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RAPID

RESOURCES FOR THE AWARENESS OF POPULATION IMPACT ON DEVELOPMENT

DESCRIPTION OF THE BASIC COMPUTER PROGRAM FOR THE RAPID SOCIOECONOMIC MODEL

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DESCRIPTION OF THE BASIC COMPUTER PROGRAM
FOR THE RAPID SOCIOECONOMIC MODEL

This paper describes the computer program written for the Apple II microcomputer to implement the RAPID s ocioeconomic model. The model equations and the use of the model are described in a separate paper, User's Guide for the RAPID Socioeconomic Computer Model and the Apple II Computer. The general outline of the program and the variables used are described in order to provide the user with the information required to make changes to the model. Before attempting to do so, however, the user should be thoroughly familiar with the use of the BASIC programming language on the Apple II computer. Apple provides an excellent set of manuals for this purpose.

General Program Organization

Due to the design of the Apple II computer it was necessary to divide the program into three separate parts. The high resolution graphics of the Apple do not provide for the use of letters or numbers within the graphics area. Thus, it is necessary to use a program written in machine language that can accomplish this task.

The other two parts of the program are both written in Applesoft BASIC. Again the requirement for two separate parts arises from the design of the high resolution graphics in the Apple. An Apple computer with 48K RAM normally loads the program into the lowest portion of the RAM, starting with the 2048th byte and increasing until the entire program is in memory.

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The variable values are then stored starting from the highest portion of RAM, starting at memory location 49152 and working downwards. When the program storage area meets the variable storage area, the memory is used up and all 48K RAM has been used. Unfortunately, the use of high resolution graphics intrudes on this scheme because it also requires memory space, 8K of RAM. The section of memory selected for the graphics is normally the space from 8K to 16K. Thus the program normally has available to it the space from 2K (2048) to 8K for storage and the space from 16K to 48K is available for variable storage. Since the RAPID program requires much more than 5K of storage there is an obvious problem.

To solve this problem the BASIC program has been divided into two parts. One part resides in low memory, from 2K to 6K, and the other in high memory from 16K up. (The portion of memory from 6K to 8K is used by the machine language graphics program.)

The program in low memory contains the procedures to read in the data base and to perform the demographic calculations. Everything else resides in the second portion of the program. The second portion of the program is the one that will usually be changed when changes are made and it can be edited easily. Editing the first part of the program is considerably more complicated.

To edit the second part of the program the entire program is loaded into memory. At this point a LIST command will show only the first part of the program. To get at the second part it is first necessary to change the pointers that tell the computer where the program resides. In order to do this follow the procedure below.

1. Enter the machine monitor by typing the command CALL -151.

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2. Enter the commands: 67:03
68:40
4001:0
4002:0

3. Type a C[CTRL] to return to BASIC.

Now the second part of the program can be listed and edited. Once the editing is completed the following procedure will reset the pointers to the first part of the program.

1. CALL -151

2. 67:01
68:08

3. C[CNTRL]

If a disk is being used for storage rather than cassette the program should be saved at this point before being run. The reason for this lies in the fact that the operating system of the disk requires 10K of RAM. However, with the program loaded there are only about 10K bytes of storage available. Thus with the disk operating system also loaded no storage remains for program variables. Therefore, the program erases the disk operating system when it runs in order to gain storage space. With the disk operating system erased no disk commands, such as SAVE, can be used. Since reloading the disk operating system destroys any resident program, the need for saving the edited program before running it is clear. There is no memory requirement for the cassette storage system, so this problem does not arise with cassette storage.

An attempt to edit the first part of the program directly will end in disaster since the second part of the program will be shifted to an unknown memory location. To edit the first part the procedure below must be followed.

1. Load just the first part of the program. (In order to do this you must have just this part saved on tape or disk or you must type it into the computer.)

2. Edit this portion in the normal manner.

3. Save the edited version on tape or disk.

4. Enter the following commands:

```
CALL -151
67:03
68:40
4001:0
4002:0
C[CNTRL]
NEW
```

5. Now load just the second portion of the program from tape. It must be loaded from tape since loading from disk will destroy the first program. (The second part of the program can be saved on tape by loading the entire program then using the commands

```
CALL -151
67:03
68:40
4001:0
4002:0
C[CNTRL]
```

to enter the second part, then saving in the normal manner.)

6. Enter the commands:

```
CALL -151
67:01
68:08
```

and save the new program in the normal manner.

NOTE: Due to the division of the program into two parts it cannot be printed just by using the LIST command. To print the entire program first load it into the computer, then use the PR#1 command to set up the printer and the LIST command to list the first part of the program. Then go to the second part of the program using

```
CALL -151
67:03
68:04
4001:0
4002:0
[CNTRL]C
```

and again use PR#1 and LIST to list the second part of the program.

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General Program Structure

The program is divided into a general program that has several sectors and a series of subroutines that perform various functions. Most of the subroutines are located at the beginning of the program and a few at the very end. The main portion of the program begins at line 2500 in the second part. From this point the program branches to different areas depending on the sector chosen by the user. The major portions of the program by line number are as follows:

First Part of Program

20-165	Subroutine used to input new values for variables that are changed by the user.
1400-1451	Initiates the program by asking for country name and reading in data base.
1500-1740	Dimensions variables, initializes variables and reads in model life table.
2000-2125	Asks for users' inputs for fertility and life expectancy.
2130-2420	Performs demographic projections.
2500-2510	Transfers to second part of program.

Second Part of Program

10	Puts screen in text mode, clears string space and initializes Q1 and Q2.
20-165	Subroutine used to input new values for variables that are changed by the user.
210-261	Finds the demographic projection on which the chart scale is based.
300	Writes letters in graphics area by calling the machine language subroutine.
320	Sets up to write a number to graphics area. Used with 330-342.
330-342	Writes a number in graphics area by calling the machine language subroutine.

