRINT CHR$(12):WIDTH80,25:CONSOLE6,17,0,0
30 LOCATE20,0:PRINT"<< CONVERT TO BASIC PROGRAM >>"
40 REMOVE2:MOUNT2:NA$="":OS$="!#":OS$="+-*/^"
50 RS$="(<)":LC%=10:ET$="":EB%=1:ET%=1
60 ON ERROR GOTO140:LOCATE10,2:COLOR4
70 PRINT"ENTER FILE-NAME ":COLOR0:LOCATE1,24:PRINT"MESSAGE : "
80 LOCATE20,2,1:LINEINPUT NA$:IF NA$="" THEN REMOVE2:RUN"menu2.SPM"
90 A%=LEN(NA$):GOSUB520:I$="":MID$(I$,1,LEN(NA$))=NA$
100 OPEN "2:"+NA$+".FLW" FOR INPUT AS#1
110 LOCATE6,4:PRINT"FILE":LOCATE15,4:PRINT"BOX-NO"
120 LOCATE30,4:PRINT"CODE":LOCATE45,4:PRINT"DESCRIPTION"
130 LOCATE0,5:PRINT STRING$(80,45):LOCATE0,23:PRINT STRING$(80,45):GOTO1000
140 COLOR0:LOCATE12,24:PRINT SPC(30):BEEP:LOCATE12,24:COLOR4
150 IF ERR=53 THEN PRINT"FILE NOT FOUND":BEEP:RESUME00
160 IF ERR=62 THEN PRINT"BAD FILE-NAME":BEEP:RESUME00
170 IF ERR=60 THEN PRINT"DISK FULL":BEEP:RESUME00
180 PRINT "ERROR CODE = ";ERR:BEEP:RESUME00
190 ' CONVERT TO WORK FILE
200 T$=MID$(N$,1,3):NO%=VAL(T$):Q$=MID$(N$,4,1):IF Q$("<")"c" THEN 220
210 M%=5:GOSUB250:M%=8:GOSUB250:M%=11:GOSUB250:M%=14:GOSUB250:M%=17:GOTO240
220 Q$=Q$+MID$(N$,5,1):M%=6:GOSUB250:Q$=Q$+MID$(N$,9,1)
230 M%=10:GOSUB250:M%=13:GOSUB250:M%=16
240 G%=LEN(N$)-M%+1:B$=Q$+MID$(N$,M%,G%):RETURN
250 IF MID$(N$,M%,3)=" " THEN Q$=Q$+" ":RETURN
260 T$=MID$(N$,M%,3):G%=VAL(T$):Q$=Q$+MKI$(G%):RETURN
270 ' VARIABLE
280 D$=MID$(T$,PT%,1):D%=ASC(D$):PT%=PT%+1
290 IF D%(<91 AND D%(>64 THEN 300 ELSE RC%=0:RETURN
300 VR$=VR$+D$:IF PT%>A% THEN RC%=3:RETURN
310 D$=MID$(T$,PT%,1):D%=ASC(D$)
320 IF D%(<91 AND D%(>64 OR D%(<58 AND D%(>47 THEN PT%=PT%+1:VR$=VR$+D$
330 RC%=3:IF PT%>A% THEN RETURN ELSE D$=MID$(T$,PT%,1):I%=INSTR(DS$,D$)
340 IF I%(<0 THEN RC%=I%:VR$=VR$+D$:PT%=PT%+1
350 IF PT%>A% THEN RETURN ELSE D$=MID$(T$,PT%,1)
360 IF D$="(" AND J%=0 THEN J%=1:PT%=PT%+1:VR$=VR$+D$:M%=RC% ELSE RETURN
370 IF PT%>A% THEN RC%=0:RETURN
380 D$=MID$(T$,PT%,1):D%=ASC(D$)
390 IF D%(<58 AND D%(>47 THEN JJ%=0:GOSUB420 ELSE GOSUB280
400 IF PT%>A% OR RC%=0 THEN RC%=0:RETURN

```



```

410 IF D$((">")) THEN RC%=0:RETURN ELSE VR%=VR%+D$:RC%=(M%*10+RC%):PT%=PT%+1:RETURN
420 ' DIGIT
430 VR%=VR%+D$:PT%=PT%+1
440 IF PT%>A% THEN RC%=100:RETURN ELSE D%=MID$(T$,PT%,1):I%=ASC(D%)
450 IF I%<58 AND I%>47 THEN 430
460 IF D$(")") THEN RC%=100:RETURN
470 IF JJ%=0 THEN JJ%=1:GOTO430 ELSE RC%=0:RETURN
480 ' LITERAL
490 VR%=VR%+D$:PT%=PT%+1:IF PT%>A% THEN RC%=0:RETURN
500 D%=MID$(T$,PT%,1)
510 IF D%=CHR$(34) THEN VR%=VR%+D$:PT%=PT%+1:RC%=5:RETURN ELSE 490
520 ' ALPHABETIC
530 IF A%=0 THEN RETURN
540 FOR I%=1TOA%
550 T%=MID$(NA$,I%,1):D%=ASC(T%)
560 IF D%<123 AND D%>96 THEN T%=CHR$(D%-32):MID$(NA$,I%,1)=T%
570 NEXT I%
580 RETURN
590 ' ERROR ROUTINE
600 IF EC%=1 THEN N$="SYNTAX ERROR":GOTO730
610 IF EC%=2 THEN N$="VARIABLE TYPE MISMATCH":GOTO730
620 IF EC%=3 THEN N$="BAD FILE NAME":GOTO730
630 IF EC%=4 THEN N$="BAD FIELD DEFINITION":GOTO730
640 IF EC%=5 THEN N$="BAD LABEL REFERENCE":GOTO730
650 IF EC%=6 THEN N$="BAD SUB-MODULE NAME":GOTO730
660 IF EC%=7 THEN N$="DUPLICATE SUB-MODULE NAME":GOTO730
670 IF EC%=8 THEN N$="LABEL NOT FOUND":GOTO730
680 IF EC%=9 THEN N$="ENDIF WITH OUT IF STATEMENT":GOTO730
690 IF EC%=10 THEN N$="NO CONTINUE PATH":GOTO730
700 IF EC%=11 THEN N$="NO PREVIOUS PATH":GOTO730
710 IF EC%=14 THEN N$="UNMATCH PARENTHESIS":GOTO730
720 IF EC%=15 THEN N$="FILE NOT DEFINE"
730 T$=" ' "+T$:N$=" ' XXX"+N$:GOSUB910:GOSUB870
740 PRINT#3,T$:T$=N$:GOSUB910:PRINT #3,T$
750 NE%=NE%+1:D$="E-"+MID$(STR$(EC%),2,4):IF LEN(D%)<4 THEN D$=D$+" "
760 GOSUB820:RETURN
770 ' WARNING ROUTINE
780 IF WC%=1 THEN N$="NO CONTENT IN BLOCK":GOTO800
790 IF WC%=2 THEN N$="BYPASS ARRAY & FILE DEFINITION"
800 N$=" ' XXX"+N$:T$=N$:GOSUB910:GOSUB870:PRINT#3,T$
810 NW%=(WC%+1):D$="W-"+MID$(STR$(WC%),2,2)+" ":GOSUB820:RETURN
820 T$="":GOSUB880:T%=MID$(T$,7,3):D%=LEN(T%)
830 IF D%<4 THEN T%=T$+STRING$(4-D%,32):D%=LEN(D%)
840 IF D%<3 THEN D%=D$+STRING$(3-D%,32)
850 A%=(LEN(N$)-3):N%=MID$(N$,4,A%):PRINT SPC(5) I$ SPC(5) T$ SPC(10) D$ SPC(10) N$
860 T$=I$+T$+D$+N$:PRINT #2,T$:N$="":RETURN
870 ' BOX-REF
880 IF NO%=0 THEN T$=T$+" ' X--DEF":RETURN
890 I%=(NO%-1)/10+1:J%=(NO%-(I%-1)*10):A%=STR$(I%)+CHR$(J%+64)
900 T$=T$+" ' X-"+A$:RETURN

```

```

910 / LINE NO
920 A$=MID$(STR$(LC%),2,4):LC%=LC%+10:T$=A$+T$:RETURN
930 IF ERR=53 THEN RESUME1040 ELSE 140
940 IF ERR=53 THEN RESUME1060 ELSE 140
950 / PUT FILE-TABLE
960 FT$=FT$+"      ":MID$(FT$,FT%,Y4%)=B$
970 FT$=FT$+A$+MKI$(K%):FT%=FT%+12:RETURN
980 / PUT ERR TABLE
990 ER$=ER$+MKI$(N%):ER%=ER%+2:RETURN
1000 / LOAD FILE
1010 NO%=0:FT$="":FT%=1:LOCATE12,24:COLOR0:PRINT SPC(30)
1020 LOCATE12,24:COLOR6:PRINT"COMPILE DEFINITION":COLOR0
1030 ON ERROR GOTO930:KILL"2:"+NA$+".SWK"
1040 OPEN "2:"+NA$+".SWK" FOR OUTPUT AS#3
1050 ON ERROR GOTO940:KILL "2:"+NA$+".LST"
1060 OPEN "2:"+NA$+".LST" FOR OUTPUT AS#2
1070 LINEINPUT #1,T$:A%=LEN(T$):PT%=1:O$=""
1080 IF PT%>A% THEN 1160
1090 J%=0:VR$="":GOSUB280:IF RC%=0 THEN 1140
1100 IF RC%>100 THEN 1110 ELSE EC%=2:GOSUB590:GOTO1160
1110 IF PT%>A% THEN 1150
1120 B$=MID$(T$,PT%,1):IF B$<>" " THEN 1140 ELSE O$=O$+"DIM "+VR$+":"
1130 PT%=PT%+1:IF PT%>A% THEN 1140 ELSE 1090
1140 EC%=1:GOSUB590:GOTO1160
1150 O$=O$+"DIM "+VR$:T$=O$:GOSUB910:GOSUB870:PRINT #3,T$:O$=""
1160 LINEINPUT #1,T$:A%=LEN(T$):G$=T$:IF A%=0 THEN 1510 ELSE K1%=A%/13:Y%=12:Y1%=1
1170 FOR K%=1TOK1%
1180 B$=MID$(T$,Y%,11):Y2%=1:A$=MID$(B$,1,1):A%=ASC(A$)
1190 IF A%<51 AND A%>48 THEN 1200 ELSE 1210
1200 IF MID$(B$,2,1)<>" " THEN 1280 ELSE Y2%=Y2%+2
1210 Y3%=Y2%:A$=MID$(B$,Y2%,1):A%=ASC(A$)
1220 IF A%<91 AND A%>64 THEN Y2%=Y2%+1:A$=MID$(B$,Y2%,1):GOTO1240
1230 IF A%>96 AND A%<123 THEN Y2%=Y2%+1:A$=MID$(B$,Y2%,1)
1240 IF Y2%>11 OR A$="" THEN Y4%=Y2%:GOTO1300
1250 A%=ASC(A$):IF A%<91 AND A%>64 THEN 1290
1260 IF A%>96 AND A%<123 THEN 1290
1270 IF A%<58 AND A%>47 THEN 1290
1280 EC%=3:O$=T$:T$=B$:GOSUB590:T$=O$:GOTO1490
1290 Y2%=Y2%+1:A$=MID$(B$,Y2%,1):GOTO1240
1300 Y2%=Y2%+1:IF Y2%>11 THEN 1320
1310 A$=MID$(B$,Y2%,1):IF A$<>" " THEN 1280 ELSE 1300
1320 B$=MID$(B$,1,Y4%-1):IF MID$(T$,Y%,1)<>"s" THEN 1370
1330 A$=MID$(T$,Y%+1,1):IF A$="i" THEN D$="" FOR INPUT AS#":GOTO1350
1340 IF A$="a" THEN D$="" FOR APPEND AS# ELSE D$="" FOR OUTPUT AS#"
1350 O$="" OPEN "+CHR$(34)+B$+CHR$(34)+D$+MID$(STR$(K%),2,2)
1360 Y4%=Y4%-Y3%:B$=MID$(B$,Y3%,Y4%):GOSUB950:GOTO1480
1370 O$="" OPEN "+CHR$(34)+B$+CHR$(34)+A$+MID$(STR$(K%),2,2)
1380 Y4%=Y4%-Y3%:B$=MID$(B$,Y3%,Y4%):A$="r":GOSUB950
1390 O$=O$+" :FIELD#"+MID$(STR$(K%),2,2)
1400 LINEINPUT#1,N$:T$=N$:A%=LEN(T$):PT%=1:IF PT%>A% THEN 1470

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1410 VR$="":GOSUB270:IF RC<>1 THEN 1470 ELSE A$=VR$
1420 IF PT%>A% OR D$<>"-" THEN 1470
1430 PT%=PT%+1:IF PT%>A% THEN 1470 ELSE D$=MID$(T$,PT%,1):D%=ASC(D$)
1440 IF D%<58 AND D%>47 THEN VR$="":JJ%=0:GOSUB420 ELSE 1470
1450 IF RC%=0 THEN 1470 ELSE O$=O$+","+"VR$+" AS "+A$
1460 IF PT%>A% THEN 1480 :ELSE IF D$="," THEN PT%=PT%+1:GOTO1410
1470 EC%=4:GOSUB590:T$=G$:GOTO1490
1480 T$=O$:GOSUB910:GOSUB870:PRINT#3,T$:T$=G$:N$=""
1490 Y1%=Y1%+13:Y2%=Y2%+13
1500 NEXT K%
1510 G$="":LINEINPUT #1,T$:LINEINPUT #1,T$:T$=""
1520 CLOSE2:OPEN "work.SWK" AS#2:FIELD #2,237 AS W$
1530 LOCATE12,24:COLOR0:PRINT SPC(68):LOCATE12,24
1540 COLOR6:PRINT"LOADING TO WORK-FILE"
1550 COLOR0:LOCATE50,24:PRINT"FILE-NAME":COLOR4:LOCATE63,24:PRINTI$:COLOR0
1560 ER$="":ER%=1:ST$="":ST%=1:LT$="":LT%=1:IT$="":IT%=1
1570 IB%=1:LINEINPUT #1,N$:IF N$="" THEN 3160 ELSE S$=MID$(N$,1,3)
1580 L=VAL(S$):GOSUB190:GOSUB1690
1590 IF EOF(1) THEN K%=1:GOTO2250
1600 X%=0:LINEINPUT #1,N$:GOSUB190:N$=""
1610 IF MID$(B$,1,1)="r" AND MID$(B$,5,1)="x" THEN GOSUB1980 ELSE 1640
1620 IF D=0 THEN MID$(B$,2,1)="E":MID$(B$,6,2)=MKI$(6)
1630 GOSUB2170:GOTO1680
1640 IF MID$(B$,1,1)="c" THEN GOSUB1820 ELSE 1670
1650 IF X%=0 THEN 1680 ELSE Q$=MKI$(X%):GOSUB1920
1660 IF MID$(B$,4,2)=" " AND MID$(B$,6,2)=" " THEN 1670 ELSE 1680
1670 IF MID$(B$,8,2)=" " THEN GOSUB980
1680 L=NO%:GOSUB1690:GOTO1590
1690 ' PUT RECORD #2
1700 B%=(L-1)*3+1:D=L-(B%-1)*3:T%=(D-1)*79+1:A%=LEN(B$)
1710 D$=STRING$(79,32):MID$(D$,1,A%)=B$
1720 GET #2,B%:Q$=W$:MID$(Q$,T%,79)=D$:LSET W$=Q$
1730 PUT #2,B%:B$="":D$="":Q$="":RETURN
1740 ' PUT RECORD #1
1750 B%=(L-1)*3+1:D=L-(B%-1)*3:T%=(D-1)*79+1:A%=LEN(B$)
1760 D$=STRING$(79,32):MID$(D$,1,A%)=B$
1770 GET #1,B%:Q$=W$:MID$(Q$,T%,79)=D$:LSET W$=Q$
1780 PUT #1,B%:B$="":D$="":Q$="":RETURN
1790 ' READ RECORD
1800 B%=(L-1)*3+1:D=L-(B%-1)*3:T%=(D-1)*79+1
1810 GET #1,B%:Q$=W$:B$=MID$(Q$,T%,79):Q$="":RETURN
1820 ' CHECK LABEL
1830 D=LEN(B$):D=D-9:IF D=0 THEN 1910 ELSE D$=MID$(B$,10,D):L=2
1840 IF D$="ENDIF" OR D$="END00" THEN X%=0:RETURN
1850 A$=MID$(D$,1,1):IF ASC(A$)>48 AND ASC(A$)<58 THEN Q$=A$ ELSE 1910
1860 IF L>D THEN 1910 :ELSE A$=MID$(D$,L,1):IF ASC(A$)>47 AND ASC(A$)<58 THEN L=L+1:Q$=Q$+A$ ELSE 1890
1870 A$=MID$(D$,L,1):IF ASC(A$)>47 AND ASC(A$)<58 THEN L=L+1:Q$=Q$+A$ ELSE 1890
1880 IF L>D THEN 1910 ELSE A$=MID$(D$,L,1)
1890 X%=VAL(Q$):P=ASC(A$):IF P>64 AND P<75 THEN 1900 ELSE 1910
1900 X%=(X%-1)*10+(P-64):L=L+1:IF L>D THEN RETURN ELSE 1910

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1910 X%=0:MID$(B$,4,1)="E":MID$(B$,6,2)=MKI$(5):RETURN
1920 ' PUT L-TABLE
1930 LT$=LT$+Q$:LT%=LT%+2:RETURN
1940 ' DEL BLANK
1950 D%=10:A%=9
1960 A$=MID$(B$,D%,1):IF D%>79 THEN B$=MID$(B$,1,A%):A%=A%-9:RETURN
1970 IF A$=" " THEN D%=D%+1:GOTO1960 ELSE A%=D%:D%=D%+1:GOTO1960
1980 ' CHECK SUB NAME
1990 D=LEN(B$):D=D-9:IF D=0 THEN 2050 ELSE D$=MID$(B$,10,D):L=2
2000 A$=MID$(D$,1,1):IF ASC(A$)>64 AND ASC(A$)<91 THEN Q$=A$ ELSE 2050
2010 IF L>D THEN RETURN
2020 A$=MID$(D$,L,1):IF ASC(A$)>64 AND ASC(A$)<91 THEN 2040
2030 IF ASC(A$)>47 AND ASC(A$)<58 THEN 2040 ELSE 2050
2040 Q$=Q$+A$:L=L+1:GOTO2010
2050 D=0:RETURN
2060 ' SEARCH SYMBOL TABLE
2070 IF I%>ST% THEN I%=0:RETURN
2080 A$=MID$(ST$,I%,2):X%=CVI(A$):RETURN
2090 ' ADD SYMBOL TABLE
2100 ST$=ST$+" ":ST%=ST%+2:D%=ST%*2:RETURN
2110 ' SEARCH IN-SUB-TABLE
2120 IF A%>IT% THEN A%=0:RETURN:ELSE IF Q$=MID$(IT$,A%,6) THEN RETURN
2130 A%=A%+8:GOTO2120
2140 ' SEARCH EX TABLE
2150 IF A%>ET% THEN A%=0:RETURN
2160 IF Q$=MID$(ET$,A%,6) THEN RETURN ELSE A%=A%+8:GOTO2150
2170 ' PUT IN-SUB-TABLE
2180 IF D<=0 THEN Q$="@@@@@":D=6:GOTO2280
2190 A%=1:GOSUB2110:IF A%>0 THEN MID$(B$,2,1)="E":MID$(B$,6,2)=MKI$(7)
2200 IT$=IT$+" ":MID$(IT$,IT%,D)=Q$
2210 MID$(IT$,IT%+6,2)=MKI$(NO%):IT%=IT%+8:RETURN
2220 ' SEARCH L-TABLE
2230 IF A%>LT% THEN A%=0:RETURN
2240 IF Q$=MID$(LT$,A%,2) THEN RETURN ELSE A%=A%+2:GOTO2230
2250 CLOSE1,2:OPEN "work.SWK" AS#1:FIELD #1,237 AS W$
2260 OPEN"2:"+NA$+".LST" FOR APPEND AS#2
2270 IF K%>LT% THEN 2310 ELSE G$=MID$(LT$,K%,2)
2280 NO%=CVI(G$):L=NO%:GOSUB1790:MID$(B$,5,1)="+
2290 A%=(K%+1)*2:MID$(B$,8,2)=MKI$(A%)
2300 GOSUB1740:ST$=ST$+" ":ST%=ST%+2:K%=K%+2:GOTO2270
2310 COLOR0:LOCATE12,24:PRINT SPC(30):LOCATE12,24
2320 COLOR6:PRINT "CONVERT FLOW TO BASIC":COLOR0
2330 NO%=VAL(S$):SB$="":SB%=1
2340 ' CONVERT FLOW TO BASIC
2350 L=NO%:GOSUB1790:GOSUB1940:T$=MID$(B$,10,A%):A$=MID$(B$,1,1)
2360 D%=ASC(A$):IF D%>116 THEN 2550
2370 IF A$="+" THEN 3030
2380 IF A%=0 AND A$("<") "s" THEN WC%=1:GOSUB770:GOTO3100
2390 IF MID$(B$,5,1)="+ THEN 2400 ELSE 2410
2400 Q$=MID$(B$,8,2):A%=CVI(Q$):MID$(ST$,A%,2)=MKI$(LC%)