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360-698	Graphics subroutine. Its major parts are:	
	360-367	Determines type of chart and final year of chart
	368-430	Determines scaling factors and limits of chart
	435-436	Transfers to 8000 if a table is being displayed
	440-573	Draws chart outline and prints labels
	600-601	Determines color of bar or line
	604	Transfers to 680 if a bar chart is being displayed
	605-630	Draws line
	650-698	Draws bar
700-1031	Draws population pyramid.	
1100-1184	Draws people per hectare of arable land display.	
2000-2010	Transfers program to first part.	
2501-2503	Pokes musical program into memory.	
2505	Defines colors.	
2506-2509	Draws RAPID display or displays country name.	
2510-2535	Determines sector to be examined and transfers to that sector.	
2570-2820	Displays demographic variables.	
3000-3570	Calculates and displays economic varialbes. Major sections are:	
	3010-3120	Determines changes made by user
	3150-3285	Performs economic calculations
	3300-3570	Displays economic variables
4000-4450	Calculates and displays education varialbes. Its major sections are:	
	4000-4050	Determines changes by users and variable to be displayed

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	4050-4124	Displays comparison of two projections primary education
	4300-4324	Fills in area on display between two graphed lines, one stored in Z array and one in M (6,T) array
	4400-4450	Calculates and displays other education variables
5000-5150	Calculates and displays health variables.	
5500-5610	Calculates and displays housing variables.	
6000-6400	Calculates and displays nutrition and agriculture variables.	
6999-7001	Determines if answer was YES or NO.	
7010-7015	Determines number selected by user. Checks to be sure it is a valid selection.	
7050-7120	Gets projection to be used in display.	
8000-8080	Displays table of values on the screen or printer.	

Figures 1 and 2 display the general relationship of these program pieces. Table 1 lists the variable names that are used in the program.

Attached to the end of this paper is a listing for the two parts of the BASIC program.

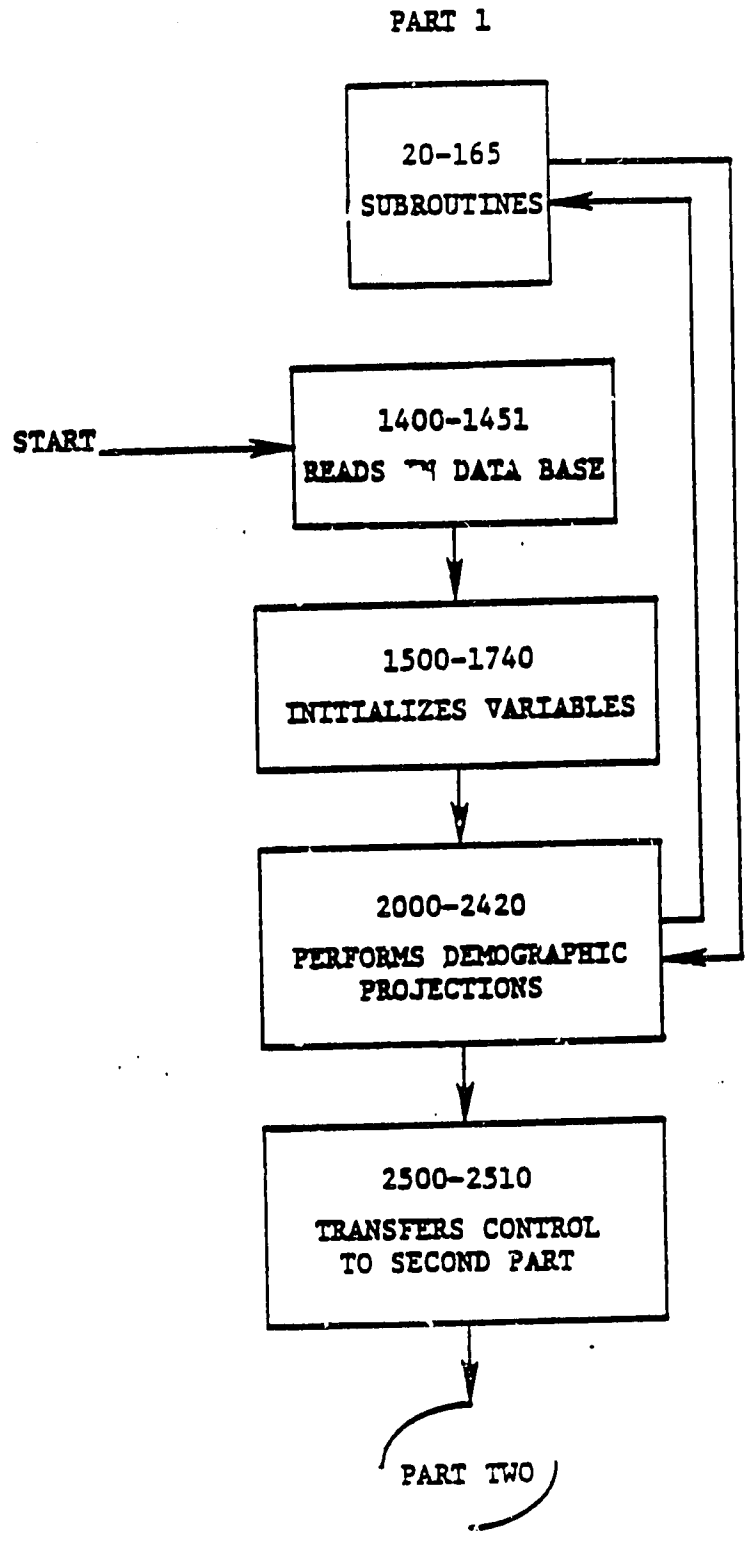

Figure 1. General Program Structure of Part 1

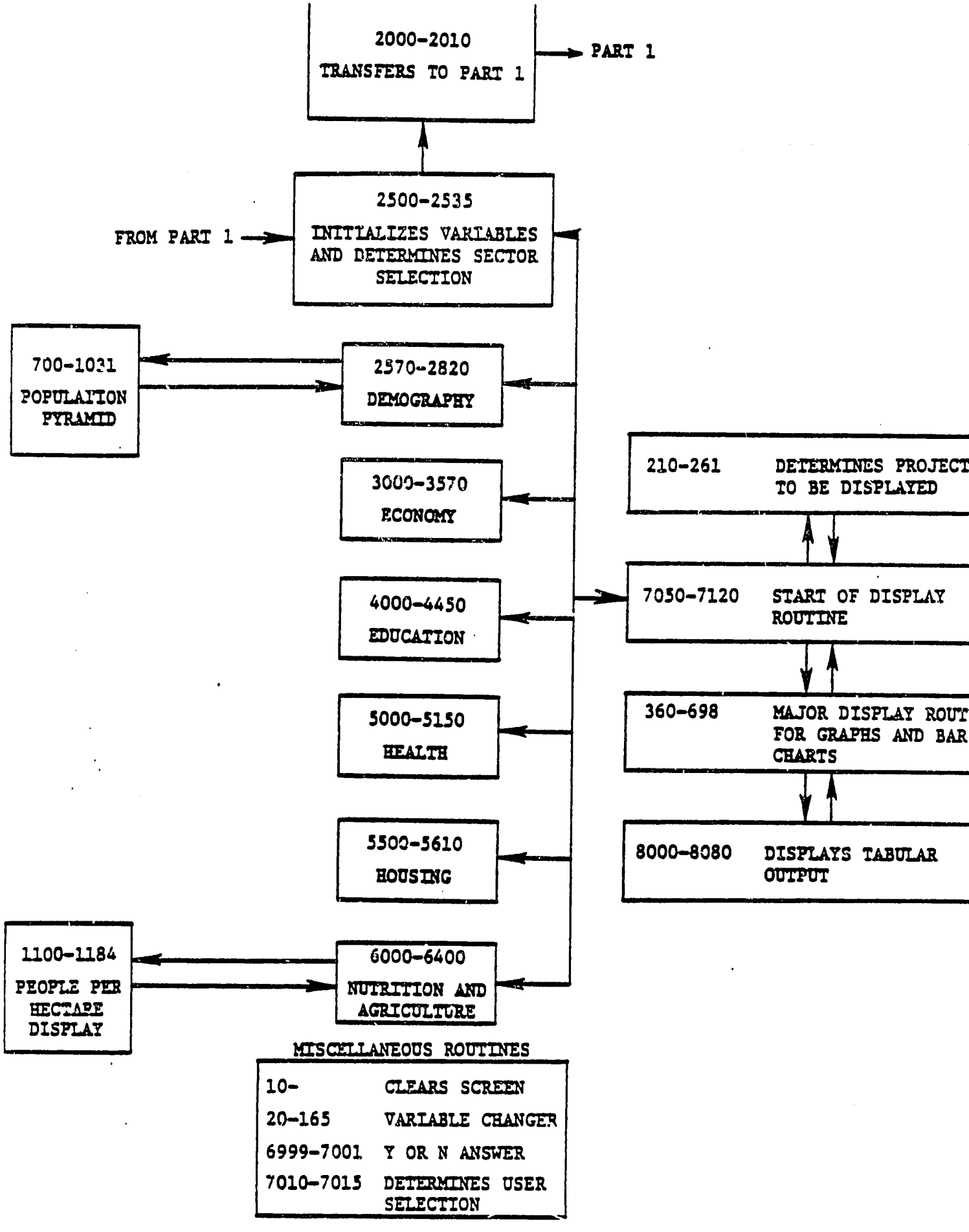

Figure 2. General Program Structure of Part 2

Table 1
RAPID Model Variables

A	A -	Age index 1=0-4, 2=5-9, ... 16=75+, 17=all ages
	A1 -	Selection variable, indicates which option was chosen
	A2 -	Indicates whether economic output is in dollars (1) or local currency (2)
	A8 -	Indicates lowest number acceptable in response to a choice question
	A9 -	Indicates highest number acceptable in response to a choice question
	A$ -	Contains answer to a question = Y for Yes, N for No
B	B -	Determines the number of lines to skip between beeps in the bar chart routine
	B(3,11) -	Births by projection and time
	B2 -	Equals 1 if user has selected 3 bar chart option and chart extends beyond 2005, otherwise it equals 0
	BAR -	Equals 1 if three separate bars are to be plotted, otherwise it equals 0
	BLANK -	Dummy variable used in WRITE Subroutine
C	C$ -	Name of local currency
	CF -	Consumption function adjustment constant
D	D -	Duration of tone during plotting routine
	D(17,6) -	Contains model life table for 17 age groups and 6 life expectancy levels
	D$ -	Set equal to a (CNTRL) D character
E	E(7,11,3) -	Economic array for 7 variables, 11 time periods, 3 projections Variables are: 2 = External public debt 3 = Capital stock 4 = Employment 5 = GNP 6 = GNP per capita 7 = Consumption
F	F(11) -	Fertility for 11 time periods

Table 1 (continued)
RAPID Model Variables

G	GEEN -	Code number for green color
	GLD -	Code number for orange color
	G$ -	Contains display selection, = G for graph, B for bar chart, T for table
H		
I	I -	Index value for FOR loops, also stores sum in housing sector
	I1 -	Index value for FOR loops
	I2 -	Used in variable changer routine
	INIT -	Contains starting address of initialization machine language routine
J	J -	Adjustment factor for household calculations
K		
L	L(11) -	Life expectancy by time period
	LF -	Equals 1 or 2 if labor force and child dependency chart is being drawn, otherwise it equals zero
M	M$(40) -	Used to contain text written to graphics area
	M(20,11) -	A general array used for different purposes in each sector. The second subscript always refers to time. The uses by sector are:

<u>Demographic sector</u>

1-17	= Deaths by age group
18,19,20	= Total deaths for projection A, B, C
1	= Migration rate in display sector

<u>Economic sector</u>

1,2,3	= Labor force in projection A, B, C
5	= Aid as percent of GNP
6	= New job requirements
9	= Labor force participation rate