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2410 IF MID$(B$,1,1)="c" THEN A$=MID$(ST$,4,1):Q$=MID$(B$,6,2):GOTO2430
2420 A$=MID$(B$,2,1):Q$=MID$(B$,6,2)
2430 IF A$="E" THEN EC%=CVI(Q$):GOSUB590:GOTO3100
2440 A$=MID$(B$,1,1):PT%=1:A%=LEN(T$):GOSUB4070
2450 T$=MID$(T$,PT%,A%-PT%+1):PT%=1:A%=LEN(T$):Q$="" :VR$=""
2460 IF A$="b" THEN 3830
2470 IF A$="c" THEN 2560
2480 IF A$="d" THEN 4810
2490 IF A$="f" THEN 2810
2500 IF A$="i" THEN 4760
2510 IF A$="l" THEN 4270
2520 IF A$="o" THEN 4600
2530 IF A$="p" THEN YI%=1:GOTO4450
2540 IF A$="r" THEN 2930
2550 IF A$="s" THEN 3010 ELSE 3110
2560 ' CONNECTOR
2570 IF MID$(B$,4,1)="E" THEN EC%=CVI(MID$(B$,6,2)):GOSUB590:GOTO2620
2580 IF T$="ENDIF" THEN 2630
2590 IF T$="ENDDO" THEN T$="NEXT":GOSUB2790:GOTO2730
2600 Q$=T$:GOSUB2220:IF A%=0 THEN EC%=2:GOSUB590:GOTO2730
2610 D%=A%*2+1:Q$="e"+MID$(STR$(D%),2,4):T$="GOTO "+Q$:GOSUB2790
2620 IF SB%=1 THEN 3030 ELSE 2640
2630 IF SB%=1 THEN EC%=9:GOSUB590:GOTO2730
2640 A%=SB%-6:IF MID$(SB$,A%,2)="XX" THEN 2710
2650 IF MID$(SB$,A%,2)=" " THEN 2660 ELSE 2670
2660 T$="/--ENDIF":GOSUB2800:Q$=MID$(SB$,A%+2,2):D%=CVI(Q$):GOSUB2750:GOTO2720
2670 Q$=MID$(SB$,A%,2):NO%=CVI(Q$):Q$=MID$(SB$,A%+2,2)
2680 MID$(SB$,A%,2)="XX":GOSUB2090:MID$(SB$,A%+4,2)=MKI$(D%)
2690 T$="+GOTO e"+MID$(STR$(D%),2,4):GOSUB2800
2700 T$="/--ELSE":GOSUB2800:D%=CVI(Q$):GOSUB2750:GOTO2340
2710 Q$=MID$(SB$,A%+4,2):T$="/--ENDIF":GOSUB2800:D%=CVI(Q$):GOSUB2750:T$=""
2720 SB%=SB%-6:IF SB%<=1 THEN SB$="" ELSE SB$=MID$(SB$,1,SB%-1)
2730 A$=MID$(B$,2,2):IF A$=" " THEN EC%=10:GOSUB590:GOTO3030
2740 NO%=CVI(A$):GOTO2350
2750 ' UPDATE SYMBOL TABLE
2760 D%=(D%-1)*2+1:MID$(ST$,D%,2)=MKI$(LC%):RETURN
2770 T$=" "+T$:GOSUB2780:GOTO3110
2780 ' PUT SWK FILE
2790 GOSUB910:GOSUB870:PRINT#3,T$:RETURN
2800 GOSUB910:PRINT#3,T$:RETURN
2810 ' IF BLOCK
2820 GOSUB4090:SB$=SB$+" ":G$=MID$(B$,3,2):IF G$=" " THEN 2880
2830 A$=MID$(B$,6,2)
2840 MID$(SB$,SB%,2)=A$:GOSUB2090:Q$="e"+MID$(STR$(D%),2,4)
2850 MID$(SB$,SB%+2,2)=MKI$(D%)
2860 T$="+IF "+T$+" THEN"+STR$(LC%+10)+" ELSE "+Q$
2870 GOSUB2790:NO%=CVI(G$):SB%=SB%+6:GOTO2350
2880 G$=MID$(B$,6,2):IF G$=" " THEN EC%=10:GOSUB590:GOTO3030
2890 T$=" IF "+T$+" THEN"+STR$(LC%+10)+" ELSE "+STR$(LC%+20):GOSUB2780:NO%=CVI(G$)
2900 GOSUB2090:MID$(SB$,SB%+4,2)=MKI$(D%)

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2910 T$="+GOTO @"+MID$(STR$(D%),2,4):GOSUB2800:T$=" '-ELSE":GOSUB2800
2920 MID$(SB$,SB$,2)="XX":SB%=SB%+6:GOTO2350
2930 ' SUB-ROUTINE
2940 IF MID$(B$,2,1)="E" THEN EC%=CVI(MID$(B$,6,2)):GOSUB590:GOTO3100
2950 IF MID$(B$,5,1)="X" THEN 3100
2960 D%=LEN(B$)-9:Q$=MID$(B$,10,D%):IF D%<6 THEN A%=6-D%:Q$=Q$+STRING$(A%,32)
2970 A%=1:GOSUB2110:IF A%=0 THEN A%=1:GOSUB2140 ELSE 3000
2980 IF A%=0 THEN ET%=ET%+Q$+" ":A%=(ET%/8)+1:ET%=ET%+8 ELSE A%=(A%/8)+1
2990 T$="XGOSUB @"+MID$(STR$(A%),2,4):GOSUB2790:GOTO3100
3000 A%=(A%/8)+1:T$="-GOSUB @"+MID$(STR$(A%),2,4):GOSUB2790:GOTO3100
3010 ' START
3020 IF EB%=1 THEN T$=" ' "+NA$+"---PROGRAM":GOSUB2790:GOTO3100 ELSE 3100
3030 ' STOP
3040 IF IB%=1 AND EB%=1 THEN T$=" END":GOSUB2780 ELSE T$=" RETURN":GOSUB2780
3050 IF SB%>1 THEN 2640
3060 IF IB%>1 THEN 3160 ELSE Q$=MID$(IT$,IB%+6,2)
3070 T$=" ' "+MID$(IT$,IB%,6)+"SUB-PROGRAM"
3080 MID$(IT$,IB%+6,2)=MKI$(LC%):NO%=CVI(Q$):IB%=IB%+8:GOSUB2780
3090 GOTO2350
3100 ' INTERNAL PASS
3110 Q$=MID$(B$,3,2):IF Q$=" " THEN EC%=10:GOSUB590:GOTO3030
3120 NO%=CVI(Q$):GOTO2350
3130 ' BYPASS LINE NO
3140 A$=MID$(T$,G%,1):A%=ASC(A$)
3150 IF A%<58 AND A%>47 THEN G%=G%+1:GOTO3140 ELSE RETURN
3160 ' END OF CONVERT
3170 IF ER%=1 THEN 3220 ELSE ER%=ER%-1
3180 FOR K%=1TOER% STEP 2
3190 Q$=MID$(ER$,K%,2):L=CVI(Q$):NO%=L:GOSUB1790:GOSUB1940
3200 IF A%=0 THEN T$="" ELSE T$=MID$(B$,10,A%)
3210 EC%=11:GOSUB590:NEXT K%
3220 ' RESOLVE SYMBOL PASS
3230 COLOR0:LOCATE12,24:PRINT SPC(30):COLOR6
3240 LOCATE12,24:PRINT"RESOLVE INTERNAL SYMBOL":COLOR0
3250 ON ERROR GOTO3750
3260 CLOSE1,3:OPEN "2:"+NA$+".SWK" FOR INPUT AS#1:KILL"2:"+NA$+".SW1"
3270 OPEN "2:"+NA$+".SW1" FOR OUTPUT AS#3
3280 IF EOF(1) THEN 3590
3290 LINEINPUT#1,T$:G%=1:GOSUB3130
3300 IF A$="+" THEN 3340
3310 IF A$="-" THEN 3450
3320 IF A$="X" THEN 3500
3330 PRINT#3,T$:GOTO3280
3340 ' ORDINARY SYMBOL
3350 MID$(T$,G%,1)=" ":D%=INSTR(T$,"@"):IF D%=0 THEN 3330
3360 GOSUB3430:G$=MID$(T$,PT%,A%-PT%+1):D%=D%+1
3370 B%=VAL(VR$):I%=(B%-1)*2+1:GOSUB2860:IF I%=0 OR A$=" " THEN 3390
3380 N$=MID$(T$,1,D%-2):T$=N$+MID$(STR$(X%),2,4)+G$:GOTO3330
3390 B%=LEN(T$)-G%:T$=MID$(T$,1,G%)+'"'+MID$(T$,G%+1,B%)
3400 PRINT #3,T$:A%=G%-1:A$=MID$(T$,1,A%)

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3410 A%=VAL(A$)+5:N$=" ' XXXUNRESOLVED LABEL":T$=MID$(STR$(A%),2,4)+N$:PRINT#3,T$
3420 NO%=CVI(MID$(LT$,1%,2)):EC%=12:T$=MID$(T$,6,19):GOSUB750:GOTO3280
3430 ' FIND DIGIT
3440 PT%=D%:A%=LEN(T$):D$="":VR$="":GOSUB420:RETURN
3450 ' SUB NAME
3460 MID$(T$,G%,1)=" ":D%=INSTR(T$,"@"):IF D%=0 THEN 3330
3470 GOSUB3430:G$=MID$(T$,PT%,A%-PT%+1):D%=D%+1:B%=VAL(VR$):B%=(B%-1)*8+1
3480 A$=MID$(IT$,B%+6,2):B%=CVI(A$):D%=D%-2
3490 T$=MID$(T$,1,D%)+MID$(STR$(B%),2,4)+G$:GOTO3330
3500 ' EX NAME
3510 D%=INSTR(T$,"@"):IF D%=0 THEN 3330
3520 GOSUB3430:G$=MID$(T$,PT%,A%-PT%+1):D%=D%+1
3530 B%=VAL(VR$):B%=(B%-1)*8+1:A$=MID$(ET$,B%+6,2)
3540 IF B%>=EB% THEN 3330:ELSE IF A$="XX" THEN 3570
3550 A%=CVI(A$):T$=MID$(T$,1,D%-2)+MID$(STR$(A%),2,4)+G$
3560 MID$(T$,G%,1)=" ":GOTO3330
3570 N$=MID$(T$,1,G%-1)+" ' "+MID$(ET$,B%,6)+" XXXUNRESOLVE EXTERNAL SYMBOL"
3580 PRINT #3,N$:NO%=0:EC%=13:GOSUB750:GOTO3280
3590 ' EXTERNAL SYMBOL PASS
3600 CLOSE1:IF EB%>=ET% THEN 3770
3610 T$=MID$(ET$,EB%,6):I$=T$:T$=T$+".FLW"EDN ERROR GOTO3730:OPEN "2:"+T$ FOR INPUT AS#1
3620 ON ERROR GOTO3730:OPEN "2:"+T$ FOR INPUT AS#1
3630 T$=" ' "+T$+" X--EXTERNAL SUBROUTINE NAME"
3640 NO%=0:GOSUB2790:MID$(ET$,EB%+6,2)=MKI$(LC%)
3650 ' BYPASS RECORD
3660 LINEINPUT #1,N$:LINEINPUT #1,Q$:IF Q$="" THEN 3710
3670 WC%=2:NO%=0:G%=LEN(Q$):G%=G%*13:GOSUB770:Y%=12
3680 FOR K%=1 TO G%
3690 IF MID$(Q$,Y%,1)="s" THEN 3700 ELSE LINEINPUT#1,T$
3700 Y%=Y%+13:NEXT K%
3710 EB%>=EB%+8:CLOSE3:KILL "2:"+NA$+".SWK":NAME "2:"+NA$+".SW1" AS "2:"+NA$+".SWK"
3720 OPEN "2:"+NA$+".SWK" FOR APPEND AS#3:GOTO1510
3730 ' ERROR EXTERNAL SYMBOL
3740 IF ERR=53 THEN MID$(ET$,EB%+6,2)="XX":EB%>=EB%+8:RESUME3600 ELSE 140
3750 IF ERR=53 THEN RESUME3270 ELSE 140
3760 IF ERR=53 THEN RESUME3790 ELSE 140
3770 ' END OF COMPILE
3780 CLOSE:ON ERROR GOTO3760:KILL "2:"+NA$+".OBJ"
3790 NAME "2:"+NA$+".SW1" AS "2:"+NA$+".OBJ":KILL "2:"+NA$+".SWK":REMOVE2
3800 LOCATE0,24:COLOR0:PRINT SPC(80):LOCATE1,24:PRINT"XXX( END OF COMPILE )XXX"
3810 LOCATE30,24:PRINT"NO-OF ERRORS = ";NE%:LOCATE50,24
3820 PRINT"NO-OF WARNINGS = ";NW%:LOCATE75,24:A$=INPUT$(1):RUN"menu2.SPM"
3830 ' PROCESS
3840 IF PT%>A% THEN 3910
3850 IF MID$(T$,PT%,4)="LSET" OR MID$(T$,PT%,4)="RSET" THEN PT%=PT%+4:GOSUB4070
3860 IF PT%>A% THEN 3910 ELSE VR$="":J%=0:GOSUB270
3870 IF RC%=0 OR PT%>A% THEN 3910
3880 GOSUB4070:IF PT%>A% OR MID$(T$,PT%,1)<"=" THEN 3910
3890 PT%=PT%+1:GOSUB4070:GOSUB3930:IF PT%=0 THEN GOSUB590:GOTO3110
3900 IF PT%>A% THEN 2770:ELSE IF MID$(T$,PT%,1)=":" THEN PT%=PT%+1:GOTO3840

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3910 EC%=1:GOSUB590:GOTO3110
3920 ' EXPRESSION
3930 Y%=0:Y1%=0:VR$="":D$=""
3940 IF PTX>A% THEN 4040 ELSE D$=MID$(T$,PTX,1):K%=ASC(D$)
3950 IF K%>64 AND K%<91 THEN J%=0:GOSUB270:GOTO4000
3960 IF K%<47 AND K%<58 THEN D$="":JJ%=0:GOSUB420:GOTO4000
3970 IF D$="." THEN D$="":JJ%=1:GOSUB420:GOTO4000
3980 IF D$="(" THEN Y%=Y%+1:PTX=PTX+1:GOTO3940
3990 IF D$="+" OR D$="-" THEN Y1%=1:PTX=PTX+1:GOTO3940 ELSE 4040
4000 IF RC%=0 THEN 4040 ELSE Y1%=0
4010 IF PTX>A% THEN RETURN ELSE D$=MID$(T$,PTX,1)
4020 IF D$=")" THEN 4050
4030 O%=INSTR(OS$,D$):IF O%=0 THEN 4060 ELSE Y1%=1:PTX=PTX+1:GOTO3940
4040 EC%=1:PTX=0:RETURN
4050 Y%=Y%-1:IF Y%<0 THEN PTX=0:EC%=14:RETURN ELSE PTX=PTX+1:GOTO4010
4060 IF Y%<0 THEN EC%=14:PTX=0:RETURN ELSE RETURN
4070 ' DEL BLNK
4080 IF PTX>A% OR MID$(T$,PTX,1)<>" " THEN RETURN ELSE PTX=PTX+1:GOTO4080
4090 ' IF SYNTAX
4100 IF MID$(T$,PTX,4)="EOF(" THEN 4110 ELSE 4140
4110 PTX=PTX+4:JJ%=1:VR$="":D$="":GOSUB420
4120 IF RC%=0 OR VR$="" THEN 4260
4130 IF PTX>A% OR MID$(T$,PTX,1)<>")" THEN 4260 ELSE RETURN
4140 GOSUB4070:IF PTX>A% THEN 4260 ELSE GOSUB3920
4150 IF PTX=0 OR PTX>A% THEN 4260 ELSE GOSUB4070
4160 IF PTX>A% THEN 4260 ELSE D$=MID$(T$,PTX,1):O%=INSTR(RS$,D$)
4170 IF O%=0 THEN 4260 ELSE PTX=PTX+1:IF PTX>A% THEN 4260
4180 D$=MID$(T$,PTX,1):I%=INSTR(RS$,D$):IF I%=0 THEN 4200
4190 IF O%=I% THEN 4260 ELSE PTX=PTX+1
4200 IF PTX>A% THEN 4260 ELSE D$=MID$(T$,PTX,1):GOSUB4070
4210 IF PTX>A% THEN 4260 ELSE GOSUB3920
4220 IF PTX=0 THEN 4260:ELSE GOSUB4070:IF PTX>A% THEN RETURN
4230 IF MID$(T$,PTX,3)="AND" THEN PTX=PTX+3:GOTO4250
4240 IF MID$(T$,PTX,2)="OR" THEN PTX=PTX+2
4250 GOSUB4070:GOTO4100
4260 EC%=1:STOP:GOSUB590:T$="":RETURN
4270 ' LOOP
4280 GOSUB4070:IF PTX>A% THEN 3910 ELSE GOSUB270
4290 IF RC%=0 THEN 3910 :ELSE IF RC%=1 OR RC%=110 THEN 4400
4300 GOSUB4070:IF PTX>A% THEN 3910:ELSE IF MID$(T$,PTX,1)<>"=" THEN 3910
4310 PTX=PTX+1:GOSUB4070:IF PTX>A% THEN 3910 ELSE VR$="":GOSUB4410
4320 IF RC%=0 OR PTX>A% THEN 3910:ELSE IF RC%=1 OR RC%=110 THEN 4400
4330 O$="FOR "+MID$(T$,1,PTX-1):IF D$<>"," THEN 3910 ELSE PTX=PTX+1:O$=O$+" TO "
4340 IF PTX>A% THEN 3910 ELSE VR$="":GOSUB4410
4350 IF RC%=0 OR PTX>A% THEN 3910:ELSE IF RC%=1 OR RC%=110 THEN 4400
4360 O$=O$+VR$:IF PTX>A% THEN T$=O$:GOTO2770 ELSE D$=MID$(T$,PTX,1)
4370 PTX=PTX+1:IF D$<>"," OR PTX>A% THEN 3910 ELSE VR$="":GOSUB4410
4380 IF RC%=0 OR PTX<=A% THEN 3910:ELSE IF RC%=1 OR RC%=110 THEN 4400
4390 O$=O$+" STEP "+VR$:T$=O$:GOTO2770

```

```

4400 EC%=2:GOSUB590:GOTO3110
4410 VR$="":D$=MID$(T$,PT%,1):D%=ASC(D$)
4420 IF D%>64 AND D%<91 THEN J%=0:GOSUB270:RETURN
4430 IF D%>47 AND D%<58 THEN JJ%=0:GOSUB420:RETURN
4440 IF D$="." THEN JJ%=1:GOSUB420:RETURN ELSE RC%=0:RETURN
4450 ' PRINT
4460 D$=MID$(T$,PT%,3):IF D$="CC1" THEN Q$="LPRINT CHR$(12)":GOTO4550
4470 IF D$="SP1" THEN Q$="LPRINT":GOTO4550
4480 IF D$="SP2" THEN Q$="LPRINT:LPRINT":GOTO4550
4490 IF D$="SP3" THEN Q$="LPRINT:LPRINT:LPRINT":GOTO4550
4500 YI%=0:S$="":D$=MID$(T$,PT%,1)
4510 IF D$=CHR$(34) THEN VR$="":GOSUB480 ELSE VR$="":J%=0:GOSUB270
4520 IF RC%=0 OR PT%>A% THEN 3910 ELSE D$=MID$(T$,PT%,1):IF D$<"-" THEN 3910
4530 PT%=PT%+1:IF PT%>A% THEN 3910 ELSE Q$=VR$:VR$="":GOSUB4410
4540 IF RC%=0 THEN 3910 ELSE O$=O$+A$+" TAB( "+VR$+" ) "+Q$:G$="":A$="":GOTO4570
4550 PT%=PT%+3:A$="LPRINT":G$="":IF YI%=1 THEN S$=" ELSE S$="":YI%=1
4560 O$=O$+S$+Q$
4570 IF PT%>A% THEN T$=O$:GOTO2770
4580 IF MID$(T$,PT%,1)<>" THEN 3910 ELSE O$=O$+G$:PT%=PT%+1
4590 IF PT%>A% THEN 3910 ELSE 4460
4600 ' CRT
4610 IF MID$(T$,PT%,3)="CC1" THEN O$=O$+"PRINT CHR$(12)":PT%=PT%+3:GOTO4630
4620 GOSUB4660:IF RC%=0 THEN 3910 ELSE O$=O$+G$+"PRINT "+Q$
4630 IF PT%>A% THEN T$=O$:GOTO2770 ELSE O$=O$+"":
4640 IF MID$(T$,PT%,1)<>" THEN 3910
4650 PT%=PT%+1:IF PT%>A% THEN 3910 ELSE 4610
4660 VR$="":D$=MID$(T$,PT%,1):IF D$=CHR$(34) THEN GOSUB480:GOTO4680
4670 VR$="":J%=0:GOSUB270
4680 IF RC%=0 OR PT%>A% THEN RC%=0:RETURN ELSE Q$=VR$:VR$="
4690 IF MID$(T$,PT%,2)<>"-" THEN RC%=0:RETURN ELSE PT%=PT%+2
4700 IF PT%>A% THEN RC%=0:RETURN ELSE GOSUB4410
4710 IF RC%=0 OR PT%>A% THEN 3910
4720 IF MID$(T$,PT%,1)<>" THEN RC%=0:RETURN ELSE PT%=PT%+1
4730 G$=VR$:VR$="":GOSUB4410:IF RC%=0 OR PT%>A% THEN RC%=0:RETURN
4740 IF MID$(T$,PT%,1)<>" THEN RC%=0:RETURN
4750 G$="LOCATE "+G$+" "+VR$+"":PT%=PT%+1:RETURN
4760 ' INPUT
4770 GOSUB4670:IF RC%=0 THEN 3910 ELSE O$=O$+G$+"INPUT "+Q$
4780 IF PT%>A% THEN T$=O$:GOTO2770
4790 IF MID$(T$,PT%,1)<>" THEN 3910 ELSE PT%=PT%+1:O$=O$+"":
4800 IF PT%>A% THEN 3910 ELSE 4770
4810 ' DISK
4820 GOSUB4870:IF PT%>A% THEN 3910
4830 IF MID$(T$,PT%,4)="READ" THEN Y%=1:O$="INPUT #":PT%=PT%+4:GOTO4850
4840 IF MID$(T$,PT%,5)="WRITE" THEN Y%=2:O$="PRINT #":PT%=PT%+5:GOTO4850
4850 GOSUB4870:IF PT%>A% THEN 3910 ELSE D$=MID$(T$,PT%,1)
4860 IF D$<>CHR$(34) THEN 3910 ELSE VR$="":GOSUB480
4870 IF RC%=0 OR PT%>1)A% THEN 3910 :ELSE IF MID$(T$,PT%,1)<>" THEN 3910
4880 PT%=PT%+1:GOSUB5000:IF RC%=0 THEN EC%=15:GOSUB590:GOTO3110
4890 D%=CVI(MID$(FT$,RC%+10,2)):A$=MID$(FT$,RC%+9,1):IF A$="r" THEN 4970
4900 IF A$="o" AND Y%=1 THEN EC%=15:GOSUB590:GOTO3110

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```

4910 IF A$="i" AND Y%=2 THEN EC%=15:GOSUB590:GOTO3110
4920 IF A$="a" AND Y%=1 THEN EC%=15:GOSUB590:GOTO3110
4930 O$=O$+MID$(STR$(D%),2,4):IF PT%>A% THEN 3910
4940 GOSUB4410:IF RC%=0 THEN 3910:ELSE IF PT%>A% THEN T$=O$+", "+VR$:GOTO2770
4950 IF MID$(T$,PT%,1)<>"," THEN 3910
4960 PT%=PT%+1:IF PT%>A% THEN 3910 ELSE O$=O$+", "+VR$:GOTO4940
4970 IF Y%=1 THEN O$="GET #" ELSE O$="PUT #"
4980 O$=O$+MID$(STR$(D%),2,4)+", ":VR$="":GOSUB4410:IF RC%=0 THEN 3910
4990 O$=O$+VR$:IF PT%<=A% THEN 3910 ELSE T$=O$:GOTO2770
5000 D%=LEN(VR$)-2:VR$=MID$(VR$,2,D%):IF D%<9 THEN VR$=VR$+STRING$(9-D%,32):RC%=1
5010 IF RC%>FT% THEN RC%=0:RETURN
5020 IF VR$=MID$(FT$,RC%,9) THEN RETURN ELSE RC%=RC%+12:GOTO5010

```



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```

410 FOR I%=1TOA%
420 T$=MID$(NA$,I%,1):D%=ASC(T$)
430 IF D%<123 AND D%>96 THEN T$=CHR$(D%-32):MID$(NA$,I%,1)=T$
440 NEXT I%
450 RETURN
460 OPEN "work.SMK" AS #2:FIELD #2,237 AS W$
470 LINEINPUT #1,T$:LINEINPUT #1,T$:IF T$="" THEN 520
480 G%=LEN(T$):G%=G%*13:Y%=12
490 FOR I%=1TOG%
500 IF MID$(T$,Y%,1)="s" THEN 510 ELSE LINEINPUT #1,N$
510 Y%=Y%+13:NEXT I%
520 LINEINPUT #1,T$:LINEINPUT #1,T$:IF EOF(1) THEN 950
530 T$="":LO%=1:LP$=STRING$(120,32):Y%=1:GOSUB860:F%=1
540 IF EOF(1) THEN F%=0:GOTO600
550 LINEINPUT #1,N$:GOSUB310:L=NO%:GOSUB240:Y5%=NO%
560 U%=(NO%-1)*10+1:X%=NO%-(U%-1)*10
570 IF U%>LO% THEN 600
580 A$=MID$(B$,1,1):D%=ASC(A$):IF D%>116 THEN 590 ELSE FW$=FW$+MKI$(Y5%)
590 FB$=FB$+A$+MKI$(X%):GOSUB1000:GOTO540
600 A%=LEN(FB$):G%=A%*13:L%=1:Y3%=1:Y4%=1
610 FOR P%=1TO5
620 K%=1:M%=1:I%=1
630 IF I%>G% THEN 720
640 D$=MID$(FB$,K%,1):D%=CVI(MID$(FB$,K%+1,2)):D%=(D%-1)*12+1:L%=ASC(D$)
650 IF L%>116 THEN GOSUB1190:GOTO690
660 J%=INSTR(S$,D$):IF J%=0 THEN J%=10
670 R%=(P%-1)*10+1:MID$(LP$,D%,10)=MID$(F$(J%),R%,10)
680 IF P%=2 AND D$="f" THEN GOSUB1450
690 L%=CVI(MID$(FP$,M%,2)):IF L%=0 THEN 700 ELSE GOSUB1360
700 K%=K%+3:M%=M%+4
710 I%=I%+1:GOTO630
720 H$="":I%:IF P%<>3 THEN D$="":GOTO740
730 D$=STR$(LO%):D$=MID$(D$,2,2):IF LO%<10 THEN D$=" "+D$
740 MID$(H$,1,2)=D$:LPRINT H$ TAB(11) LP$:LP$=STRING$(120,32)
750 NEXT P%
760 A%=LEN(FP$):G%=A%*14:K%=1:L1$=STRING$(120,32):Y3%=1:IF A%=0 THEN 830
770 FOR I%=1TOG%
780 D%=CVI(MID$(FP$,K%,2)):IF D%<100 THEN 820
790 D%=CVI(MID$(FP$,K%+2,2)):D%=(D%-1)*12+1
800 MID$(LP$,D%+4,1)=" "+MID$(L1$,D%+4,1)=" "+
810 D$=MID$(FB$,Y4%,1):IF D$="f" THEN GOSUB1510
820 K%=K%+4:Y4%=Y4%+3:NEXT I%
830 LPRINT H$ TAB(11) LP$:LPRINT H$ TAB(11) L1$:LP$=STRING$(120,32):Y%=Y%+1
840 FB$="":FP$="":FF$="":LO%=LO%+1:IF F%=0 THEN GOSUB860:GOTO950
850 IF Y%>7 THEN GOSUB860:GOTO570 ELSE 570
860 GOSUB1020:A%=LEN(FW$):G%=A%*12:K%=1
870 FOR I%=1TOG%
880 NO%=CVI(MID$(FW$,K%,2)):L=NO%:GOSUB280:GOSUB1430
890 A$=MID$(B$,1,1):IF A$="s" THEN B$="START":GOTO910

```

```

900 IF A$="t" THEN B$="STOP" ELSE B$=MID$(B$,10,70)
910 LPRINT:LPRINT TAB(10) T$ TAB(41) B$
920 K/=K/2:NEXT I$
930 FB$="":FW$="":FP$="":Y%=1:LP$=STRING$(120,32):L=Y%:GOSUB280:NO%=Y%
940 IF F%=0 THEN 950 ELSE LPRINT CHR$(12):GOSUB960:RETURN
950 LPRINT:LPRINT:LPRINT TAB(50) "XXX< END OF FILE >XXX":REMOVE2:RUN"menu2.SPM"
960 ' PRINT FLOW HEAD
970 D$=STR$(PN%):LPRINT TAB(55) "TABLE OF FLOW" TAB(105) "PAGE " D$
980 LPRINT TAB(55) STRING$(13,61)TAB(105) "FILE-NAME : = " NA$
990 LPRINT TAB(16) "A"TAB(28) "B"TAB(40) "C"TAB(52) "D"TAB(64) "E";
1000 LPRINT TAB(76) "F"TAB(88) "G"TAB(100) "H"TAB(112) "I"TAB(124) "J"
1010 LPRINT TAB(5) STRING$(125,45):LPRINT SPC(5) "I":LPRINT SPC(5) "I":RETURN
1020 ' PRINT CONTENT HEAD
1030 LPRINT CHR$(12):D$=STR$(PN%)
1040 LPRINT TAB(40) "TABLE OF CONTENT" TAB(105) "PAGE " D$
1050 LPRINT TAB(40) STRING$(16,61)
1060 LPRINT:LPRINT:LPRINT TAB(8) "BOX-NO" TAB(43) "CONTENT" TAB(70) "FILE-NAME : = " NA$
1070 LPRINT STRING$(130,45):PN%=PN%/1:LPRINT:RETURN
1080 ' DIRECTION
1090 IF A$="c" THEN 1100 ELSE 1110
1100 IF MID$(B$,2,2)=" " THEN D%=0:GOTO1140 ELSE D%=100:GOTO1140
1110 IF A$="f" THEN A$=MID$(B$,2,1):GOSUB1150:D%=L%:FF$=FF$+MKI$(L%)+*Y" ELSE 1130
1120 A$=MID$(B$,5,1):GOSUB1150:D%=D%+L%:FF$=FF$+MKI$(L%)+*N":GOTO1140
1130 A$=MID$(B$,2,1):GOSUB1150:D%=L%
1140 FP$=FP$+MKI$(D%)+MKI$(X%):RETURN
1150 IF A$="d" THEN L%=100:GOTO1180
1160 IF A$="1" THEN L%=2:GOTO1180
1170 IF A$="r" THEN L%=1 ELSE L%=0
1180 RETURN
1190 ' DRAW LINE IN BLOCK
1200 IF D$="u" THEN MID$(LP$,D%/4,1)="+":GOTO1240
1210 IF D$="v" THEN 1220 ELSE 1250
1220 IF P%<3 THEN MID$(LP$,D%/4,1)="+":RETURN
1230 IF P%=3 THEN MID$(LP$,D%,5)=STRING$(5,43)
1240 RETURN
1250 IF D$="w" AND P%<4 THEN 1260 ELSE 1280
1260 IF P%=3 THEN MID$(LP$,D%/4,6)=STRING$(6,43):GOTO1240
1270 MID$(LP$,D%/4,1)="+":GOTO1240
1280 IF D$="y" AND P%>2 THEN 1290 ELSE 1310
1290 IF P%=3 THEN MID$(LP$,D%,5)=STRING$(5,43):RETURN
1300 MID$(LP$,D%/4,1)="+":RETURN
1310 IF D$="z" AND P%>2 THEN 1320 ELSE 1340
1320 IF P%=3 THEN MID$(LP$,D%/4,6)=STRING$(6,43):RETURN
1330 MID$(LP$,D%/4,1)="+":RETURN
1340 IF P%=3 THEN MID$(LP$,D%,10)=STRING$(10,43):RETURN ELSE RETURN
1350 ' DRAW LINE BETWEEN BLOCK
1360 IF L%=100 OR P%<>3 THEN RETURN
1370 IF L%>100 THEN L%=L%-100
1380 IF L%=3 THEN GOSUB1410:GOSUB1420
1390 IF L%=1 THEN GOSUB1410 ELSE GOSUB1420

```

```

1400 RETURN
1410 MID$(LP$,D%+10,2)="++":RETURN
1420 MID$(LP$,D%-2,2)="++":RETURN
1430 ' BOX REF
1440 L%=(NO%-1)*10+1:D%=NO%-(L%-1)*10+64:T%=MID$(STR$(L%),2,4)+CHR$(D%):RETURN
1450 ' DECISION YES & NO
1460 FOR L%=1TO2
1470 B%=CUI(MID$(FF$,Y3%,2)):D%=MID$(FF$,Y3%+2,1):IF B%=100 OR B%=0 THEN 1490
1480 IF B%=2 THEN MID$(LP$,D%-2,1)=D$ ELSE MID$(LP$,D%+11,1)=D$
1490 Y3%=Y3%+3:NEXT L%
1500 RETURN
1510 ' DECISION IN DOWN
1520 L%=CUI(MID$(FF$,Y3%,2))
1530 IF L%=100 THEN D%=MID$(FF$,Y3%+2,1) ELSE D%=MID$(FF$,Y3%+5,1)
1540 Y3%=Y3%+6:MID$(LP$,D%+2,1)=D$:RETURN

```



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4. โปรแกรมแสดงความผิดพลาดจากการแปลงผังงานบนจอภาพ " lerr.SPM "

```

10 ' LIST ERROR
20 WIDTH80:CONSOLE6,17,0,0:PRINT CHR$(12)
25 LOCATE22,0:PRINT "<< LIST ERROR OF CONVERSION >>"
30 REMOVE2:MOUNT2:ON ERROR GOTO 110:LOCATE10,2:COLOR4:PRINT "ENTER FILE-NAME : "
40 COLOR0:LOCATE1,24:PRINT "MESSAGE : "
45 LOCATE6,4:PRINT "FILE":LOCATE15,4:PRINT"BOX-NO"
50 LOCATE30,4:PRINT "CODE":LOCATE45,4:PRINT"DESCRIPTION"
60 LOCATE50,24:PRINT "PRESS ESC TO HALT/CON PROCESS"
70 LOCATE0,5:PRINT STRING$(80,45):LOCATE0,23:PRINT STRING$(80,45)
80 COLOR0:LOCATE28,2,1:LINEINPUT NA$:IF NA$="" THEN 290
90 A%=LEN(NA$):GOSUB140:OPEN "2:"+NA$+".LST" FOR INPUT AS#1
100 LOCATE28,2:PRINT SPC(20):COLOR0
105 PRINT SPC(30):LOCATE12,24:COLOR6:PRINT "LISTING ERROR":COLOR0:GOTO210
110 LOCATE12,24:COLOR0:PRINT SPC(30):LOCATE12,24
115 COLOR4:IF ERR=53 THEN PRINT "FILE NOT FOUND":BEEP:RESUME80
120 IF ERR=62 THEN PRINT "BAD FILE-NAME":BEEP:RESUME80
130 PRINT "ERROR CODE = ";ERR:BEEP:RESUME80
140 ' ALPHABETIC
150 IF A%=0 THEN RETURN
160 FOR I%=1TOA%
170 T%=MID$(NA$,I%,1):D%=ASC(T%)
180 IF D%<123 AND D%>96 THEN T%=CHR$(D%-32):MID$(NA$,I%,1)=T%
190 NEXT I%
200 RETURN
210 IF EOF(1) THEN 260
220 LINEINPUT #1,T$:F%=MID$(T$,1,6):B%=MID$(T$,7,4):E%=MID$(T$,11,4)
230 A%=LEN(T$)-14:M%=MID$(T$,15,A%)
240 PRINT SPC(5) F$ SPC(5) B$ SPC(10) E$ SPC(10) M$
250 GOTO210
260 PRINT SPC(20) "XX<< END OF FILE >>XX"
270 LOCATE12,24:PRINT SPC(80) :LOCATE12,24:PRINT "READY LIST ERROR"
280 LOCATE 50,24:PRINT "HIT RETURN TO EXIT":LOCATE 70,24:T%=INPUT$(1)
290 REMOVE2:RUN"menu2.SPM"

```

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๑. โปรแกรมรายการเลือกที่ ๒ " menu-2 "

```

10 ' PRINT & CONVERT FLOW MENU
20 CLEAR:CONSOLE0,25,0,0:COLOR0:MONGR:ERASE0:PRINT CHR$(12):WIDTH80,25
30 LOCATE 20,0:PRINT "<< MENU-2 PRINT & CONVERT FLOW >>"
40 LOCATE 25,5:PRINT "1. CONVERT FLOW TO BASIC"
50 LOCATE 25,7:PRINT "2. PRINT FLOW-CHART"
60 LOCATE 25,9:PRINT "3. LISTING ERROR OF CONVERT"
70 LOCATE 25,11:PRINT "4. EXIT TO MENU-1"
80 LOCATE 25,13:PRINT "5. EXIT TO N-BASIC"
90 LOCATE 23,15:PRINT "SELECT : ":LOCATE 0,20:PRINT "MESSAGE : "
100 COLOR0:LOCATE 32,15:A$=INPUT$(1):A%=ASC(A$)
110 IF A%<54 AND A%>48 THEN 130
120 COLOR4:LOCATE11,20:PRINT "INVALID CHOICE":BEEP:GOTO100
130 ON ERROR GOTO210:IF A$="1" THEN RUN"conv.SPM"
140 IF A$="2" THEN RUN "pflow.SPM"
150 IF A$="3" THEN RUN"lerr.SPM"
160 ON ERROR GOTO240:IF A$="4" THEN 170 ELSE 200
170 LOCATE 11,20:PRINT SPC(65)
180 COLOR4:LOCATE11,20:PRINT "MOUNT MENU-1 DISK IN DRIVE #1 & HIT RETURN"
190 COLOR0:LOCATE55,20:REMOVE1:A$=INPUT$(1):MOUNT1:RUN"fw5.SPM"
200 REMOVE:COLOR0:PRINT CHR$(12):LOCATE20,1:PRINT "XX<< EXIT TO N-BASIC >>XX":END
210 COLOR0:LOCATE11,20:PRINT SPC(65):LOCATE11,20:COLOR4
220 IF ERR=53 THEN PRINT"NOT MENU-2 DISK":BEEP:RESUME100
230 PRINT "ERROR = ";ERR:BEEP:RESUME100
240 LOCATE11,20:PRINT SPC(65):COLOR4:LOCATE11,20
250 IF ERR=53 THEN PRINT"XX NOT MENU-1 DISK XX":BEEP:RESUME100
260 PRINT "ERROR CODE = ";ERR:RESUME100

```

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7. โปรแกรม " Imac.SPM "

```

10 ' USR0 PLOT HIGH RESOLUTION FLOW
20 DATA &h3e,&h41,&hd3,&hef,&h3e,&h19,&h21,&h00,&h00,&hed,&h5b,&h86,&hee,&hfe,&h01
30 DATA &hca,&h81,&hee,&h01,&h07,&h00,&hed,&hb0,&h01,&h49,&h00,&he5,&h62,&h6b,&h09
40 DATA &h54,&h5d,&he1,&h3d,&hc3,&h69,&hee,&h3e,&h01,&hd3,&hef,&hc9,1000
50 ' USR1 INSERT & DELETE SCROLLING
60 DATA &h3e,&h41,&hd3,&hef,&h3e,&h00,&hfe,&h01,&hc2,&hc9,&hee
70 DATA &h11,&h83,&h8c,&h21,&h83,&h96,&h01,&hfd,&h27
80 DATA &hed,&hb0,&hc3,&hd4,&hee,&h11,&h75,&hbe,&h21,&h75
90 DATA &hb4,&h01,&h00,&h00,&hed,&hb8,&h21,&h00,&h00,&h36,&h00
100 DATA &h54,&h5d,&h13,&h01,&hfc,&h09,&hed,&hb0,&h3e,&h01,&hd3,&hef,&hc9,1000
110 ' USR2 INSERT & DELETE COL SCROLLING
120 DATA &h3e,&h41,&hd3,&hef,&h01,&hbf,&h8c,&h21,&h00,&h00
130 DATA &h11,&h00,&h00,&hc5,&h78,&hba,&hc2,&h18,&hed,&h79
140 DATA &hbb,&hca,&h5a,&hed,&h3e,&h00,&hfe,&h01,&hca,&h2d
150 DATA &hed,&he5,&h60,&h69,&he6,&h00,&hed,&h52
160 DATA &h44,&h4d,&he1,&hc3,&h40,&hed,&h00,&he5,&h60,&h69,&he6,&h00,&hed,&h52,&h44,&h4d,&he1,&h00
170 DATA &h00,&h00,&h00,&h00,&h11,&hc5,&h8c,&h00,&h3a,&h89
180 DATA &hed,&hfe,&h01,&hca,&h5a,&hed,&hc5,&he5,&hd5,&hed,&hb0
190 DATA &h01,&h50,&h00,&he1,&h09,&heb,&he1,&h09,&hc1,&h3c
200 DATA &hc3,&h43,&hed,&he1,&h01,&h05,&h00,&he6,&h00
210 DATA &hed,&h42,&h01,&h10,&h00,&h54,&h5d,&h13,&h3a,&h89
220 DATA &hed,&hfe,&h01,&hca,&h84,&hed,&h36,&h00,&hc5
230 DATA &he5,&hd5,&hed,&hb0,&h01,&h50,&h00,&he1,&h09,&heb,&he1,&h09,&hc1,&h3c,&hc3,&h6b,&hed
240 DATA &h3e,&h01,&hd3,&hef,&hc9,1000
250 ' USR3 SCROLL UP & DOWN
260 DATA &h3e,&h41,&hd3,&hef,&h3e,&h00,&hfe,&h03,&hca,&h16,&hec,&hfe,&h01,&hc2,&hfb
270 DATA &heb,&h11,&h83,&h8c,&h21,&h83,&h96,&h01,&hfd,&h27
280 DATA &hed,&hb0,&h11,&h84,&hb4,&h21,&h83,&hb4,&h36,&h00,&h01
290 DATA &hfd,&h09,&hed,&hb0,&hc3,&h2e,&hec,&h11,&h75,&hbe,&h21,&h75,&hb4
300 DATA &h01,&h7d,&h2a,&hed,&hb8,&h01,&hfd,&h09,&h11,&h84,&h8c
310 DATA &h21,&h83,&h8c,&h36,&h00,&hed,&hb0,&hc3,&h2e,&hec,&h21,&h00,&h00
320 DATA &h36,&h00,&h54,&h5d,&h13,&h3e,&h00,&hfe,&h01,&hca,&h2e,&hec,&h01,&h7c,&h0c
330 DATA &hed,&hb0,&h3d,&hc3,&h20,&hec,&h3e,&h01,&hd3,&hef,&hc9,1000
340 ' USR4 CREATE LINE IN BLOCK
350 DATA &h3e,&h41,&hd3,&hef,&h21,&h00,&h00,&h3e,&h00,&h01,&h50,&h00,&hfe,&h0b,&hca
360 DATA &h67,&hec,&hfe,&h0c,&hca,&h75,&hec,&hfe,&h0d,&hca,&h65,&heb
370 DATA &hfe,&h1f,&hca,&h81,&heb,&hfe,&h15,&hca,&h9b,&heb,&h3e
380 DATA &h08,&hfe,&h01,&hca,&hb7,&heb,&h36,&hff,&h23,&h3d,&hc3,&h5b,&hec
390 DATA &h3e,&h19,&hfe,&h01,&hca,&hb7,&heb,&h36,&h10,&h09,&h3d
400 DATA &hc3,&h69,&hec,&h3e,&h0c,&hfe,&h01,&hca,&h83,&hec
410 DATA &h36,&h10,&h09,&h3d,&hc3,&h77,&hec,&h36,&hff,&h2b,&h36
420 DATA &hff,&h2b,&h36,&hff,&h2b,&h36,&hff,&hc3,&hb7,&heb,1000
430 DATA &h3e,&h0c,&hfe,&h01,&hca,&h73,&heb,&h36,&h10,&h09,&h3d,&hc3,&h67,&heb,&h36,&h1f,&h23
440 DATA &h36,&hff,&h23,&h36,&hff,&h23,&h36,&hff,&hc3,&hb7,&heb,&h36,&hff,&h23,&h36
450 DATA &hff,&h23,&h36,&hff,&h23,&h36,&hff,&h09,&h3e,&h0d
460 DATA &hfe,&h01,&hca,&hb7,&heb,&h36,&h10,&h09,&h3d,&hc3,&h8f
470 DATA &heb,&he5,&h36,&h1f,&h23,&h36,&hff,&h23,&h36,&hff,&h23,&h36,&hff
480 DATA &he1,&h09,&h3e,&h0d,&hfe,&h01,&hca,&hb7,&heb,&h36,&h10
490 DATA &h09,&h3d,&hc3,&hab,&heb,&h3e,&h01,&hd3,&hef,&hc9,1000
500 ' USR5 CREATE LINE BETWEEN BLOCK