Table 1 (continued)
RAPID Model Variables

		Education sector
		1 = Primary enrollment rate
		2 = Secondary enrollment rate
		4 = Primary age children
		5 = Primary children in school, first projection
		6 = Primary children in school, second projection
		Housing sector
		1 = Number of households
		2 = New housing requirements
		3 = Average household size
		Agriculture and Nutrition sector
		1 = Growth rate of food supply
		2 = Arable land
		3 = Kilocalories required
		4 = Kilocalories supply
		5 = Ratio of kilocalorie supply to requirements
		6 = Arable land/capita
		Health sector
		1 = People per doctor
		2 = People per hospital bed
		Print routine
		11 = Projection A
		12 = Projection B
		13 = Projection C
		Variable changer routine
		15 = Variable value
		16 = Year
N	NC -	Equals 1 if chart outline is drawn without any plotting
	NUMBER -	Numbers to be written in graphics area
	N$ -	Country name
P	P(17,11,3) -	Population by age group (1=0-4, 17=total), time and projection
	PM -	Indicates if population momentum chart is being displayed
	PURPLE -	Code for purple color

Table 1 (continued)
RAPID Model Variables

Q	Q1 -	Indicates if units are percent (1) or per thousand (2)
	Q2 -	Equals 1 if graph outline has been set up, otherwise equals 0
R		
S	S -	Indicates scenario A=1, B=2, C=3
	S1 -	Scenario number
	S2 -	Scenario number
	SK -	Equals 1 if bar chart plots only every other line, otherwise it equals 0
	S$(3) -	Scenario, 1=A, 2=B, 3=C
T	T -	Time index 1=1975, 2=1980, ..., 11=2025
	T1 -	Index for arable land display
	T7 -	Index of final year to be displayed
	T9 -	Index of final year of projection
	T(158) -	Initial data/base matrix - corresponds to numbers on load sheet. Extra units are used to store and retrieve country name.
U		
V		
W	W -	Index in WRITE subroutine
	WRITE -	Start of machine language subroutine to write text in graphics area
	WHITE -	Code number for white color
X	X -	X-axis plot value
	XH,XL -	High and low limits of X-axis of graph
	XE -	Bar chart spacing variable
	XI -	Bar chart spacing variable

Table 1 (continued)
RAPID Model Variables

Y	Y -	Y-axis plot value
	YL,YH -	High and low limits of y-axis of graph
	Y(11) -	Year, 1=1975, 11=2025
	YB -	Bar chart start variable
	YP -	Bar chart step variable
	Y1,Y2 -	Used in change routine
	Y1,Y2,Y3,Y4, Y5,Y6,YD -	Used to calculate graph in education comparison chart
Z	Z(11) -	Contains values to be plotted
	Z0 -	Lower limit of graph
	Z1 -	Graph scale value
	Z2 -	Graph scale value
	Z6 -	Arable land per capita index number
	Z7 -	Arable land per capita index number
	Z3 -	Graph scale value
	Z9 -	Upper graph limit
	Z$ -	Graph title

```
10  GOTO 1400
20  HOME : PRINT Z$: PRINT "NOW EQUALS ";Z(1): PRINT : PRINT
25  PRINT "PLEASE ENTER NEW VALUES": PRINT " OF ";Z$: PRINT " ENTER AS  Y
    EAR,VALUE"
30  PRINT " AT THE END ENTER 0,0": PRINT "EXAMPLE-": PRINT "2000,3": PRINT
    "2025,2": PRINT "0,0"
35  PRINT :I = 1:M(15,1) = Y(1):M(16,1) = Z(1):Z(0) = Z(1)
65 I = I + 1: INPUT M(15,I),M(16,I): IF M(15,I) = 0 GOTO 71
70 M(15,I) = 5 * INT ((M(15,I) - Y(1)) / 5 + .5) + Y(1): GOTO 65
71 I = I - 1:Y1 = 2: IF I = 1 THEN  RETURN
73  FOR I1 = 2 TO I:Y2 =  INT ((M(15,I1) - Y(1)) / 5) + 1:I2 = 5 / (M(15,
    I1) - Y(Y1 - 1))
75  FOR T = Y1 TO Y2:Z(T) = Z(T - 1) + I2 * (M(16,I1) - M(16,I1 - 1)): NEXT
    :Y1 = Y2 + 1: NEXT
160  IF Y2 >  = T9 GOTO 165
162  FOR T = Y2 + 1 TO T9:Z(T) = Z(T - 1): NEXT
165  RETURN
1400  DIM N$(20):D$ = ""
1401  PRINT D$;"NOMON C,I,O": HOME : PRINT : PRINT "PLEASE ENTER THE NAME
      OF THE COUNTRY": PRINT "YOU WISH TO EXAMINE ";: INPUT N$
1403  PRINT : PRINT : PRINT : PRINT "MAKE CERTAIN THE DATABASE DISK IS IN
     ": PRINT "THE DISK DRIVE": PRINT : PRINT "PRESS RETURN TO CONTINUE":
      INPUT A$
1405  DIM T(158)
1406  HOME : HTAB 5: VTAB 10: PRINT "LOADING DATA FOR ";N$;"..."
1410  PRINT D$;"OPEN ";N$: PRINT D$;"READ ";N$: FOR I = 0 TO 76: INPUT T(
     I): NEXT : INPUT C$
1415  PRINT D$;"CLOSE"
1420 T(77) =  LEN (N$): FOR I = 1 TO T(77):T(77 + I) =  ASC ( MID$ (N$,I,
     1)): NEXT
1425 T(118) =  LEN (C$): FOR I = 1 TO T(118):T(118 + I) =  ASC ( MID$ (C$
     ,I,1)): NEXT
1430  HIMEM: 49152
1440  POKE 54,240: POKE 55,253: POKE 56,27: POKE 57,253
1450  FOR I = 1 TO T(77):N$(I) =  CHR$ (T(77 + I)): NEXT
1451 C$ = " ": FOR I = 1 TO T(118):C$ = C$ +  CHR$ (T(118 + I)): NEXT
1500  READ A,T,S,I,T9,M,BLANK,XH,XL,YH,YL,Q1,Q2,W,A$
1510  DATA    0,0,0,0,0,0,160,0,0,0,0,0,0,0,"Y"
1511 WRITE = 6656:INIT = 6840
1520  DIM P(17,11,3),D(17,6),Y(11),F(11),L(11),Z(11),M(20,11),B(3,11),Z$(
     40),M$(40),E(7,11,3),S$(3)
1530 S$(1) = "A":S$(2) = "B":S$(3) = "C"
1600  FOR L = 1 TO 6: FOR A = 1 TO 17: READ D(A,L): NEXT : NEXT
1610  DATA  .3629,.1704,.0541,.0542,.0607,.0808,.0907,.1006,.1085,.1156,.
     1351,.1703,.2269,.3036,.3966,.5183,.7385,.2593,.1119,.0370,.0373,.04
     77,.0564,.0635,.0707,.077,.0836,.0997,.1277,.1732,.237,.3200,.4333,.
     6941
1620  DATA  .1781,.0712,.0242,.0248,.0321,.0382,.0432,.0484,.0535,.0598,.
     0733,.0961,.1331,.1873,.2633,.3696,.6453,.1111,.0308,.014,.0148,.02,
     .0243,.0276,.031,.0357,.0419,.0533,.0726,.1034,.1508,.2217,.3225,.59
     79
1630  DATA  .0572,.0149,.0061,.0068,.0076,.0121,.0141,.0167,.0205,.0265,.
     0365,.0520,.0772,.1185,.1842,.2810,.5456,.0161,.0021,.0012,.0014,.00
     22,.0028,.0037,.005,.0073,.0017,.0187,.0293,.0469,.0789,.1348,.2241,
     .4750
1720  HOME : PRINT : PRINT : PRINT "PLEASE ENTER THE FINAL YEAR OF": PRINT
     "THE PROJECTION": INPUT T9:T9 =  INT ((T9 - 1975) / 5 + .5) + 1
1730 Y(1) = T(76):L(1) = T(26):F(1) = T(10): FOR T = 2 TO T9:Y(T) = Y(T -
```