```

```

510 DATA &h3e,&h41,&hd3,&hef,&h21,&h00,&h00,&h3e,&h00,&h01,&h50,&h00
520 DATA &hfe,&h01,&hca,&h1f,&hef,&h3e,&h06,&hfe,&h01
530 DATA &hca,&h2d,&hef,&h36,&hff,&h23,&h3d,&hc3,&h13,&hef,&h3e,&h09
540 DATA &hfe,&h01,&hca,&h2d,&hef,&h36,&h10,&h09,&h3d,&hc3,&h21,&hef
550 DATA &h3e,&h01,&hd3,&hef,&hc9,1000
560 / USR6 DELETE BLOCK & LINE BETWEEN BLOCK
570 DATA &h3e,&h41,&hd3,&hef,&h21,&h00,&h00,&h3e,&h29,&hfe,&h01,&hca,&h18,&hee,&he5
580 DATA &h23,&h01,&h10,&h00,&heb,&he1,&h36,&h00,&he5,&hed,&hb0
590 DATA &h01,&h50,&h00,&he1,&h09,&h3d,&hc3,&hfe,&hed,&h3e,&h01,&hd3,&hef,&hc9,1000
600 / USR7 ARROW
610 DATA &h3e,&h41,&hd3,&hef,&h21,&h00,&h00,&h01,&h50,&h00,&h3e,&h00,&hfe,&h01,&hca
620 DATA &hbd,&hff,&hfe,&h02,&hca,&hcb,&hff,&h36,&h08,&h09
630 DATA &h36,&h04,&h09,&h36,&h02,&h09,&h36,&hff,&h09,&h36,&h02,&h09,&h36,&h04,&h09
640 DATA &h36,&h04,&hc3,&hdf,&hff,&h36,&h92,&h09,&h36,&h54
650 DATA &h09,&h36,&h38,&h09,&h36,&h10,&hc3,&hdf,&hff,&h36,&h10,&h09,&h36,&h20,&h09
660 DATA &h36,&h40,&h09,&h36,&hff,&h09,&h36,&h40,&h09
670 DATA &h36,&h20,&h09,&h36,&h10,&h3e,&h01,&hd3,&hef,&hc9,1000
680 / USR8 SCROLL COL FLOW
690 DATA &h3e,&h41,&hd3,&hef,&h3e,&h00,&hfe,&h01,&hc2,&hab,&hf2,&h21,&h83,&h8c,&he5
700 DATA &h11,&hc5,&h8c,&h21,&hb9,&h8c,&h01,&h3c,&h00,&h3e,&hb0
710 DATA &hfe,&h50,&hca,&hd1,&hf2,&hc5,&he5,&hd5,&hed,&hb8,&h01,&h50,&h00,&he1,&h09
720 DATA &heb,&he1,&h09,&hc1,&h3c,&hc3,&h94,&hf2,&h21,&hba,&h8c
730 DATA &he5,&h21,&h8f,&h8c,&h11,&h83,&h8c,&h01,&h37,&h00,&h3e,&hb0,&hfe,&h50,&hca
740 DATA &hd1,&hf2,&hc5,&he5,&hd5,&hed,&hb0,&h01,&h50,&h00,&he1
750 DATA &h09,&heb,&he1,&h09,&hc1,&h3c,&hc3,&hba,&hf2,&he1,&he5,&h23,&heb,&he1,&h01
760 DATA &h0b,&h00,&h3e,&hb0,&hfe,&h50,&hca,&hf4,&hf2,&h36,&h00
770 DATA &hc5,&he5,&hd5,&hed,&hb0,&h01,&h50,&h00,&he1,&h09,&heb
780 DATA &he1,&h09,&hc1,&h3c,&hc3,&hdb,&hf2,&h3e,&h01,&hd3,&hef,&hc9,1000
790 / USR9 SCROLL TEXT
800 DATA &h3e,&h41,&hd3,&hef,&h11,&h00,&h00,&h21,&h00,&h00,&h01,&h00,&h00,&h3e,&h00
810 DATA &hfe,&h01,&hca,&h76,&hff,&hc5,&he5,&hd5,&hed,&hb8,&h01,&h78,&h00
820 DATA &he1,&h09,&heb,&he1,&h09,&hc1,&h3d,&hc3,&h5f,&hff,&h3e,&h01,&hd3,&hef,&hc9,1000
830 RESTORE 20:L=&HEE5C+65536!
840 READ D%:IF D%=1000 THEN 860
850 POKE L,D%:L=L+1:GOTO840
860 RESTORE 60:L=&HEEB0+65536!
870 READ D%:IF D%=1000 THEN 880 ELSE POKE L,D%:L=L+1:GOTO 870
880 RESTORE 120:L=&HED00+65536!
890 READ D%:IF D%=1000 THEN 900 ELSE POKE L,D%:L=L+1:GOTO 890
900 RESTORE 260:L=&HEBD0+65536!
910 READ D%:IF D%=1000 THEN 920 ELSE POKE L,D%:L=L+1:GOTO 910
920 RESTORE 350:L=&HEC34+65536!
930 READ D%:IF D%=1000 THEN 940 ELSE POKE L,D%:L=L+1:GOTO 930
940 RESTORE 430:L=&HEB65+65536!
950 READ D%:IF D%=1000 THEN 960 ELSE POKE L,D%:L=L+1:GOTO 950
960 RESTORE 510:L=&HEF00+65536!
970 READ D%:IF D%=1000 THEN 980 ELSE POKE L,D%:L=L+1:GOTO 970
980 RESTORE 570:L=&HEDF5+65536!
990 READ D%:IF D%=1000 THEN 1000 ELSE POKE L,D%:L=L+1:GOTO 990
1000 RESTORE 610:L=&HFF90+65536!

```



```
1010 READ D%:IF D%=1000 THEN 1020 ELSE POKE L,D%:L=L+1:GOTO 1010
1020 RESTORE 698:L=&HF27A+65536!
1030 READ D%:IF D%=1000 THEN 1040 ELSE POKE L,D%:L=L+1:GOTO 1030
1040 RESTORE800:L=&HFF58+65536!
1050 READ D%:IF D%=1000 THEN 1060 ELSE POKE L,D%:L=L+1:GOTO1050
1060 POKE &HEEE7,8:RUN"flow1.SPM"
```



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8. โปรแกรมภาษาเครื่อง " USRO "

XXXX Z-80 ASSEMBLY LIST XXXX				PAGE= 1	
ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EE5C	3E41	LD	A,41H		.A
EE5E	D3EF	OUT	<EFH>,A		..
EE60	3E19	LD	A,19H		..
EE62	210000	LD	HL,0000H		...
EE65	ED5B06EE	LD	DE,<EE86H>		./..
EE69	FE01	CP	01H		..
EE6B	CA01EE	JP	Z,EE01H		...
EE6E	010700	LD	BC,0007H		...
EE71	EDB0	LDIR			..
EE73	014900	LD	BC,0049H		.I.
EE76	E5	PUSH	HL		.
EE77	62	LD	H,D		b
EE78	6B	LD	L,E		k
EE79	09	ADD	HL,BC		.
EE7A	54	LD	D,H		T
EE7B	5D	LD	E,L		y
EE7C	E1	POP	HL		.
EE7D	3D	DEC	A		.
EE7E	C369EE	JP	EE69H		.i.
EE81	3E01	LD	A,01H		..
EE83	D3EF	OUT	<EFH>,A		..
EE85	C9	RET			.

* RETURN *



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๑. โปรแกรมภาษาเครื่อง " USR1 "

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EEB0	3E41	LD	A,41H		.A
EEB2	D3EF	OUT	<EFH>,A		..
EEB4	3E00	LD	A,00H		..
EEB6	FE01	CP	01H		..
EEB8	C2C9EE	JP	NZ,EEC9H		...
EEBB	11838C	LD	DE,8C83H		...
EEBE	218396	LD	HL,9683H		...
EEC1	01FD27	LD	BC,27FDH		...
EEC4	EDB0	LDIR			..
EEC6	C3D4EE	JP	EED4H		...
EEC9	1175BE	LD	DE,BE75H		.U.
EECC	2175B4	LD	HL,B475H		.U.
EECF	010000	LD	BC,0000H		...
EED2	EDB8	LDDR			..
EED4	210000	LD	HL,0000H		...
EED7	3600	LD	<HL>,00H		6.
EED9	54	LD	D,H		T
EEDA	5D	LD	E,L		γ
EEDB	13	INC	DE		.
EEDC	01FC09	LD	BC,09FCH		...
EEDF	EDB0	LDIR			..
EEE1	3E01	LD	A,01H		..
EEE3	D3EF	OUT	<EFH>,A		..
EEE5	C9	RET		X RETURN X	.

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10. โปรแกรมภาษาเครื่อง " USR2 "

**** Z-80 ASSEMBLY LIST ****

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
ED00	3E41	LD	A,41H		.A
ED02	D3EF	OUT	(EFH),A		..
ED04	018F8C	LD	BC,8CBFH		...
ED07	210000	LD	HL,0000H		...
ED0A	110000	LD	DE,0000H		...
ED0D	C5	PUSH	BC		.
ED0E	78	LD	A,B		x
ED0F	BA	CP	D		.
ED10	C218ED	JP	NZ,ED18H		...
ED13	79	LD	A,C		y
ED14	BB	CP	E		.
ED15	CA5AED	JP	Z,ED5AH		.Z.
ED18	3E00	LD	A,00H		..
ED1A	FE01	CP	01H		..
ED1C	CA2DED	JP	Z,ED2DH		...
ED1F	E5	PUSH	HL		.
ED20	60	LD	H,B		.
ED21	69	LD	L,C		i
ED22	E600	AND	00H		..
ED24	ED52	SBC	HL,DE		.R
ED26	44	LD	B,H		D
ED27	4D	LD	C,L		M
ED28	E1	POP	HL		.
ED29	C340ED	JP	ED40H		...
ED2C	00	NOP			.
ED2D	E5	PUSH	HL		.
ED2E	60	LD	H,B		.
ED2F	69	LD	L,C		i
ED30	E600	AND	00H		..
ED32	ED52	SBC	HL,DE		.R
ED34	44	LD	B,H		D
ED35	4D	LD	C,L		M
ED36	E1	POP	HL		.
ED37	00	NOP			.
ED38	00	NOP			.
ED39	00	NOP			.
ED3A	00	NOP			.
ED3B	00	NOP			.
ED3C	11C58C	LD	DE,8CC5H		...

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 2

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
ED3F	00	NOP			.
ED40	3A89ED	LD	A,(ED89H)		...
ED43	FE01	CP	01H		..
ED45	CA5AED	JP	Z,ED5AH		.Z.
ED48	C5	PUSH	BC		.
ED49	E5	PUSH	HL		.
ED4A	D5	PUSH	DE		.
ED4B	EDB0	LDIR			..
ED4D	015000	LD	BC,0050H		.P.
ED50	E1	POP	HL		.
ED51	09	ADD	HL,BC		.
ED52	EB	EX	DE,HL		.
ED53	E1	POP	HL		.
ED54	09	ADD	HL,BC		.
ED55	C1	POP	BC		.
ED56	3C	INC	A		<
ED57	C343ED	JP	ED43H		.C.
ED5A	E1	POP	HL		.
ED5B	010500	LD	BC,0005H		...
ED5E	E600	AND	00H		..
ED60	ED42	SBC	HL,BC		.B
ED62	011000	LD	BC,0010H		...
ED65	54	LD	D,H		T
ED66	5D	LD	E,L		γ
ED67	13	INC	DE		.
ED68	3A89ED	LD	A,(ED89H)		...
ED6B	FE01	CP	01H		..
ED6D	CA84ED	JP	Z,ED84H		...
ED70	3600	LD	(HL),00H		6.
ED72	C5	PUSH	BC		.
ED73	E5	PUSH	HL		.
ED74	D5	PUSH	DE		.
ED75	EDB0	LDIR			..
ED77	015000	LD	BC,0050H		.P.
ED7A	E1	POP	HL		.
ED7B	09	ADD	HL,BC		.
ED7C	EB	EX	DE,HL		.
ED7D	E1	POP	HL		.
ED7E	09	ADD	HL,BC		.

**** Z-80 ASSEMBLY LIST **** PAGE= 3

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
ED7F	C1	POP	BC		.
ED80	3C	INC	A		<
ED81	C368ED	JP	ED6BH		.K.
ED84	3E01	LD	A,01H		..
ED86	D3EF	OUT	(EFH),A		..
ED88	C9	RET		X RETURN X	.
ED89	FEFE	CP	FEH		..



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11. โปรแกรมภาษาเครื่อง "USR3"

XXXX 2-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EB00	3E41	LD	A,41H		.A
EBD2	D3EF	OUT	(EFH),A		..
EBD4	3E00	LD	A,00H		..
EBD6	FE03	CP	03H		..
EBD8	CA16EC	JP	Z,EC16H		...
EBDB	FE01	CP	01H		..
EBDD	C2FBEB	JP	NZ,EBFBH		...
EBE0	11838C	LD	DE,8C83H		...
EBE3	218396	LD	HL,9683H		...
EBE6	01FD27	LD	BC,27FDH		...
EBE9	EDB8	LDIR			..
EBEB	1184B4	LD	DE,B4B4H		...
EBEE	2183B4	LD	HI,9465H		...
EBF1	3600	LD	(HL),00H		.6.
EBF3	01FD09	LD	BC,09FDH		...
EBF6	EDB8	LDIR			..
EBF8	C32EEC	JP	EC2EH		...
EBFB	1175BE	LD	DE,BE75H		.u.
EBFE	2175B4	LD	HL,B475H		.u.
EC01	017D2A	LD	BC,2A7DH		...
EC04	EDB8	LDDR			..
EC06	01FD09	LD	BC,09FDH		...
EC09	11848C	LD	DE,8C84H		...
EC0C	21838C	LD	HL,8C83H		...
EC0F	3600	LD	(HL),00H		.6.
EC11	EDB8	LDIR			..
EC13	C32EEC	JP	EC2EH		...
EC16	210000	LD	HL,0000H		...
EC19	3600	LD	(HL),00H		.6.
EC1B	54	LD	D,H		T
EC1C	5D	LD	E,L		7
EC1D	13	INC	DE		.
EC1E	3E00	LD	A,00H		..
EC20	FE01	CP	01H		..
EC22	CA2EEC	JP	Z,EC2EH		...
EC25	017C0C	LD	BC,0C7CH		...
EC28	EDB8	LDIR			..
EC2A	3D	DEC	A		.
EC2B	C320EC	JP	EC20H		...

**** Z-80 ASSEMBLY LIST **** PAGE= 2

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EC2E	3E01	LD	A,01H		..
EC30	D3EF	OUT	(EFH),A		..
EC32	C9	RET		* RETURN *	.



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12. โปรแกรมภาษาเครื่อง "USR4"

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EC34	3E41	LD	A,41H		.A
EC36	D3EF	OUT	(EFH),A		..
EC38	210000	LD	HL,0000H		...
EC3B	3E00	LD	A,00H		..
EC3D	015000	LD	BC,0050H		.P.
EC40	FE0B	CP	0BH		..
EC42	CA67EC	JP	Z,EC67H		.g.
EC45	FE0C	CP	0CH		..
EC47	CA75EC	JP	Z,EC75H		.u.
EC4A	FE0D	CP	0DH		..
EC4C	CA65EB	JP	Z,EB65H		.e.
EC4F	FE1F	CP	1FH		..
EC51	CA81EB	JP	Z,EB81H		...
EC54	FE15	CP	15H		..
EC56	CA98EB	JP	Z,EB98H		...
EC59	3E08	LD	A,08H		..
EC5B	FE01	CP	01H		..
EC5D	CAB7EB	JP	Z,EBB7H		...
EC60	36FF	LD	(HL),FFH		.6.
EC62	23	INC	HL		.
EC63	3D	DEC	A		.
EC64	C35BEC	JP	EC5BH		.7.
EC67	3E19	LD	A,19H		..
EC69	FE01	CP	01H		..
EC6B	CAB7EB	JP	Z,EBB7H		...
EC6E	3610	LD	(HL),10H		.6.
EC70	09	ADD	HL,BC		.
EC71	3D	DEC	A		.
EC72	C369EC	JP	EC69H		.i.
EC75	3E0C	LD	A,0CH		..
EC77	FE01	CP	01H		..
EC79	CAB3EC	JP	Z,EC83H		...
EC7C	3610	LD	(HL),10H		.6.
EC7E	09	ADD	HL,BC		.
EC7F	3D	DEC	A		.
EC80	C377EC	JP	EC77H		.w.
EC83	36F0	LD	(HL),F0H		.6.
EC85	2B	DEC	HL		.
EC86	36FF	LD	(HL),FFH		.6.

**** Z-80 ASSEMBLY LIST ****

PAGE= 2

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EC88	2B	DEC	HL		.
EC89	36FF	LD	<HL>,FFH		6.
EC8B	2B	DEC	HL		.
EC8C	36FF	LD	<HL>,FFH		6.
EC8E	C3B7EB	JP	EBB7H		...



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XXXX 2-80 ASSEMBLY LIST XXXX

PAGE= 3

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EB65	3E0C	LD	A,0CH		..
EB67	FE01	CP	01H		..
EB69	CA73EB	JP	Z,EB73H		.5.
EB6C	3610	LD	(HL),10H		6.
EB6E	09	ADD	HL,BC		.
EB6F	3D	DEC	A		.
EB70	C367EB	JP	EB67H		.9.
EB73	361F	LD	(HL),1FH		6.
EB75	23	INC	HL		.
EB76	36FF	LD	(HL),FFH		6.
EB78	23	INC	HL		.
EB79	36FF	LD	(HL),FFH		6.
EB7B	23	INC	HL		.
EB7C	36FF	LD	(HL),FFH		6.
EB7E	C3B7EB	JP	EBB7H		...
EB81	36FF	LD	(HL),FFH		6.
EB83	23	INC	HL		.
EB84	36FF	LD	(HL),FFH		6.
EB86	23	INC	HL		.
EB87	36FF	LD	(HL),FFH		6.
EB89	23	INC	HL		.
EB8A	36F0	LD	(HL),F0H		6.
EB8C	09	ADD	HL,BC		.
EB8D	3E0D	LD	A,0DH		..
EB8F	FE01	CP	01H		..
EB91	CAB7EB	JP	Z,EBB7H		...
EB94	3610	LD	(HL),10H		6.
EB96	09	ADD	HL,BC		.
EB97	3D	DEC	A		.
EB98	C38FEB	JP	EB8FH		...
EB98	E5	PUSH	HL		.
EB9C	361F	LD	(HL),1FH		6.
EB9E	23	INC	HL		.
EB9F	36FF	LD	(HL),FFH		6.
EBA1	23	INC	HL		.
EBA2	36FF	LD	(HL),FFH		6.
EBA4	23	INC	HL		.
EBA5	36FF	LD	(HL),FFH		6.
EBA7	E1	POP	HL		.

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 4

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EBA8	09	ADD	HL,BC		.
EBA9	3E0D	LD	A,0DH		..
EBAB	FE01	CP	01H		..
EBAD	CAB7EB	JP	Z,EBB7H		...
EBB0	3610	LD	(HL),10H		6.
EBB2	09	ADD	HL,BC		.
EBB3	3D	DEC	A		.
EBB4	C3ABEB	JP	EBABH		...
EBB7	3E01	LD	A,01H		..
EBB9	D3EF	OUT	(EFH),A		..
EBBB	C9	RET		* RETURN *	.



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13. โปรแกรมภาษาเครื่อง "USR5 "

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EF00	3E41	LD	A,41H		.A
EF02	D3EF	OUT	(EFH),A		..
EF04	210000	LD	HL,0000H		...
EF07	3E00	LD	A,00H		..
EF09	015000	LD	BC,0050H		.P.
EF0C	FE01	CP	01H		..
EF0E	CA1FEF	JP	Z,EF1FH		...
EF11	3E06	LD	A,06H		..
EF13	FE01	CP	01H		..
EF15	CA2DEF	JP	Z,EF2DH		...
EF18	36FF	LD	(HL),FFH		6.
EF1A	23	INC	HL		.
EF1B	3D	DEC	A		.
EF1C	C313EF	JP	EF13H		...
EF1F	3E09	LD	A,09H		..
EF21	FE01	CP	01H		..
EF23	CA2DEF	JP	Z,EF2DH		...
EF26	3610	LD	(HL),10H		6.
EF28	09	ADD	HL,BC		.
EF29	3D	DEC	A		.
EF2A	C321EF	JP	EF21H		...
EF2D	3E01	LD	A,01H		..
EF2F	D3EF	OUT	(EFH),A		..
EF31	C9	RET		* RETURN *	.

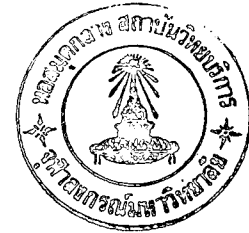
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14. โปรแกรมภาษาเครื่อง "USR6"

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
EDF5	3E41	LD	A,41H		.A
EDF7	D3EF	OUT	(EFH),A		..
EDF9	210000	LD	HL,0000H		...
EDFC	3E29	LD	A,29H		..
EDFE	FE01	CP	01H		..
EE00	CA18EE	JP	Z,EE18H		...
EE03	E5	PUSH	HL		.
EE04	23	INC	HL		.
EE05	011000	LD	BC,0010H		...
EE08	EB	EX	DE,HL		.
EE09	E1	POP	HL		.
EE0A	3600	LD	(HL),00H		6.
EE0C	E5	PUSH	HL		.
EE0D	ED00	LDIR			..
EE0F	015000	LD	BC,0050H		.P.
EE12	E1	POP	HL		.
EE13	09	ADD	HL,BC		.
EE14	3D	DEC	A		.
EE15	C3FEED	JP	EDFEH		...
EE18	3E01	LD	A,01H		..
EE1A	D3EF	OUT	(EFH),A		..
EE1C	C9	RET		* RETURN *	.



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15. โปรแกรมภาษาเครื่อง "USR7"

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
FF90	3E41	LD	A,41H		.A
FF92	D3EF	OUT	(EFH),A		..
FF94	210000	LD	HL,0000H		...
FF97	015000	LD	BC,0050H		.P.
FF9A	3E00	LD	A,00H		..
FF9C	FE01	CP	01H		..
FF9E	CABDFF	JP	Z,FFBDH		...
FFA1	FE02	CP	02H		..
FFA3	CACBFF	JP	Z,FFCBH		...
FFA6	3608	LD	(HL),08H		6.
FFA8	09	ADD	HL,BC		.
FFA9	3604	LD	(HL),04H		6.
FFAB	09	ADD	HL,BC		.
FFAC	3602	LD	(HL),02H		6.
FFAE	09	ADD	HL,BC		.
FFAF	36FF	LD	(HL),FFH		6.
FFB1	09	ADD	HL,BC		.
FFB2	3602	LD	(HL),02H		6.
FFB4	09	ADD	HL,BC		.
FFB5	3604	LD	(HL),04H		6.
FFB7	09	ADD	HL,BC		.
FFB8	3604	LD	(HL),04H		6.
FFBA	C3DFFF	JP	FFDFH		...
FFBD	3692	LD	(HL),92H		6.
FFBF	09	ADD	HL,BC		.
FFC0	3654	LD	(HL),54H		6T
FFC2	09	ADD	HL,BC		.
FFC3	3638	LD	(HL),38H		68
FFC5	09	ADD	HL,BC		.
FFC6	3610	LD	(HL),10H		6.
FFC8	C3DFFF	JP	FFDFH		...
FFCB	3610	LD	(HL),10H		6.
FFCD	09	ADD	HL,BC		.
FFCE	3620	LD	(HL),20H		6.
FFD0	09	ADD	HL,BC		.
FFD1	3640	LD	(HL),40H		6.
FFD3	09	ADD	HL,BC		.
FFD4	36FF	LD	(HL),FFH		6.
FFD6	09	ADD	HL,BC		.

**** Z-80 ASSEMBLY LIST ****

PAGE= 2

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
FFD7	3640	LD	<HL>,40H		6.
FFD9	09	ADD	HL,8C		.
FFDA	3620	LD	<HL>,20H		6.
FFDC	09	ADD	HL,8C		.
FFDD	3610	LD	<HL>,10H		6.
FFDF	3E01	LD	A,01H		..
FFE1	D3EF	OUT	(EFH),A		..
FFE3	C9	RET		* RETURN *	.



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16. โปรแกรมภาษาเครื่อง "USR8"

XXXX 2-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
F27A	3E41	LD	A,41H		.A
F27C	D3EF	OUT	(EFH),A		..
F27E	3E00	LD	A,00H		..
F280	FE01	CP	01H		..
F282	C2ABF2	JP	NZ,F2ABH		...
F285	21838C	LD	HL,8C83H		...
F288	E5	PUSH	HL		.
F289	11C58C	LD	DE,8CC5H		...
F28C	21B98C	LD	HL,8CB9H		...
F28F	013C00	LD	BC,003CH		<.
F292	3E00	LD	A,00H		..
F294	FE50	CP	50H		.P
F296	CAD1F2	JP	Z,F2D1H		...
F299	C5	PUSH	BC		.
F29A	E5	PUSH	HL		.
F29B	D5	PUSH	DE		.
F29C	EDB8	LDDR			..
F29E	015000	LD	BC,0050H		.P.
F2A1	E1	POP	HL		.
F2A2	09	ADD	HL,BC		.
F2A3	EB	EX	DE,HL		.
F2A4	E1	POP	HL		.
F2A5	09	ADD	HL,BC		.
F2A6	C1	POP	BC		.
F2A7	3C	INC	A		<
F2A8	C394F2	JP	F294H		...
F2AB	21B48C	LD	HL,8CBAH		...
F2AE	E5	PUSH	HL		.
F2AF	218F8C	LD	HL,8CF8H		...
F2B2	11838C	LD	DE,8C83H		...
F2B5	013700	LD	BC,0037H		.7.
F2B8	3E00	LD	A,00H		..
F2BA	FE50	CP	50H		.P
F2BC	CAD1F2	JP	Z,F2D1H		...
F2BF	C5	PUSH	BC		.
F2C0	E5	PUSH	HL		.
F2C1	D5	PUSH	DE		.
F2C2	EDB8	LDIR			..
F2C4	015000	LD	BC,0050H		.P.

XXXX 2-80 ASSEMBLY LIST XXXX

PAGE= 2

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
F2C7	E1	POP	HL		.
F2C8	09	ADD	HL,BC		.
F2C9	EB	EX	DE,HL		.
F2CA	E1	POP	HL		.
F2CB	09	ADD	HL,BC		.
F2CC	C1	POP	BC		.
F2CD	3C	INC	A		<
F2CE	C3BAF2	JP	F2BAH		...
F2D1	E1	POP	HL		.
F2D2	E5	PUSH	HL		.
F2D3	23	INC	HL		.
F2D4	EB	EX	DE,HL		.
F2D5	E1	POP	HL		.
F2D6	010800	LD	BC,0008H		...
F2D9	3EB0	LD	A,B0H		..
F2DB	FE50	CP	50H		.P
F2DD	CAF4F2	JP	Z,F2F4H		...
F2E0	3600	LD	(HL),00H		6.
F2E2	C5	PUSH	BC		.
F2E3	E5	PUSH	HL		.
F2E4	D5	PUSH	DE		.
F2E5	ED00	LDIR			..
F2E7	015000	LD	BC,0050H		.P.
F2EA	E1	POP	HL		.
F2EB	09	ADD	HL,BC		.
F2EC	EB	EX	DE,HL		.
F2ED	E1	POP	HL		.
F2EE	09	ADD	HL,BC		.
F2EF	C1	POP	BC		.
F2F0	3C	INC	A		<
F2F1	C30BF2	JP	F2DBH		...
F2F4	3E01	LD	A,01H		..
F2F6	D3EF	OUT	(EFH),A		..
F2F8	C9	RET		* RETURN *	.

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17. โปรแกรมภาษาเครื่อง "USR9"

XXXX Z-80 ASSEMBLY LIST XXXX

PAGE= 1

ADRS	OBJECT	OP	OPRAND	COMMENT	CHARACTER
FF50	3E41	LD	A,41H		.A
FF52	D3EF	OUT	(EFH),A		..
FF54	110000	LD	DE,0000H		...
FF57	210000	LD	HL,0000H		...
FF5A	010000	LD	BC,0000H		...
FF5D	3E00	LD	A,00H		..
FF5F	FE01	CP	01H		..
FF61	CA76FF	JP	Z,FF76H		.v.
FF64	C5	PUSH	BC		.
FF65	E5	PUSH	HL		.
FF66	D5	PUSH	DE		.
FF67	E0B8	LDDR			..
FF69	017800	LD	BC,0078H		.x.
FF6C	E1	POP	HL		.
FF6D	09	ADD	HL,BC		.
FF6E	EB	EX	DE,HL		.
FF6F	E1	POP	HL		.
FF70	09	ADD	HL,BC		.
FF71	C1	POP	BC		.
FF72	3D	DEC	A		.
FF73	C35FFF	JP	FF5FH		...
FF76	3E01	LD	A,01H		..
FF78	D3EF	OUT	(EFH),A		..
FF7A	C9	RET		* RETURN *	.

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18. โปรแกรมสร้างรูปสัญลักษณ์การประมวลผล

```

10 REM graphic flow of process symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS #1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
60 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
70 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
80 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
90 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
100 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
110 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
120 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
130 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
140 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
150 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
160 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=9:N$=""
180 FOR I=1TO168
190 READ D%=N$+MID$(MK1$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE#1:END

```



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19. โปรแกรมสร้างรูปสัญลักษณ์จุด เชื่อมต่อ

```

10 REM graphic flow of connector symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS#1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
60 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
70 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
80 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h1f,&h1f,&h00,&h00,&h00
90 DATA &h00,&h00,&hff,&hff,&h00,&h00,&h00,&h00,&h01,&hff,&hff,&h00,&h00,&h00
100 DATA &h00,&h03,&hff,&hff,&hc0,&h00,&h00,&h00,&h07,&hff,&hff,&he0,&h00,&h00
110 DATA &h00,&h07,&hff,&hff,&he0,&h00,&h00,&h00,&h07,&hff,&hff,&he0,&h00,&h00
120 DATA &h00,&h07,&hff,&hff,&he0,&h00,&h00,&h00,&h03,&hff,&hff,&hc0,&h00,&h00
130 DATA &h00,&h03,&hff,&hff,&hc0,&h00,&h00,&h00,&h00,&hff,&hff,&h00,&h00,&h00
140 DATA &h00,&h00,&h1f,&h1f,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
150 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
160 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=8:N$=""
180 FOR I=1TO168
190 READ O%:N$=N$+MID$(MKI$(O%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE 1:END

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20. โปรแกรมสร้างรูปสัญลักษณ์การอ่านและบันทึกข้อมูลบนแผ่นฟลอปปีดิสก์

```

10 REM graphic flow of disk symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS#1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h01,&hff,&hff,&hff,&hff,&hff,&hff
60 DATA &h03,&hff,&hff,&hff,&hff,&hff,&he0,&h0f,&hff,&hff,&hff,&hff,&hff,&hff,&hc0
70 DATA &h1f,&hff,&hff,&hff,&hff,&hff,&h00,&h3f,&hff,&hff,&hff,&hff,&hff,&hff,&h00
80 DATA &h3f,&hff,&hff,&hff,&hff,&hff,&h00,&h7f,&hff,&hff,&hff,&hff,&hff,&hff,&h00
90 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&h00
100 DATA &hff,&hff,&hff,&hff,&hff,&hff,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&h00
110 DATA &hff,&hff,&hff,&hff,&hff,&hff,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&h00
120 DATA &hff,&hff,&hff,&hff,&hff,&hff,&h00,&h7f,&hff,&hff,&hff,&hff,&hff,&hff,&h00
130 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&h00,&h3f,&hff,&hff,&hff,&hff,&hff,&hff,&h00
140 DATA &h3f,&hff,&hff,&hff,&hff,&hff,&h00,&h1f,&hff,&hff,&hff,&hff,&hff,&hff,&h00
150 DATA &h0f,&hff,&hff,&hff,&hff,&hff,&hc0,&h07,&hff,&hff,&hff,&hff,&hff,&hff,&he0
160 DATA &h01,&hff,&hff,&hff,&hff,&hff,&hff0,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=5:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE 1:END

```



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21. โปรแกรมสร้างรูปสัญลักษณ์การเปรียบเทียบ

```

10 REM graphic flow of if symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS#1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
60 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
70 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h1c,&h00,&h00,&h00
80 DATA &h00,&h00,&h03,&hff,&he0,&h00,&h00,&h00,&h00,&h3f,&hff,&hfe,&h00,&h00
90 DATA &h00,&h03,&hff,&hff,&hff,&hff,&h00,&h00,&h00,&h3f,&hff,&hff,&hff,&hff,&h00
100 DATA &h03,&hff,&hff,&hff,&hff,&hff,&hff,&h00,&h1f,&hff,&hff,&hff,&hff,&hff,&hff
110 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&h1f,&hff,&hff,&hff,&hff,&hff,&hff
120 DATA &h03,&hff,&hff,&hff,&hff,&hff,&h00,&h00,&h3f,&hff,&hff,&hff,&hff,&h00
130 DATA &h00,&h03,&hff,&hff,&hff,&h00,&h00,&h00,&h00,&h3f,&hff,&hfe,&h00,&h00
140 DATA &h00,&h00,&h03,&hff,&he0,&h00,&h00,&h00,&h00,&h00,&h1c,&h00,&h00,&h00
150 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
160 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=3:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE1:END

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22. โปรแกรมสร้างรูปสัญลักษณ์การรับข้อมูลทางแป้นพิมพ์

```

10 REM graphic flow of input symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS#1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
60 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
70 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
80 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
90 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
100 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h7f,&h00,&h00,&h00,&h00,&h00,&h7f,&hff,&hff
110 DATA &h00,&h00,&h00,&h07,&hff,&hff,&hff,&h00,&h00,&h7f,&hff,&hff,&hff,&hff,&hff
120 DATA &h03,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
130 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
140 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
150 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
160 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
170 RESTORE 50:K%=4:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE 1:END

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23. โปรแกรมสร้างรูปสัญลักษณ์การวนซ้ำ

```

10 REM graphic flow of loop symbol
20 CLEAR3000:PRINT CHR$(12):WIDTH80,25
30 OPEN "graph"AS#1
40 FIELD#1,168 AS FL$
50 DATA &h00,&h1f,&hff,&hff,&hff,&hff,&h08,&h00,&h00,&h3f,&hff,&hff,&hff,&hfc,&h00
60 DATA &h00,&h7f,&hff,&hff,&hff,&hfe,&h00,&h00,&hff,&hff,&hff,&hff,&hff,&h00
70 DATA &h01,&hff,&hff,&hff,&hff,&hff,&h08,&h03,&hff,&hff,&hff,&hff,&hff,&h00
80 DATA &h07,&hff,&hff,&hff,&hff,&hff,&he0,&h0f,&hff,&hff,&hff,&hff,&hff,&h00
90 DATA &h1f,&hff,&hff,&hff,&hff,&hff,&hf8,&h3f,&hff,&hff,&hff,&hff,&hff,&hfc
100 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&hfe,&hff,&hff,&hff,&hff,&hff,&hff,&hff
110 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&hfe,&h3f,&hff,&hff,&hff,&hff,&hff,&hff
120 DATA &h1f,&hff,&hff,&hff,&hff,&hff,&hf8,&h0f,&hff,&hff,&hff,&hff,&hff,&h00
130 DATA &h07,&hff,&hff,&hff,&hff,&hff,&he0,&h03,&hff,&hff,&hff,&hff,&hff,&h00
140 DATA &h01,&hff,&hff,&hff,&hff,&hff,&h08,&h00,&hff,&hff,&hff,&hff,&hff,&h00
150 DATA &h00,&h7f,&hff,&hff,&hff,&hfe,&h00,&h00,&h3f,&hff,&hff,&hff,&hff,&h00
160 DATA &h00,&h1f,&hff,&hff,&hff,&hf8,&h00,&h00,&h0f,&hff,&hff,&hff,&hff,&h00
170 RESTORE 50:K%=10:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT#1,K%
230 CLOSE1:END

```



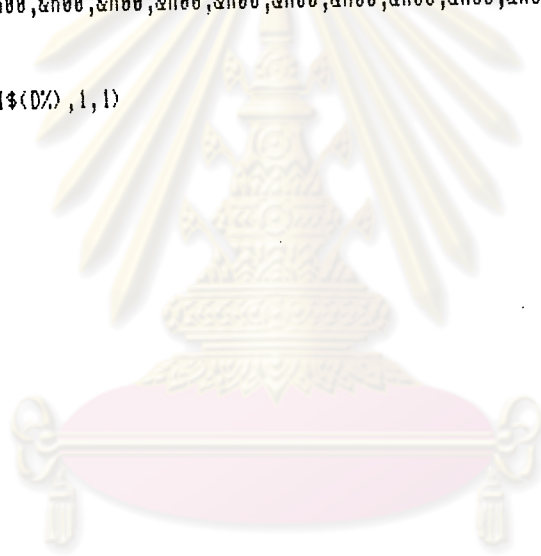
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25. โปรแกรมสร้างรูปสัญลักษณ์การแสดงผลทางเครื่องพิมพ์ดีด

```

10 REM graphic flow of print symbol
20 CLEAR3000:PRINT CHR$(12):WIDTH80,25
30 OPEN "graph"AS#1
40 FIELD#1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&hff
60 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
70 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
80 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
90 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
100 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
110 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&h00
120 DATA &hff,&hff,&hff,&hff,&hff,&hff,&h00,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&h00,&h00
130 DATA &hff,&hff,&hff,&hff,&hff,&h00,&h00,&hff,&hff,&hff,&hff,&hff,&hff,&h00,&h00
140 DATA &hff,&hff,&hff,&hff,&hff,&h00,&h00,&h00,&h3f,&hff,&hff,&hff,&hff,&hff,&h00,&h00
150 DATA &h0f,&hff,&hff,&hff,&h00,&h00,&h00,&h03,&hff,&hff,&hff,&hff,&hff,&h00,&h00
160 DATA &h00,&h3f,&hff,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=1:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT#1,K%
230 CLOSE1:END

```



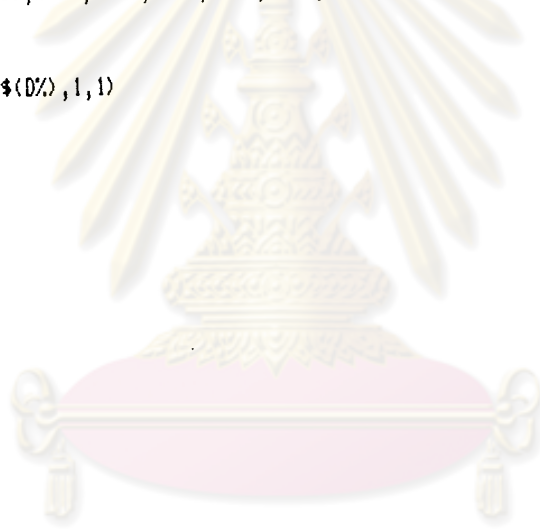
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27. โปรแกรมสร้างรูปสัญลักษณ์การเริ่มต้นและการสิ้นสุด