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```
1) + 5:F(T) = T(18):L(T) = T(26): NEXT
1740  FOR A = 1 TO 17:P(A,1,1) = T(A):P(A,1,2) = T(A):P(A,1,3) = T(A): NEXT

2000  TEXT : HOME
2010  PRINT "DO YOU WANT TO": PRINT : PRINT "1 CHANGE FERTILITY": PRINT "
      2 CHANGE LIFE EXPECTANCY": PRINT "3 CONTINUE": PRINT "ENTER 1, 2 OR
      3 TO INDICATE": PRINT "YOUR CHOICE"
2050  INPUT A1: IF A1 = 3 THEN  GOTO 2130
2060  ON A1 GOTO 2070,2100: PRINT : PRINT "PLEASE RESPOND WITH 1, 2 OR 3"
      : GOTO 2050
2070 Z$ = "FERTILITY": FOR T = 1 TO T9:Z(T) = F(T): NEXT : GOSUB 20: FOR
      T = 1 TO T9:F(T) = Z(T): NEXT : GOTO 2000
2100 Z$ = "LIFE EXPECTANCY": FOR T = 1 TO T9:Z(T) = L(T): NEXT : GOSUB 20

2110  FOR T = 1 TO T9
2111 L(T) = Z(T)
2112  IF L(T) < 25 OR L(T) > 75 THEN  GOTO 2125
2113  NEXT : GOTO 2000
2125  PRINT : PRINT : PRINT "ERROR - LIFE EXPECTANCY IS": PRINT        LES
      S THAN 25 OR MORE THAN 75": PRINT "ENTER LIFE EXPECTANCY AGAIN": PRINT
      : PRINT : GOTO 2010
2130 S = S + 1: IF S > 3 THEN S = 3
2135  PRINT : PRINT : PRINT "THIS PROJECTION WILL BE DESIGNATED": PRINT
      PROJECTION ";S$(S);: PRINT " IS THIS CORRECT": INPUT A$: IF A$ = "Y"
       THEN  GOTO 2165
2136  PRINT : PRINT : PRINT "SHOULD THIS PROJECTION BE A, B OR C": INPUT
      A$:I = 0
2137 I = I + 1: IF A$ = S$(I) GOTO 2139
2138  GOTO 2137
2139 S = I
2140  IF S = 1 OR S = 2 OR S = 3 THEN  GOTO 2165: PRINT : PRINT "PROJECTI
      ON MUST BE A, B OR C": PRINT "PLEASE REENTER": INPUT A$: GOTO 2140
2165 P(17,0,1) = T(0):P(17,0,2) = T(0):P(17,0,3) = T(0): HOME : VTAB 12: PRIN
T

      : PRINT "CALCULATING DEMOGRAPHIC PROJECTION ..."
2166  FOR T = 1 TO T9
2167  FOR I = 35 TO 75 STEP 10
2168  IF L(T) > I THEN  GOTO 2220
2170 L1 = (I - 25) / 10 + 1
2175  FOR A = 1 TO 17:M(A,T) = D(A,L1 - 1) + (D(A,L1) - D(A,L1 - 1)) * (L
      (T) - I + 10) / 10: NEXT : GOTO 2225
2220  NEXT
2225  IF T = 1 THEN  GOTO 2400
2230 P(17,T,S) = 0:M(17 + S,T) = 0:B(S,T) = 0: FOR A = 2 TO 15:M = P(A -
      1,T - 1,S) * (M(A,T) + M(A,T - 1)) / 2:P(A,T,S) = P(A - 1,T - 1,S) -
      M:P(17,T,S) = P(17,T,S) + P(A,T,S):M(17 + S,T) = M(17 + S,T) + M: NEXT

2291 M = P(15,T - 1,S) * (M(16,T) + M(16,T - 1)) / 2:P(16,T,S) = P(15,T -
      1,S) - M:M1 = P(16,T - 1,S) * (M(17,T) + M(17,T - 1)) / 2:P(16,T,S) =
      P(16,T,S) + P(16,T - 1,S) - M1:P(17,T,S) = P(17,T,S) + P(16,T,S):M(1
      7 + S,T) = M(17 + S,T) + M + M1
2335 B(S,T) = 0: FOR A = 4 TO 9:B(S,T) = B(S,T) + 5 * F(T) * T(A + 15) *
      (P(A,T,S) + P(A,T - 1,S)) * T(25) / 10: NEXT :M = B(S,T) * (M(1,T) +
      M(1,T - 1)) / 2:P(1,T,S) = B(S,T) - M:P(17,T,S) = P(17,T,S) + P(1,T,
      S):M(17 + S,T) = M(17 + S,T) + M
2400  NEXT T
2410 B(S,1) = B(1,2) * B(1,2) / B(1,3)
2420 M(17 + S,1) = M(18,2) * M(18,2) / M(18,3)
2500  POKE 103,03: POKE 104,64: POKE 16386,0: POKE 16385,0
2510  GOTO 2500
```