```

10 REM graphic flow of terminate symbol
20 WIDTH80,25:PRINT CHR$(12):CLEAR3000
30 OPEN "graph" AS#1
40 FIELD #1,168 AS FL$
50 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
60 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
70 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h07,&hff,&hff,&hff,&hff,&hff,&he0
80 DATA &h1f,&hff,&hff,&hff,&hff,&hff,&hff,&h3f,&hff,&hff,&hff,&hff,&hff,&hfc
90 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&hfe,&h7f,&hff,&hff,&hff,&hff,&hff,&hfe
100 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
110 DATA &hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff,&hff
120 DATA &h7f,&hff,&hff,&hff,&hff,&hff,&hfe,&h7f,&hff,&hff,&hff,&hff,&hff,&hfe
130 DATA &h3f,&hff,&hff,&hff,&hff,&hff,&hfc,&h1f,&hff,&hff,&hff,&hff,&hff,&hfb
140 DATA &h07,&hff,&hff,&hff,&hff,&hff,&he0,&h00,&h00,&h00,&h00,&h00,&h00,&h00
150 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
160 DATA &h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00,&h00
170 RESTORE 50:K%=6:N$=""
180 FOR I=1TO168
190 READ D%:N$=N$+MID$(MKI$(D%),1,1)
200 NEXT I
210 LSET FL$=N$
220 PUT #1,K%
230 CLOSE 1:END

```



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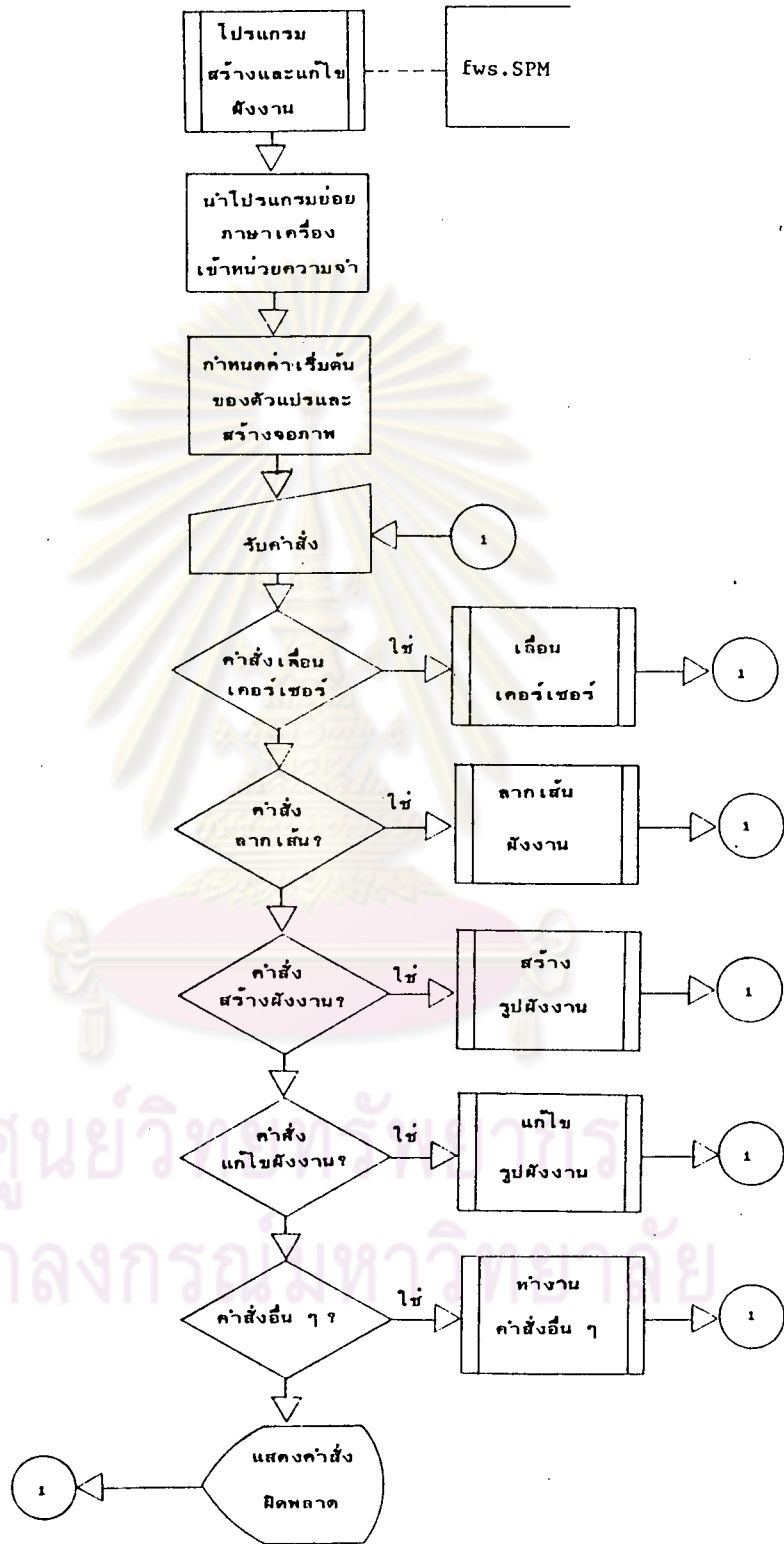
ภาคผนวก ข.

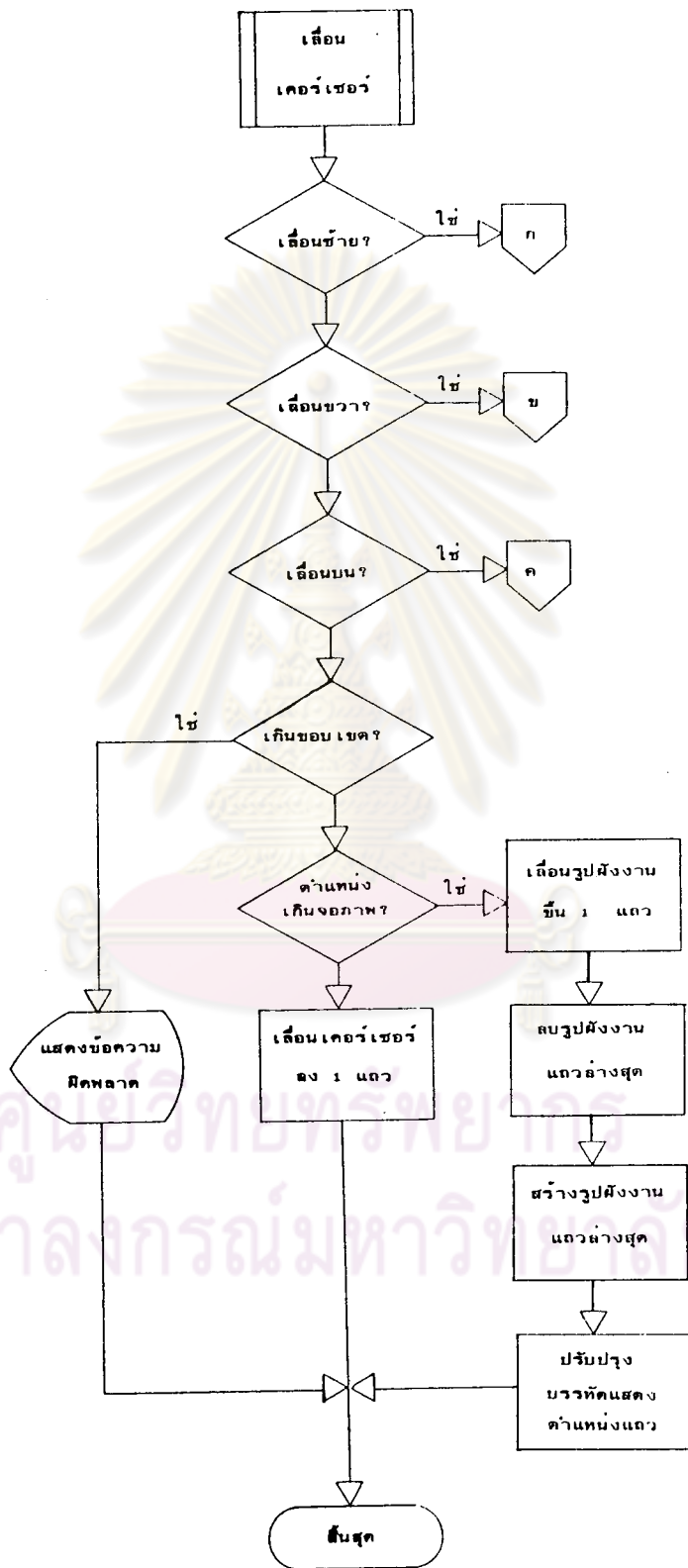
ผังงานของโปรแกรมในระบบงานแปลงผังงาน เป็นโปรแกรมภาษา เบสิก

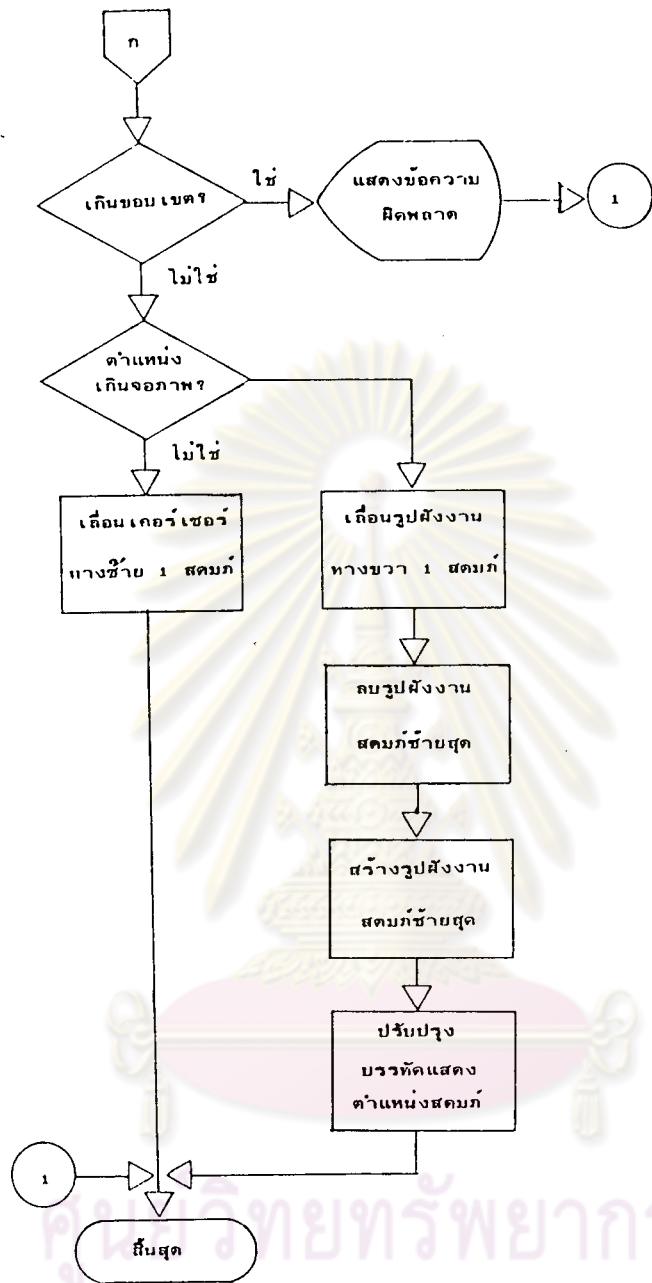
1. ผังงานของโปรแกรม " fws.SPM "



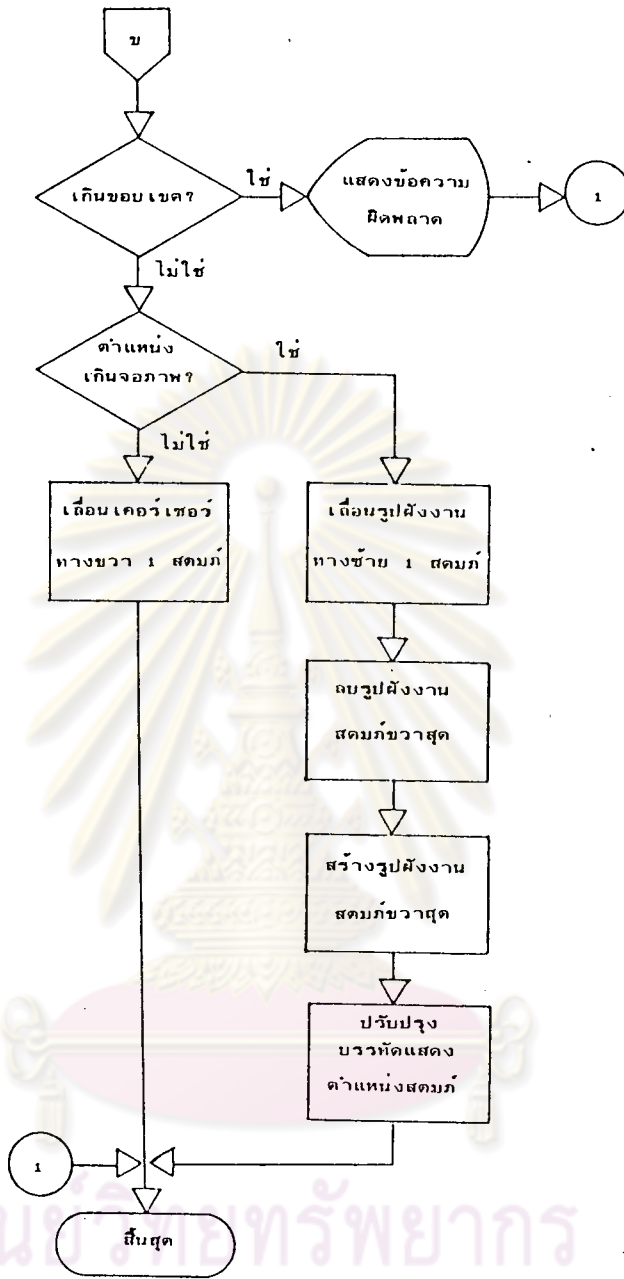
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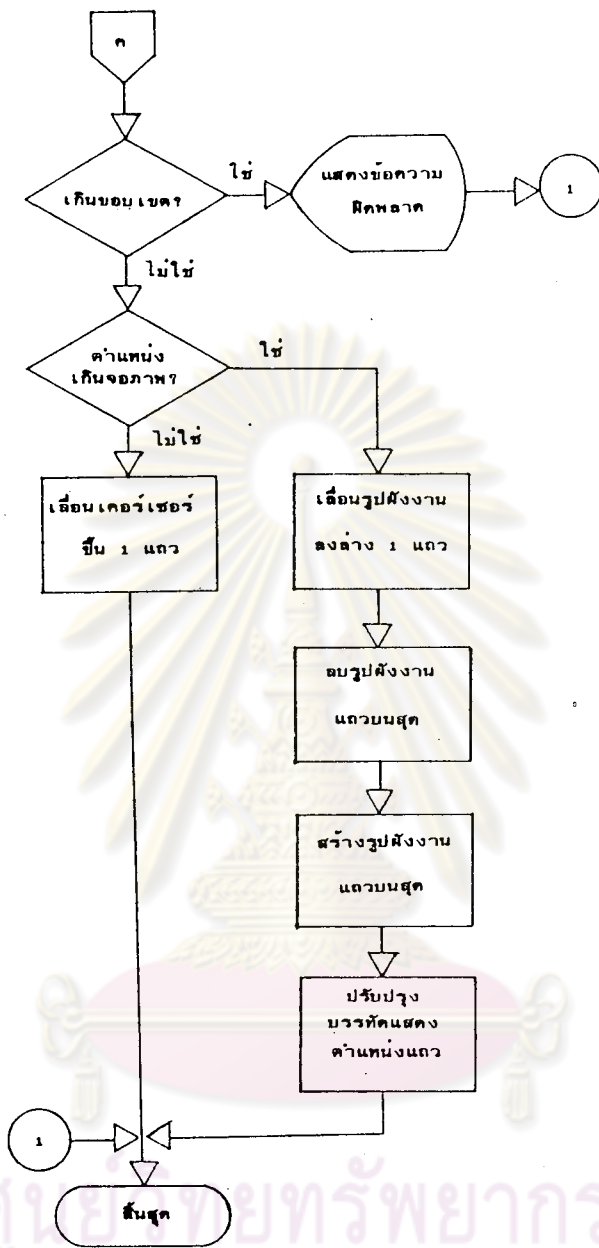




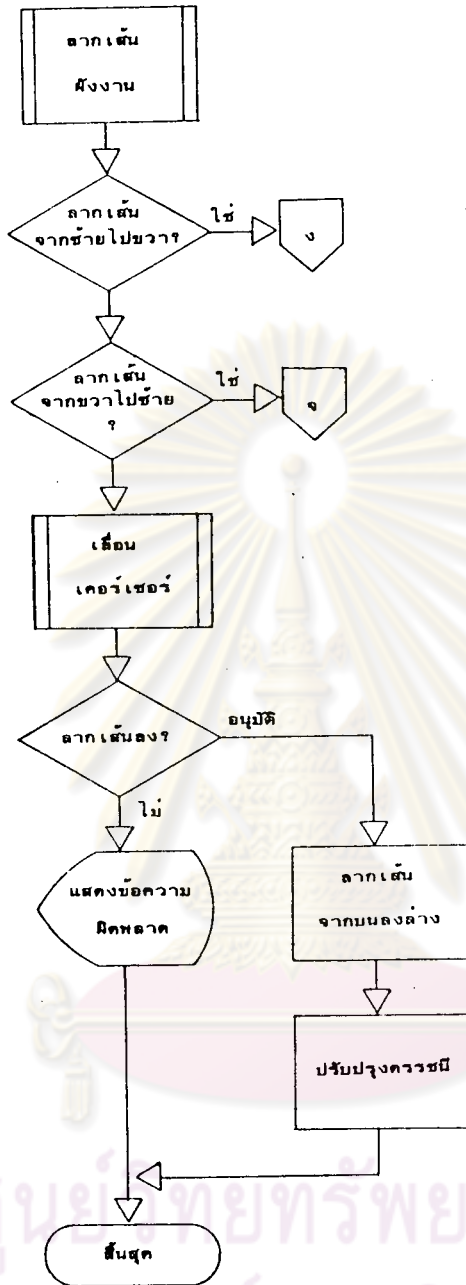
ศูนย์วิทยทรัพยากร
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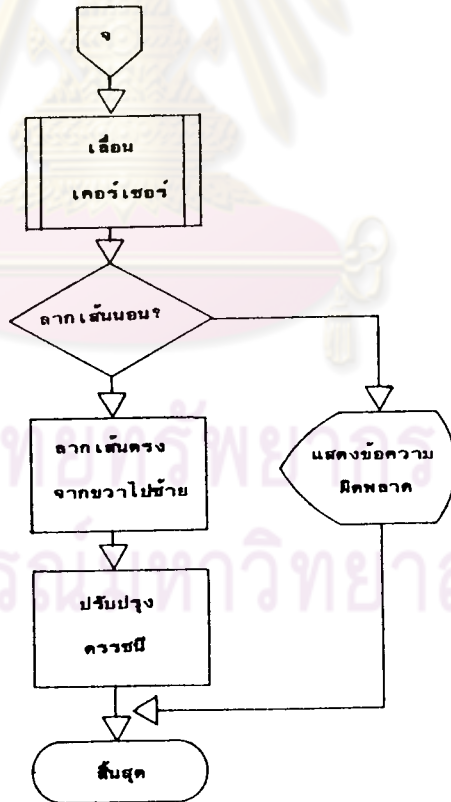
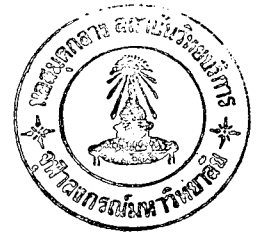
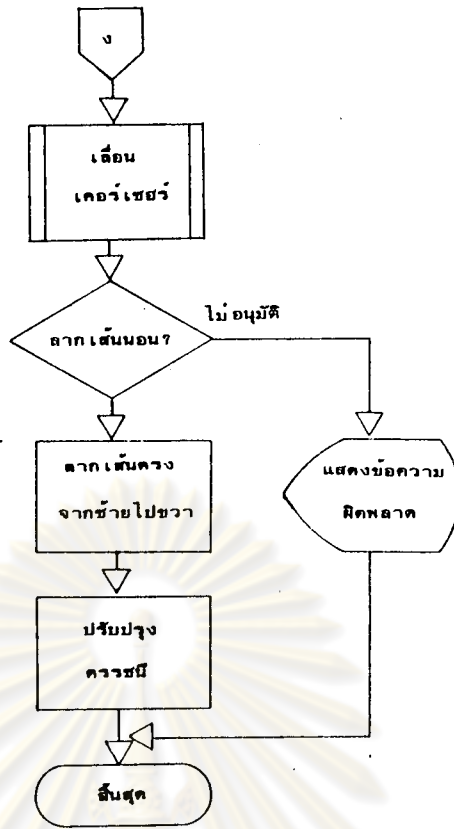
ศูนย์ทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



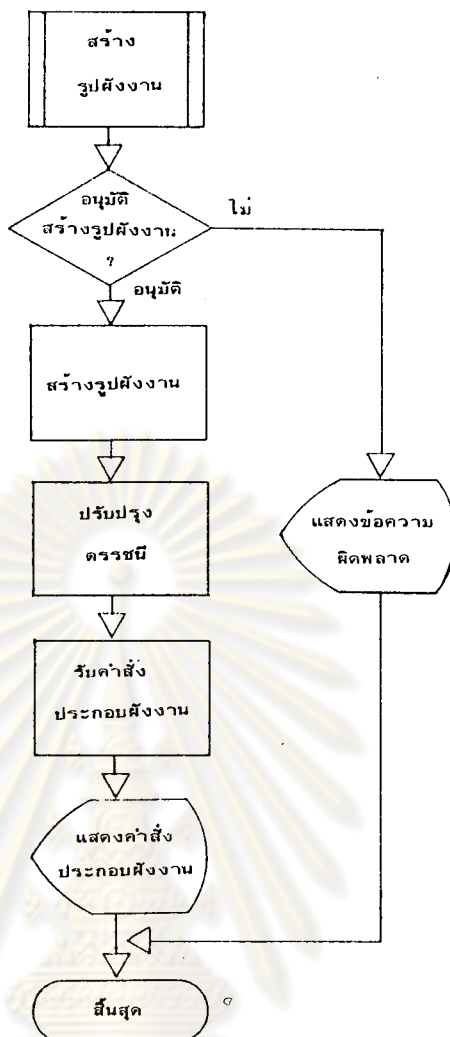
ศูนย์ทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



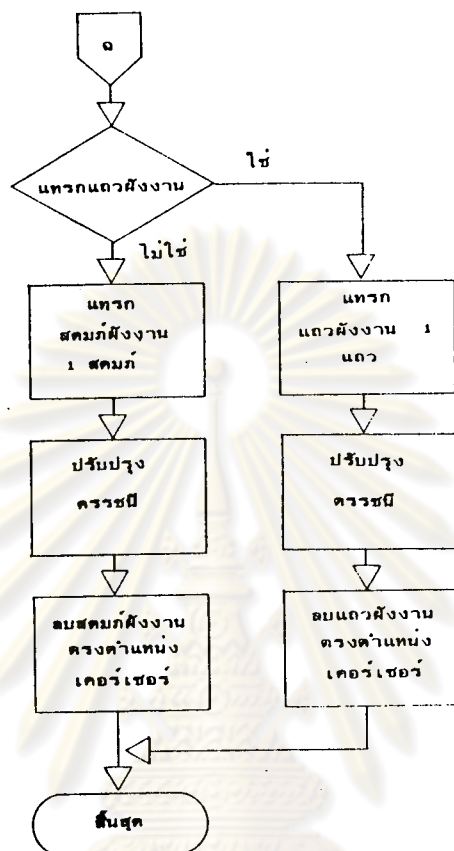
ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



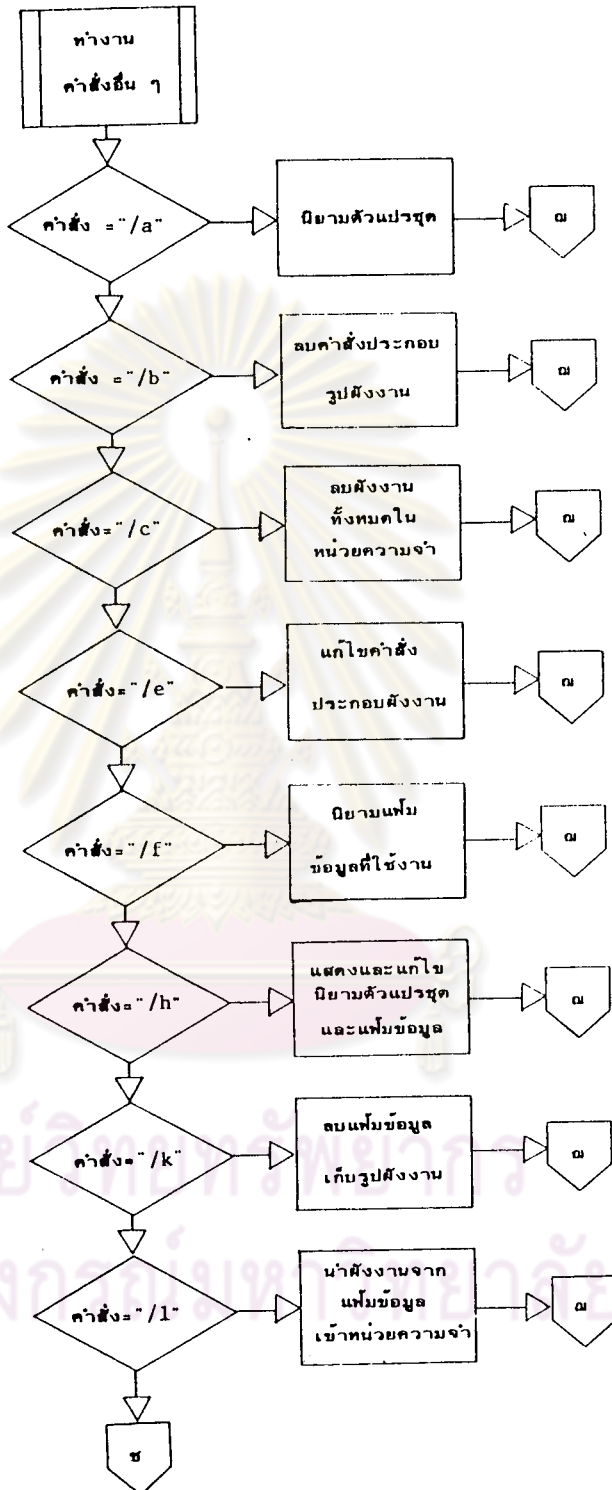
ศูนย์วิจัยทรัพยากรบุคคล
จุฬาลงกรณ์มหาวิทยาลัย

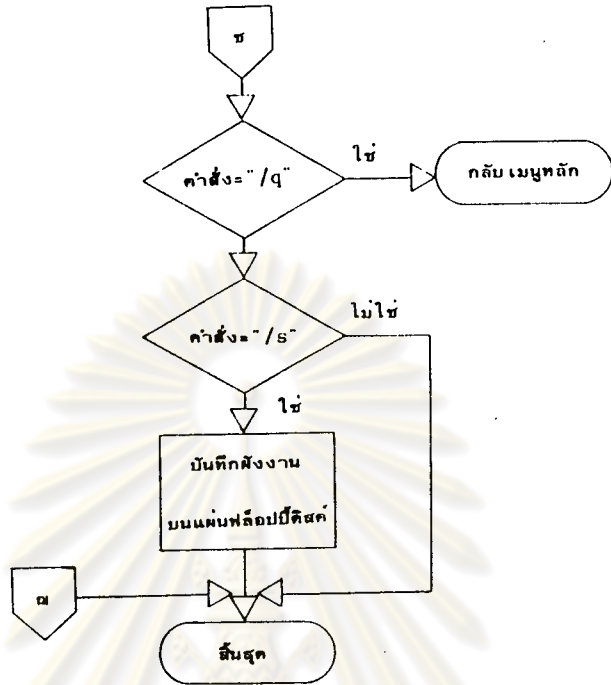


ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย





ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

2. ฟังงานของโปรแกรม " conv.SPM "

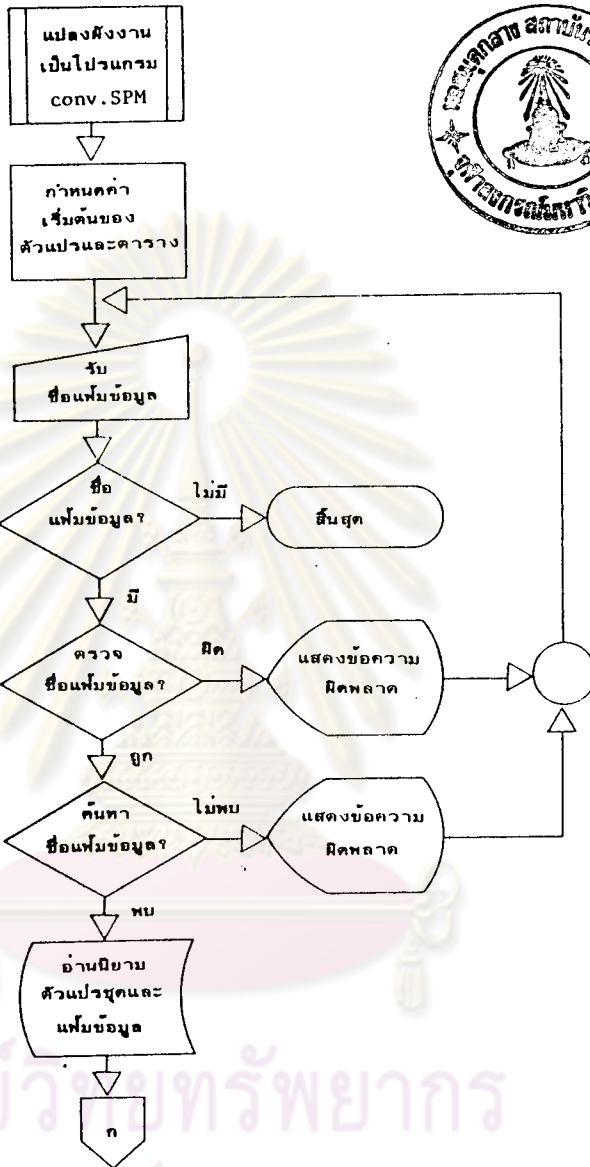
ฟังงานของโปรแกรมแปลงฟังงาน เป็นโปรแกรมภาษา เบสิก ประกอบด้วยตัวแปรและชื่อแฟ้มข้อมูล ซึ่งใช้ประกอบรูปฟังงาน ดังมีความหมายดังนี้

<u>ชื่อ</u>	<u>ความหมาย</u>
ER\$	ตาราง เก็บตำแหน่งรูปฟังงานซึ่งมีความผิดพลาด