```
20  PRINT : PRINT "PLEASE ENTER NEW VALUES": PRINT " OF ";Z$: PRINT " ENTER AS  Y
    EAR,VALUE"
30  PRINT " AT THE END ENTER 0,0": PRINT "EXAMPLE-": PRINT "2000,3": PRINT
    "2015,2": PRINT "0,0"
35  PRINT :I = 1:M(15,1) = 1975:M(16,1) = Z(1):Z(0) = Z(1)
70  I = I + 1: INPUT M(15,I),M(16,I): IF M(15,I) < > 0 GOTO 70
71  I = I - 1:Y1 = 2: IF I = 1 THEN  RETURN
73  FOR I1 = 2 TO I:Y2 =  INT ((M(15,I1) - 1975) / 5) + 1:I2 = 5 / (M(15,
    I1) - Y(Y1 - 1))
75  FOR T = Y1 TO Y2:Z(T) = Z(T - 1) + I2 * (M(16,I1) - M(16,I1 - 1)): NEXT
    :Y1 = Y2 + 1: NEXT
160  IF Y2 >  = T9 GOTO 165
162  FOR T = Y2 + 1 TO T9:Z(T) = Z(T - 1): NEXT
165  RETURN
210 S = 1: PRINT : PRINT "DO YOU WANT THIS PROJECTION TO BE": PRINT "BASE
    D ON DEMOGRAPHIC PROJECTION ";S$(S): PRINT "(Y OR N) ";: GOSUB 6999:
     IF A$ = "Y" THEN  RETURN
240  PRINT "WHICH DEMOGRAPHIC PROJECTION DO YOU": PRINT "WANT TO USE": INPUT

    A$: FOR I = 1 TO 3: IF S$(I) = A$ GOTO 243
241  NEXT
242  GOTO 260
243 S = 1: IF P(17,19,S) <  > 0 THEN  RETURN
260  PRINT "DEMOGRAPHIC PROJECTION ";S$(S): PRINT "HAS NOT BEEN MADE": PRINT

    "DO YOU WANT TO MAKE ONE  (Y OR N)": GOSUB 6999: IF A$ = "N" GOTO 24
    0
261 A$ = "X": RETURN
300  FOR W = 1 TO  LEN (M$): POKE 6, ASC ( MID$ (M$,W,1)): CALL WRITE: NEXT
    : RETURN
320  VTAB 1: HTAB 1: PRINT "          ": VTAB 1: HTAB 1: PRINT NUMBER: RETURN

330 I = 0
340  POKE 6, PEEK (1024 + I):I = I + 1: IF  PEEK (6) = BLANK THEN  RETURN

342  CALL WRITE: GOTO 340
360  TEXT : HOME : PRINT "DO YOU WANT TO DISPLAY THE PROJECTION AS": PRINT
    "(G) A GRAPH": PRINT "(B) A BAR CHART": PRINT "(T) A NUMERICAL TABLE
    ": INPUT G$
361  IF G$ = "G" OR G$ = "B" OR G$ = "T" GOTO 363
362  PRINT : PRINT "PLEASE RESPOND WITH G, B OR T": INPUT G$: GOTO 361
363 T7 = T9: PRINT : PRINT : PRINT "SHOULD THE DISPLAY SHOW PROJECTIONS":
     PRINT "TO ";Y(T9): GOSUB 6999: IF A$ = "Y" GOTO 365
364  PRINT : PRINT : PRINT "WHAT SHOULD THE FINAL YEAR OF": PRINT "THE DI
    SPLAY BE": INPUT T7:T7 =  INT ((T7 - Y(1)) / 5 + .5) + 1
365  IF G$ <  > "B" GOTO 368
366  PRINT : PRINT : PRINT "DO YOU WANT": PRINT "1 ONE BAR EACH FIVE YEAR
    S": PRINT "2 THREE BARS EACH 5 OR 10 YEARS": INPUT BAR:BAR = BAR - 1
    : IF BAR <  > 1 AND BAR <  > 0 GOTO 366
367 B2 = 0: IF BAR = 1 AND T7 > 7 THEN B2 = 1
368  HOME : CALL INIT: HGR :YL = 17:YH = 151:XL = 30:XH = 270:Z9 = 0:Z0 =
    1E15: IF LF = 1 THEN YH = 84
369  FOR T = 1 TO T7
370  IF Z9 < Z(T) THEN Z9 = Z(T)
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```
375  IF Z0 > Z(T) THEN Z0 = Z(T)
376  NEXT
379  IF LF = 1 THEN Z9 = P(1,T7,S) + P(2,T7,S) + P(3,T7,1)
381  IF Z9 = 0 GOTO 432
382  IF Z9 = E(6,T7,1) AND E(6,T7,3) > Z9 THEN Z9 = E(6,T7,3)
383  IF  INT (Z9 / T(64)) =  INT (E(6,T7,1)) AND E(6,T7,3) > Z9 / T(64) THEN
     Z9 = E(6,T7,3) * T(64)
385  FOR I =  - 3 TO 12
386 Z8 = 10 ↑ I
387  IF Z9 < Z8 GOTO 400
388  NEXT
400 Z9 = (2 *  INT ((Z9 / 10 ↑ (I - 2) + 2) / 2)) * 10 ↑ (I - 2)
429 Z0 = 0
430 Z1 =  INT ((I - 1) / 3) + 1: IF Z9 / 10 ↑ ((Z1 - 1) * 3) < 10 AND Z1 >
     1 THEN Z1 = Z1 - 1
435  IF G$ = "T" THEN  GOSUB 8000
436  IF G$ = "T" THEN  RETURN
440  HCOLOR= 3: HPLOT XL,YH TO XH,YH TO XH,YL TO XL,YL TO XL,YH
450  VTAB 1: HTAB (20 -  LEN (Z$) / 2):M$ = Z$: GOSUB 300
460  VTAB 2: HTAB 1: ON Z1 GOTO 480,490,500,510,520
480 M$ = " ": GOTO 540
490 M$ = "THOUSANDS": GOTO 540
500 M$ = "MILLIONS": GOTO 540
510 M$ = "BILLIONS": GOTO 540
520 M$ = "TRILLIONS"
540  IF Q1 = 1 THEN M$ = "PER THOUSAND"
541  IF Q1 = 2 THEN M$ = "PERCENT/YEAR"
542  GOSUB 300
545 Z2 = 10 ↑ ((Z1 - 1) * 3)
546  IF Z1 <  = 0 THEN Z2 = 1
550  IF Z9 < 1 GOTO 555
552 NUMBER =  INT (Z9 / Z2 + .5): IF Z9 < 10 THEN NUMBER = ( INT (Z9 * 10
     / Z2 + .5)) / 10
553  GOSUB 320: VTAB 3: HTAB 1: GOSUB 330
554  GOTO 560
555 NUMBER = ( INT (Z9 * 100 / Z2 + .5)) / 100: GOSUB 320: VTAB 3: HTAB 1
     : GOSUB 330
560  IF LF = 1 GOTO 570
561  IF NUMBER < 20 GOTO 565
562 NUMBER =  INT ((NUMBER - Z0 / Z2) / 2 + Z0 + .5): GOSUB 320: VTAB 11:
     HTAB 1: GOSUB 330: GOTO 570
565 NUMBER = ( INT ((NUMBER * 100 - Z0 / Z2) / 2 + Z0 + .5)) / 100: GOSUB
     320: VTAB 11: HTAB 1: GOSUB 330
570 NUMBER = Z0 / Z2: GOSUB 320: VTAB 19: IF LF = 1 THEN  VTAB 11
571  HTAB 1: GOSUB 330:NUMBER = Y(1): GOSUB 320: VTAB 20: IF LF = 1 THEN
     VTAB 12
572  HTAB 3: GOSUB 330:NUMBER = Y(T7): GOSUB 320: HTAB 37: VTAB 20: IF LF
     = 1 THEN  VTAB 12
573  GOSUB 330
590  IF NC = 1 THEN  RETURN
600 D = 20: HCOLOR= GLD: IF S = 2 THEN  HCOLOR= PURPLE
601  IF S = 3 THEN  HCOLOR= GREEN
602  IF G$ = "T" THEN  GOSUB 365: RETURN
603  IF G$ = "T" THEN  GOSUB 365: RETURN
604  IF G$ = "B" GOTO 600
605  FOR I = 0 TO 1
606  FOR T = 1 TO T7
610 Y = YH - ((Z(T) - Z0) / (Z9 -  Z0)) * (YH - YL) + I
612 X = ((Y(T) - Y(1)) / (Y(T7) - Y(1))) * (XH - XL) + XL
```

```
615  IF X > XH THEN X = XH
616  IF Y < YL THEN Y = YL
617  IF Y > YH THEN Y = YH
618  IF T = 1 THEN  HPLOT X,Y
619  IF T <  > 1 THEN  HPLOT  TO X,Y
620  IF I = 1 GOTO 624
621  REM  POKE 768,Y+50*POKE 769,D*CALL 770
624  NEXT
625  NEXT I
630 M$ = S$(S): VTAB (Y / 8) + 1: HTAB 40: GOSUB 300: RETURN
650 XI =  INT ((XH - XL) / (2 * T7 * (1 - .5 * BAR)) + .5) - 3:XE = XI
660  IF BAR < 1 GOTO 681
665  IF XI > 20 THEN XI = 20
667 XE = XI / 3 - 2 * (1 - B2) - 2
679  GOTO 681
680 D = 8:D = 20: GOTO 650
681 T = 0: IF XI > 11 AND BAR < 1 THEN XE = 11
682 T = T + 1 + B2: IF T > T7 GOTO 697
683 Y = YH - ((Z(T) - Z0) / (Z9 - Z0)) * (YH - YL)
684 X = ((Y(T) - Y(1)) / (Y(T7) - Y(1))) * (XH - XI - (XL + XI)) + XL + X
    I
685  IF BAR > 0 AND T7 > 6 THEN X = ((Y(T) - Y(2)) / ( INT (Y(T7) / 10) *
    10 - Y(2))) * (XH - XI - 5 - (XL + XI)) + XL + XI
686  IF BAR > 0 THEN X = X + (S - 2) * (2 * XE + 5)
687  HPLOT X - XE,YH TO X + XE,YH
688 YB =  INT (YH / 2) * 2:YP = Y:YS =  - 2: IF LF <  > 2 GOTO 690
689 YP = 84 + 84 - Y:YS = 2:YB = YH
690  FOR I = YB TO YP STEP YS
691  HPLOT X + XE,I: HPLOT  TO X - XE,I: IF I / B -  INT (I / B) > .01 GOTO
    693
692  REM  POKE 768,I+50*POKE 769,D*CALL 770
693  IF SK = 1 GOTO 695
694  HPLOT X - XE,I - 1 TO X + XE,I - 1
695  NEXT I
696  GOTO 682
697  GOSUB 630
698  RETURN
700  HOME : CALL INIT: HGR :Z = 0
705  FOR T = 1 TO T9: FOR A = 1 TO 16:Z1 = P(A,T,S) / P(17,T,S): IF Z < Z
    1 THEN Z = Z1
710  NEXT : NEXT :Z = 5 *  INT (Z * 100 / 5 + 1)
711 Z1 = Z / 100
720  HCOLOR= 3:M$ = "PERCENT": VTAB 20: HTAB 7: GOSUB 300: VTAB 20: HTAB
    27: GOSUB 300
725 NUMBER = Z: GOSUB 320: VTAB 19: HTAB 1: GOSUB 330
770  GOSUB 320: VTAB 19: HTAB 39: GOSUB 330:M$ = "0": VTAB 19: HTAB 17: GOSUB

    300: HTAB 23: GOSUB 300
772 M$ = "75+": VTAB 3: HTAB 19: GOSUB 300:X = 3: GOTO 800
790 X = X + 1: VTAB X: HTAB 18: GOSUB 300: RETURN
800 M$ = "70-74": GOSUB 790:M$ = "65-69": GOSUB 790:M$ = "60-64": GOSUB 7
    90:M$ = "55-59": GOSUB 790:M$ = "50-54": GOSUB 790:M$ = "45-49": GOSUB
    790:M$ = "40-44": GOSUB 790:M$ = "35-39": GOSUB 790:M$ = "30-34": GOSUB

    790:M$ = "25-29": GOSUB 790:M$ = "20-24": GOSUB 790
810 M$ = "15-19": GOSUB 790:M$ = "10-14": GOSUB 790:M$ = " 5-9": GOSUB 79
    0:M$ = " 0-4": GOSUB 790: HPLOT 0,144: HPLOT  TO 279,144: GOTO 1010
815 X = 115:Y = 143: HPLOT X,Y
820  FOR A = 1 TO 16:Y1 = 0
```

```
830  HCOLOR= 5: IF (A >  = (T) AND A <  = T + 2) OR (A >  = T - 4 AND A <
     = T - 2) THEN  HCOLOR= 6
835  HPLOT X,Y: GOTO 870
844  IF A = 4 GOTO 850
845  IF A = 14 GOTO 860
846  GOTO 870
850  HCOLOR= 5: HPLOT X,Y: GOTO 870
860  HCOLOR= 6: HPLOT X,Y
870 X = 115 - 115 * (P(A,T,S) / P(17,T,S)) / Z1:X1 = 115 - T(50) * (115 -
     X)
880  HPLOT  TO X,Y:Y = Y - 1:Y1 = Y1 + 1: IF Y1 = 8 GOTO 890
881  HPLOT  TO X,Y
882  IF A < 4 OR A > 13 GOTO 887
884  HPLOT  TO X1,Y:Y = Y - 1:Y1 = Y1 + 1: HPLOT 115,Y: IF Y1 = 8 GOTO 89
     0
885  GOTO 880
887  HPLOT  TO 115,Y:Y = Y - 1:Y1 = Y1 + 1: HPLOT  TO 115,Y: IF Y1 = 8 GOTO
     890
888  GOTO 880
890  NEXT
900 M$ =  STR$ (Y(T)): VTAB 5: HTAB 5: GOSUB 300: VTAB 6: HTAB 1:M$ = "PR
     OJECTION": GOSUB 300: VTAB 6: HTAB 12:M$ = S$(S): GOSUB 300
920  HPLOT 158,143:Y = 143
922  FOR A = 1 TO 16:Y1 = 0
925  IF PM = 0 GOTO 932
927  HCOLOR= 5: IF (A >  = (T) AND A <  = T + 2) OR (A >  = T - 4 AND A <
     = T - 2) THEN  HCOLOR= 6
928  HPLOT X,Y: GOTO 950
932  IF A = 4 GOTO 940
933  IF A = 14 GOTO 945
934  GOTO 950
940  HCOLOR= 1: HPLOT X,Y: GOTO 950
945  HCOLOR= 2: HPLOT X,Y
950 X = 158 + 115 * (P(A,T,S1) / P(17,T,S1)) / Z1:X1 = 158 + T(50) * (X -
     158)
960  HPLOT  TO X,Y:Y = Y - 1:Y1 = Y1 + 1: IF Y1 = 8 GOTO 970
961  HPLOT  TO X,Y
962  IF A < 4 OR A > 13 THEN  GOTO 967
964  HPLOT  TO X1,Y:Y = Y - 1:Y1 = Y1 + 1: HPLOT 158,Y: IF Y1 = 8 THEN  GOTO

     970
965  GOTO 960
967  HPLOT  TO 158,Y:Y = Y - 1:Y1 = Y1 + 1: HPLOT  TO 158,Y: IF Y1 = 8 GOTO
     970
968  GOTO 960
970  NEXT
980 M$ =  STR$ (Y(T)): VTAB 5: HTAB 33: GOSUB 300: VTAB 6: HTAB 29:M$ = "
     PROJECTION": GOSUB 300: VTAB 6: HTAB 40:M$ = S$(S1): GOSUB 300: RETURN

1010  HCOLOR= 6:T = 1: GOSUB 815
1015  VTAB 23: HTAB 1: PRINT "ENTER NUMBER OF YEARS TO ADVANCE": PRINT "P
     OPULATION PYRAMID, 0 TO END": INPUT A1
1016  IF A1 = 0 THEN  RETURN
1017 A1 =  INT (A1 / 5 + .5)
1020  IF T + A1 > T9 THEN  RETURN
1030  HCOLOR= 0: HPLOT 115,143: FOR Y = 143 TO 0 STEP  - 1: HPLOT  TO 0,Y
     : HPLOT  TO 115,Y: NEXT : HPLOT 158,143: FOR Y = 143 TO 0 STEP  - 1:
     HPLOT  TO 279,Y: HPLOT  TO 158,Y: NEXT
1031  HCOLOR= 6:T = T + A1: GOSUB 815: GOTO 1015
```

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1100  CALL INIT: HGR : HCOLOR= 3
1103  VTAB 1: HTAB 20 -  LEN (Z$) / 2:M$ = Z$: GOSUB 300
1106 Y = 21:X = 119: GOSUB 1180
1109  VTAB 3: HTAB 20:M$ = " = ": GOSUB 300
1112 Z9 = 0: FOR T = 1 TO T9: IF Z9 < P(17,T,S) THEN Z9 = P(17,T,S)
1115  IF Z9 < P(17,T,S1) THEN Z9 = P(17,T,S1)
1118  NEXT :Z9 = Z9 / (M(2,T9) * 21)
1119  FOR I =  - 3 TO 12:Z8 = 10 ↑ I: IF Z9 < Z8 GOTO 1121
1120  NEXT
1121 Z8 =  INT (Z