ER%	ตัวแปร เก็บจำนวนของรูปฟังงานซึ่งมีความผิดพลาด
ET\$	ตาราง เก็บชื่อฟังงานย่อยภายนอกและ LINE NØ. ที่แปลงได้
EB%	ตัวแปร เก็บตัว เลขแสดงหมายเลขลำดับรูปฟังงานย่อยภายนอกตัวปัจจุบันของ ET\$
ET%	ตัวแปร เก็บจำนวนรูปฟังงานย่อยภายนอก
IT\$	ตาราง เก็บชื่อฟังงานย่อยภายในและ LINE NØ. ที่แปลงได้
IT%	ตัวแปร เก็บจำนวนของรูปฟังงานย่อยภายใน
IB%	ตัวแปร เก็บตัว เลขแสดงหมายเลขลำดับของรูปฟังงานย่อยภายในตัวปัจจุบันของ IT\$
LT\$	ตาราง เก็บตำแหน่งรูปฟังงานซึ่งถูกอ้างอิงถึง
SB\$	Stack buffer ใช้เก็บตำแหน่งของรูปฟังงานที่จะทำการแปลงต่อไป และ SYMBOL ในรูปฟังงานการตัดสินใจ
ST\$	ตาราง เก็บ LINE NØ. ของ SYMBOL ซึ่งจะถูกแทนค่า
NØ%	ตัวแปร เก็บตำแหน่งของรูปฟังงานปัจจุบัน
LABEL	ตำแหน่งของรูปฟังงานซึ่งประกอบด้วยตำแหน่งของแถวและสดมภ์
SYMBOL	สัญลักษณ์ซึ่งใช้แทนชั่วคราวซึ่งจะถูกแทนที่ด้วย LINE NØ. เมื่อการแปลงฟังงานสำเร็จ เรียบร้อยแล้ว
wØrk.SWK	แฟ้มข้อมูลใช้งานของระบบใช้เก็บรูปฟังงานทั้งหมดจาก DATA.FLW ก่อนที่จะ เริ่มทำการแปลงฟังงาน
DATA.FLW	แฟ้มข้อมูลของผู้ใช้สร้างขึ้นสำหรับ เก็บฟังงานซึ่งสร้างได้จากโปรแกรมการสร้างและแก้ไขฟังงาน

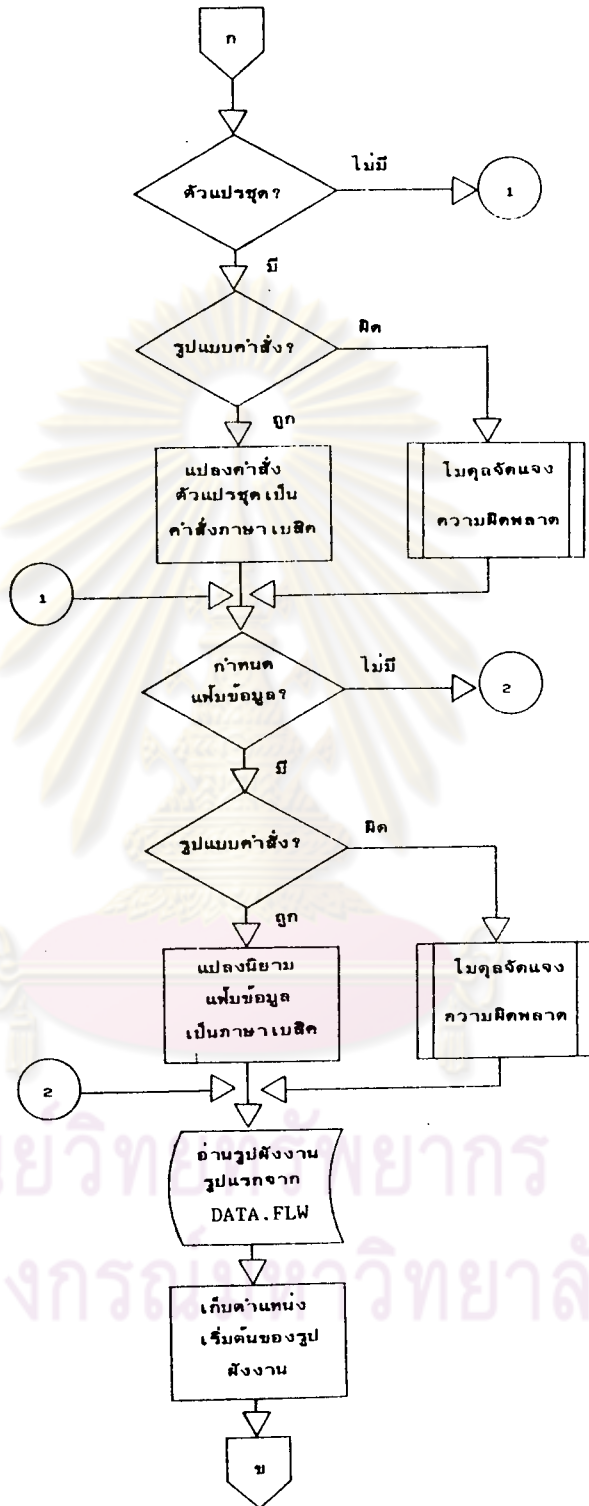
DATA.SWK	แฟ้มข้อมูลใช้งานชั่วคราวของระบบใช้เก็บภาษาเบสิกที่แปลงได้ แต่ยังไม่สมบูรณ์ในขณะที่ทำการแปลงผังงาน
DATA.LST	แฟ้มข้อมูลเก็บความผิดพลาดทั้งหมดที่เกิดขึ้นจากการแปลงผังงาน
DATA.ØBJ	แฟ้มข้อมูลเก็บภาษาเบสิกที่แปลงได้จากรูปผังงานและพร้อมที่จะทำ การประมวลผลทันที



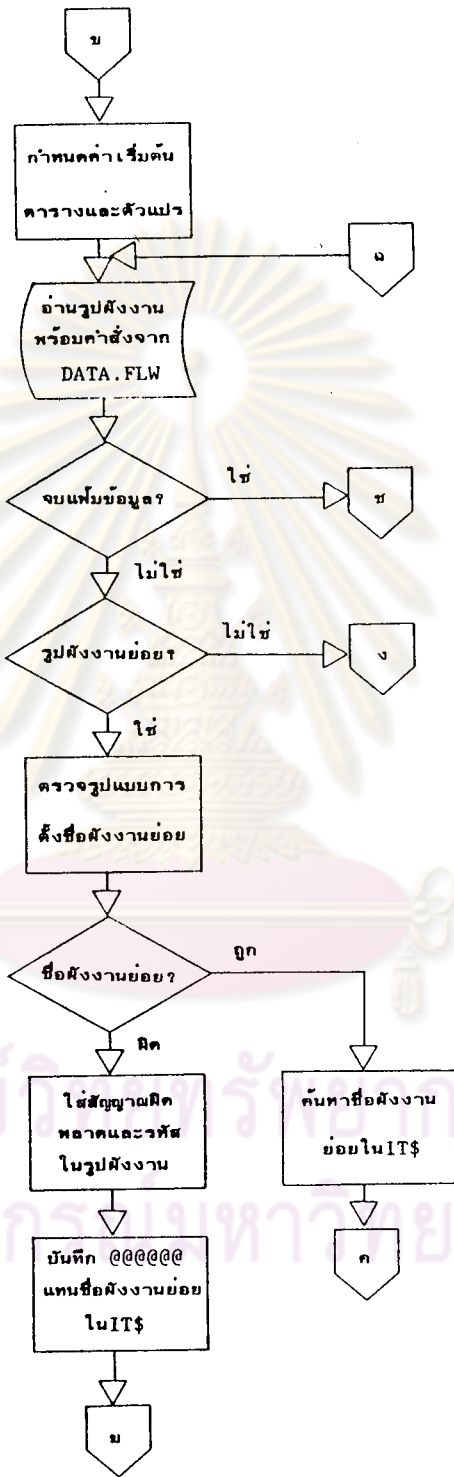
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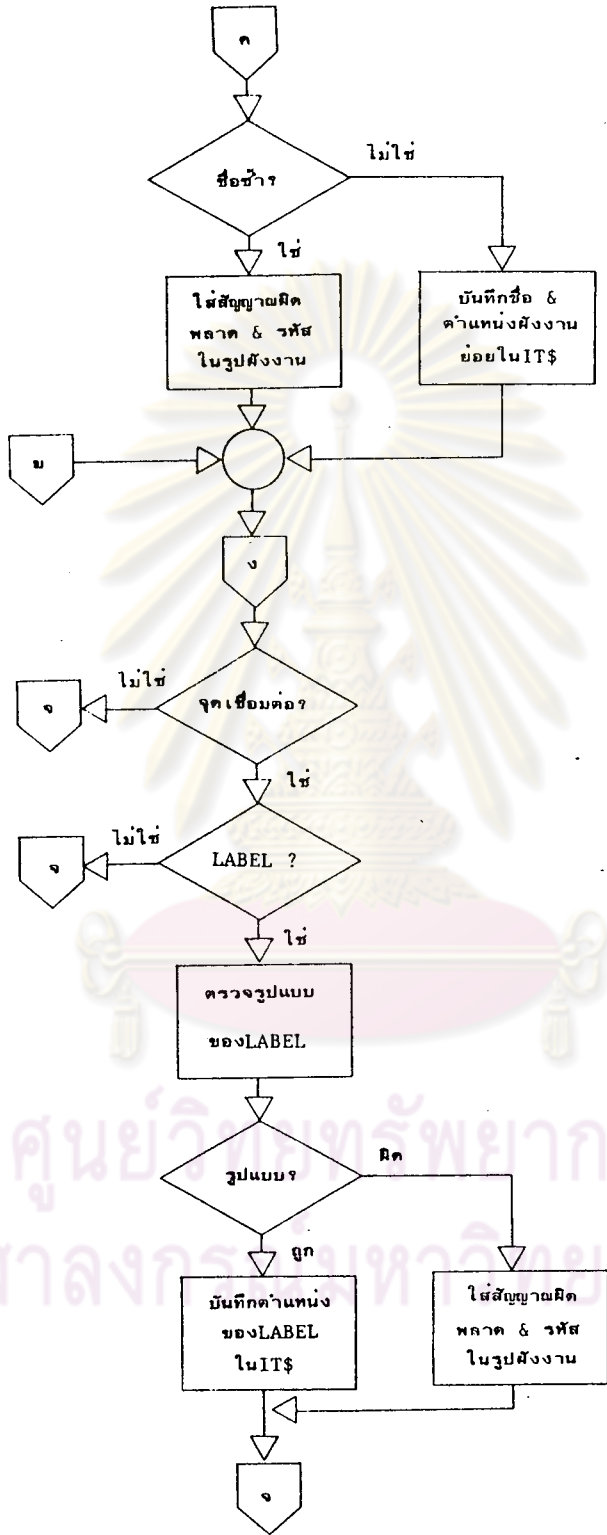
ศูนย์วิจัยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



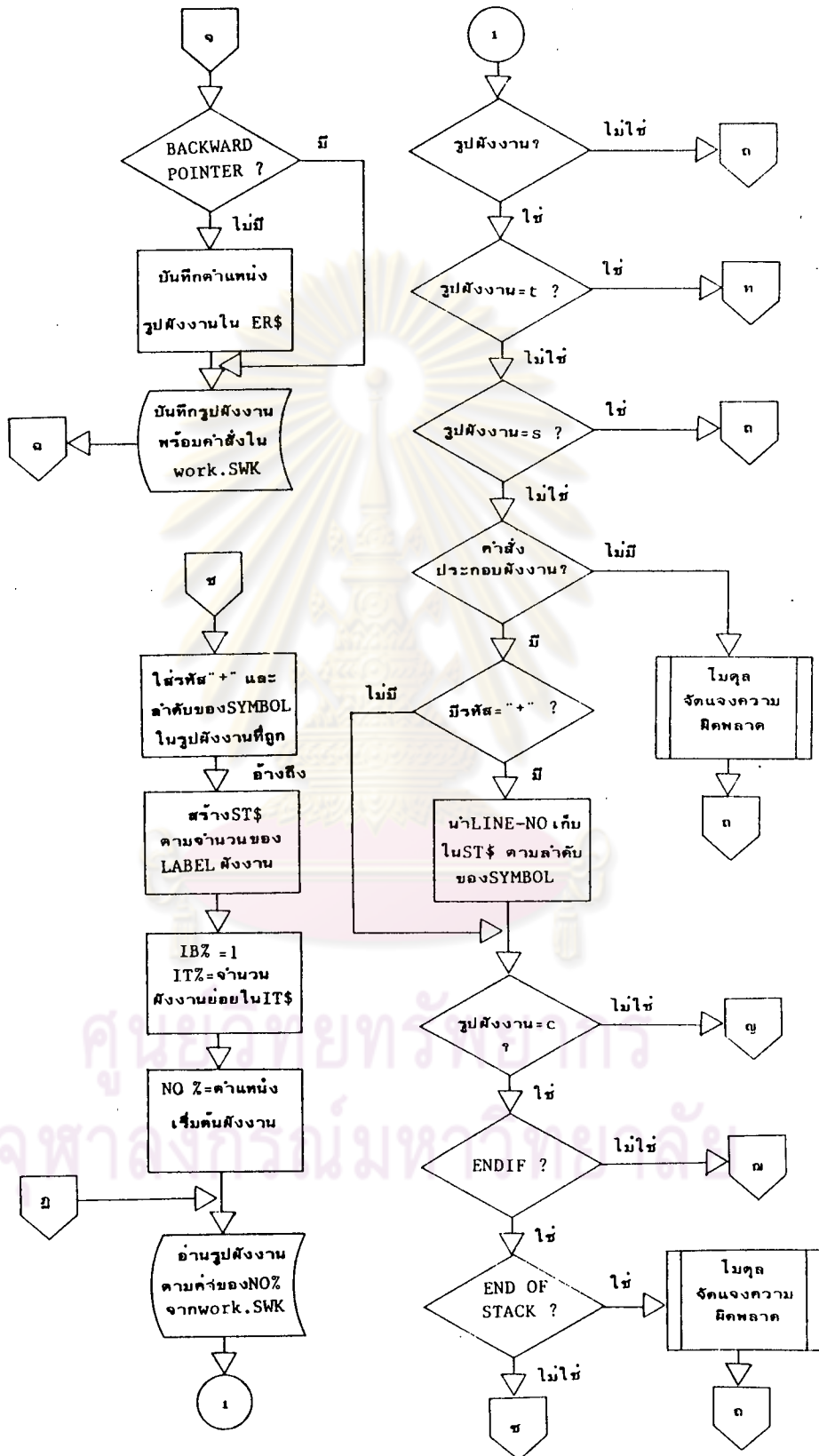
ศูนย์วิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

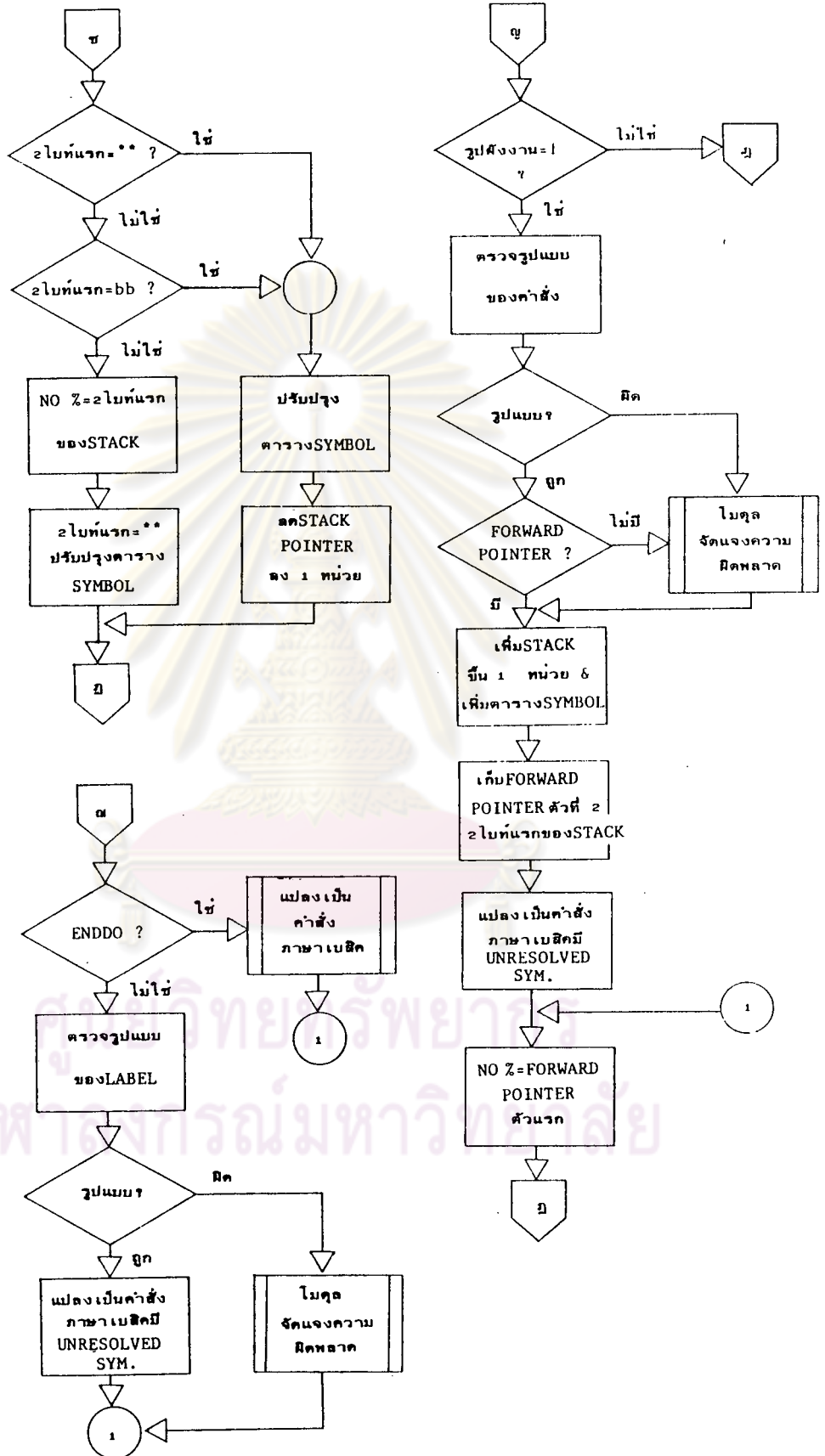


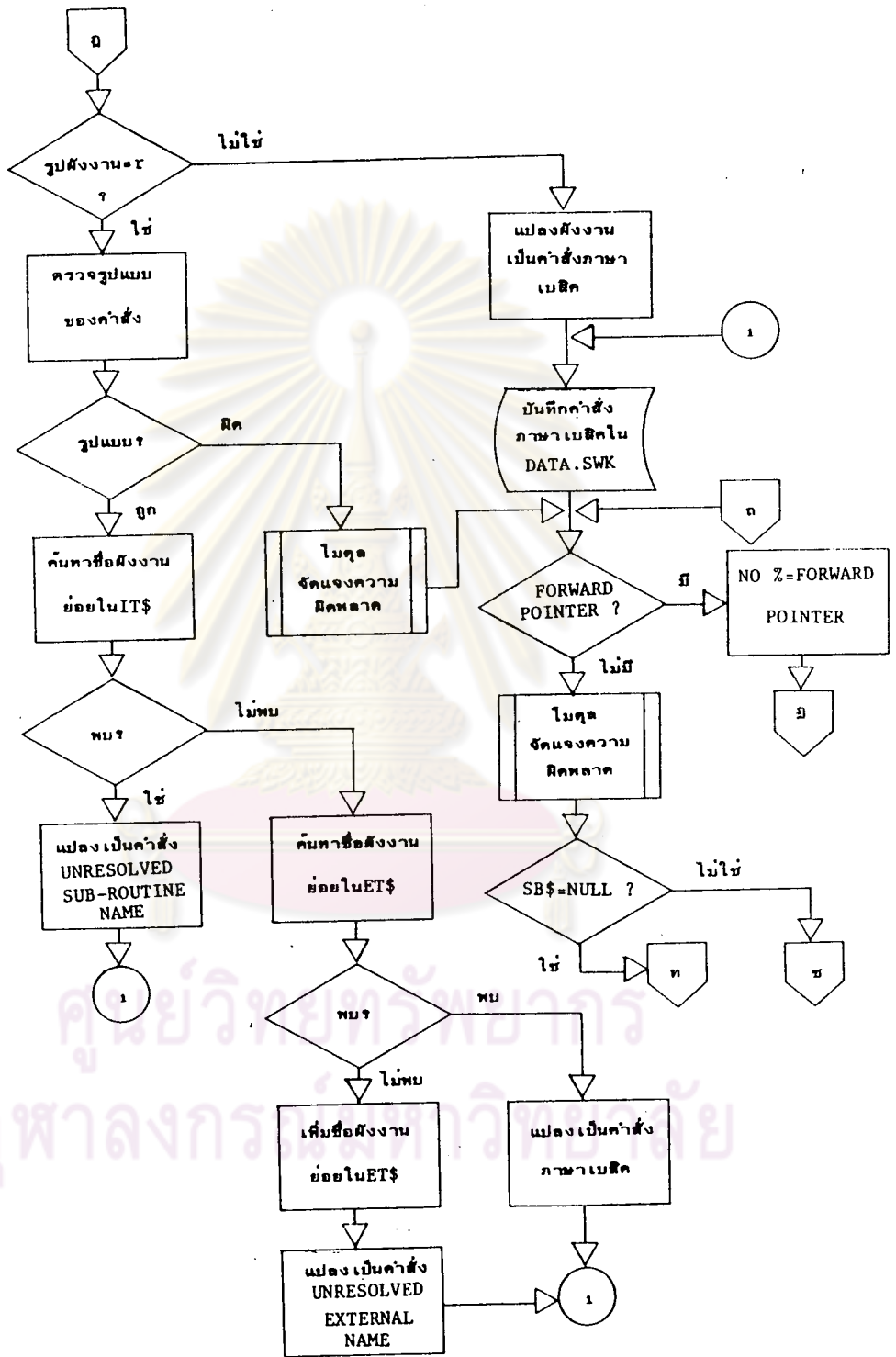
ศูนย์บริการวิทยุ
จุฬาลงกรณ์มหาวิทยาลัย

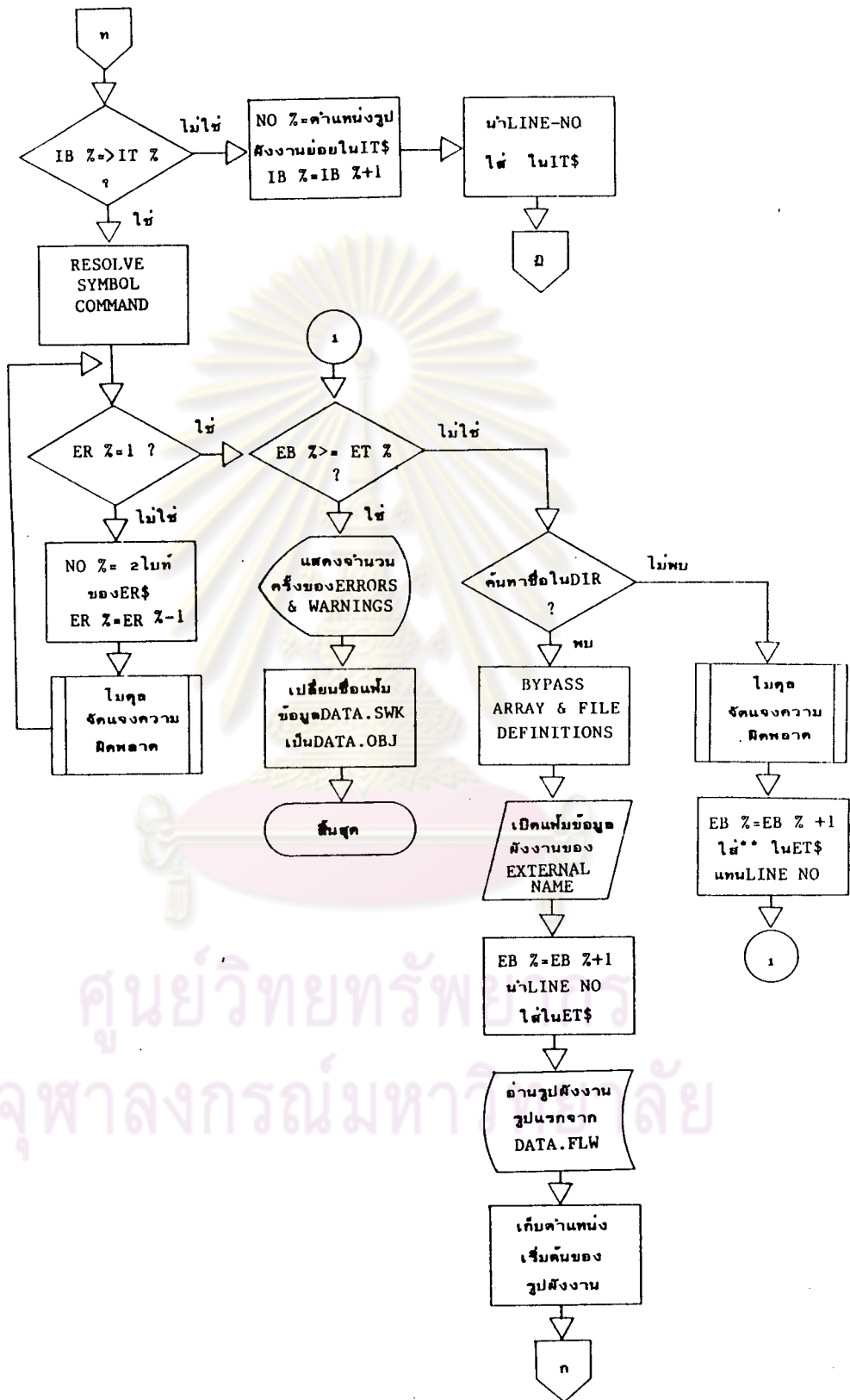


ศูนย์วิทยพัชการ
จุฬาลงกรมหาวิทยาลัย

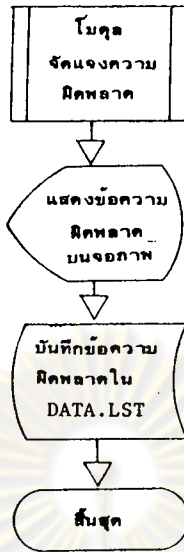








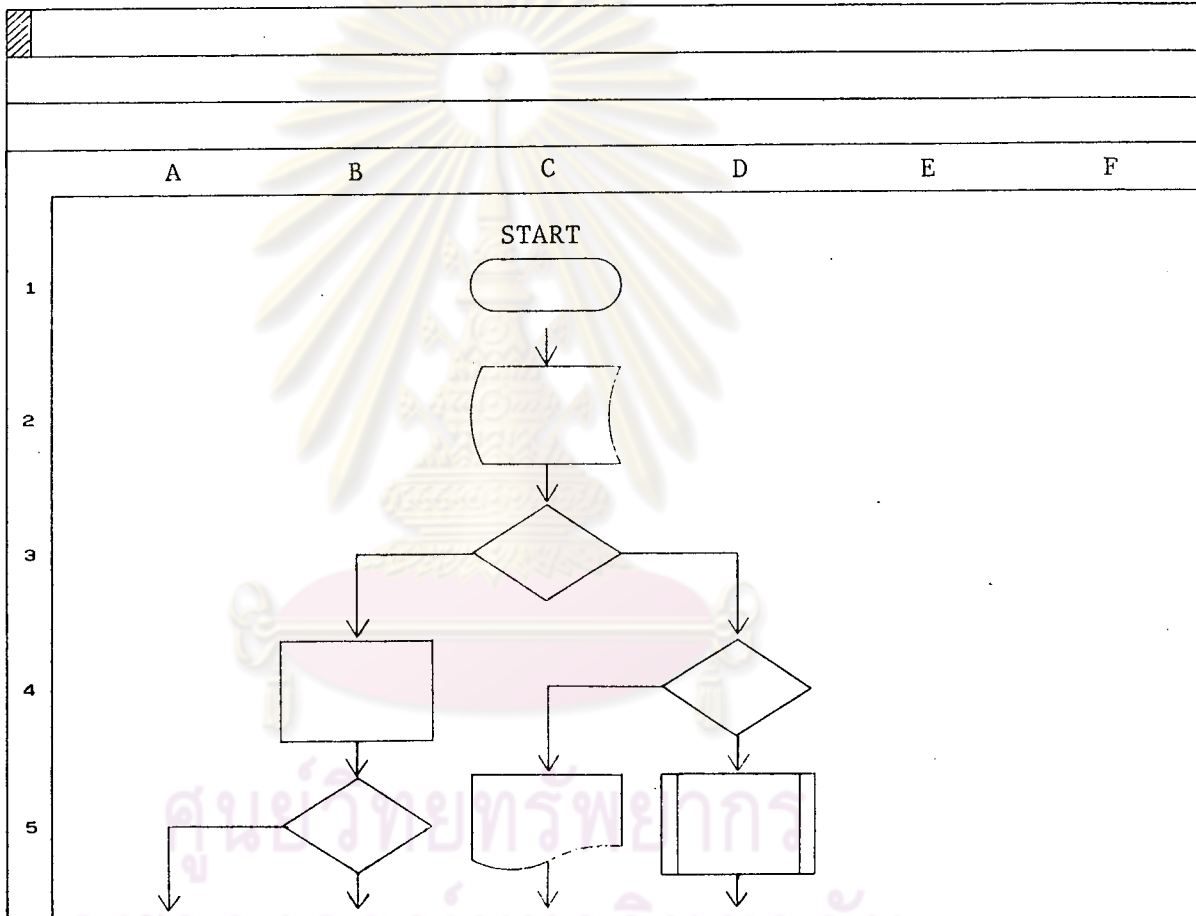
ศูนย์วิทยุโทรพัทธ์
จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวก ค.

รูปผังงานตัวอย่างบนจอภาพ



ศูนย์วิทยุโทรพยากรณ์
จุฬาลงกรณ์มหาวิทยาลัย

TABLE OF CONTENT

BOX-NO	CONTENT	FILE-NAME := TEST
1C	START	
2C	READ "abc",T9,B9	
3C	A)=-2	
4B	AZ=B%(12)	
4D	AB(B)<D%	
5B	ABZ)= C(1%)	
5C	CC1,SP2,SP3,A-14,B9(B)-1%,D%-15	
5D	ABC	
6A	AB=- (BA)3+(12/6)+D);AB = +AR-CRW(14)-(2)RT)	
6B	LSET AZ(B%) = 7	
6C	AZ-(C,12),B9-(8,C%),FRB-(D(2),R(2))	
6D	CC1,AB9-(1,2),AZ(1%)-(1%,AD),DAN-(B,FR%	
7B	END	
7D	ENDIF	

TABLE OF FLOW

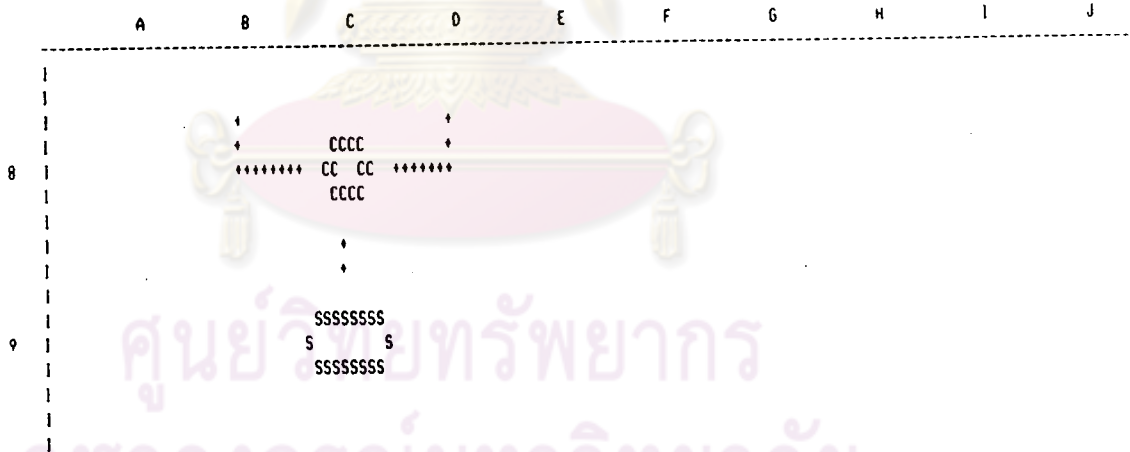


TABLE OF CONTENT

BOX-NO	CONTENT	FILE-NAME := TEST
8C	ENDIF	
9C	STOP	

*** END OF FILE ***

ภาคผนวก จ.

ตัวอย่างโปรแกรมภาษา เบสิกที่แปลงได้จากรูปผังงาน

```

10 DIM A$(10):DIM B$(5):DIM C(6):DIM D$(7):DIM G$(8):DIM H$(9) ' X--DEF
20 OPEN "abc" FOR INPUT AS#1 ' X--DEF
30 OPEN "def" AS#2:FIELD#2,1 AS D$,2 AS E$,3 AS F$ ' X--DEF
40 OPEN "ghi" AS#3:FIELD#3,1 AS G$,2 AS H$,3 AS I$ ' X--DEF
50 ' TEST---PROGRAM ' X- 1C
60 INPUT #1, T$, B$ ' X- 2C
70 IF A)=-2 THEN 80 ELSE 180 ' X- 3C
80 IF AB(8)<D$ THEN 90 ELSE 130 ' X- 4D
90 LPRINT CHR$(12):LPRINT:LPRINT:LPRINT:LPRINT:LPRINT:LPRINT TAB(14) A TAB(1%) B$(8) TAB(15) D% ' X- 5C
100 LOCATE C,12:INPUT A%:LOCATE 8,C%:INPUT B%:LOCATE D(2),R(2):INPUT FR# ' X- 6C
110 GOTO 160
120 '-ELSE
130 GOSUB 330 ' X- 5D
140 PRINT CHR$(12):LOCATE 1,2:PRINT AB%:LOCATE 1%,AD:PRINT A%(1%):LOCATE 8,FR%:PRINT DA# ' X- 6D
150 '--ENDIF
160 GOTO 310
170 '-ELSE
180 ' A%=B%(12) ' X- 4B
190 ' XXXUNMATCH PARENTHESIS
200 IF AB% >= C(1%) THEN 210 ELSE 260 ' X- 5B
210 AB=- (BAX3+(12/6)+D):AB = +AR-CR$(14)-(2XRT) ' X- 6A
220 ' END ' X- 7B
230 ' XXXBAD LABEL REFERENCE
240 GOTO 380
250 '-ELSE
260 LSET A%(B%) = 7 ' X- 6B
270 ' END ' X- 7B
280 ' XXXBAD LABEL REFERENCE
290 '--ENDIF
300 '--ENDIF
310 END ' X- 9C
320 ' ABC .FLW X--EXTERNAL SUBROUTINE NAME ' X--DEF
330 A=B+C/D:D(8)=PT-1 ' X- 2D
340 ' C1,SP3,"GOOD MORNING"-23,A-100 ' X- 3D
350 ' XXXSYNTAX ERROR
360 FOR I%=1 TO 2 STEP 3 ' X- 4D
370 GOSUB 470 ' X- 5D
380 PUT #2,D% ' X- 6D
390 NEXT ' X- 7D
400 RETURN ' X- 8D

```

```

410 ' @@@@@SUB-PROGRAM ' X- 10C
420 ' TEST ' X- 10C
430 ' XXXBAD SUB-MODULE NAME
440 GET #3,I% ' X- 11C
450 RETURN ' X- 12C
460 ' TEST ,FLW X--EXTERNAL SUBROUTINE NAME ' X--DEF
470 ' XXXBYPASS ARRAY & FILE DEFINITION ' X--DEF
480 INPUT #1, T$, B$ ' X- 2C
490 IF A)=-2 THEN 500 ELSE 600 ' X- 3C
500 IF AB(8)<D$ THEN 510 ELSE 550 ' X- 4D
510 LPRINT CHR$(12):LPRINT:LPRINT:LPRINT:LPRINT:LPRINT:LPRINT TAB(14) A TAB(I%) B$(8) TAB(15) D% ' X- 5C
520 LOCATE C,12:INPUT A%:LOCATE 8,C%:INPUT B$:LOCATE D(2),R(2):INPUT FR# ' X- 6C
530 GOTO 580
540 '-ELSE
550 GOSUB 330 ' X- 5D
560 PRINT CHR$(12):LOCATE 1,2:PRINT AB$:LOCATE I%,AD:PRINT A%(I%):LOCATE 8,FR%:PRINT DA# ' X- 6D
570 '--ENDIF
580 GOTO 730
590 '-ELSE
600 ' A%=B%(12) ' X- 4B
610 ' XXXUNMATCH PARENTHESIS
620 IF AB% >= C(I%) THEN 630 ELSE 680 ' X- 5B
630 AB=- (BA%3+(12/6)+D):AB = +AR-CR%(14)-(2%RT) ' X- 6A
640 ' END ' X- 7B
650 ' XXXBAD LABEL REFERENCE
660 GOTO 720
670 '-ELSE
680 LSET A%(B%) = 7 ' X- 6B
690 ' END ' X- 7B
700 ' XXXBAD LABEL REFERENCE
710 '--ENDIF
720 '--ENDIF
730 RETURN ' X- 9C

```

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวก ฉ.

รูปตัวอย่างการแสดงความผิดพลาดของการแปลงผังงานบนจอภาพ

<< LIST ERROR OF CONVERSION >>

ENTER FILE-NAME :

FILE	BOX-NO	CODE	DESCRIPTION
TEST	4B	E-14	XXXUNMATCH PARENTHESIS
TEST	7B	E-5	XXXBAD LABEL REFERENCE
ABC	3D	E-1	XXXSYNTAX ERROR
ABC	10C	E-6	XXXBAD SUB-MODULE NAME
TEST	DEF	W-2	XXXBYPASS ARRAY & FILE DEFINITION
TEST	4B	E-14	XXXUNMATCH PARENTHESIS
TEST	7B	E-5	XXXBAD LABEL REFERENCE
XXX<< END OF FILE >>XX			

MESSAGE : READY LIST ERROR

HIT RETURN TO EXIT

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ประวัติผู้เขียน

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เข้าศึกษาระดับปริญญาโทบัณฑิต สาขาวิทยาศาสตรคอมพิวเตอร์ ภาควิชาวิศวกรรมคอมพิวเตอร์
ในปี พ.ศ. 2525



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย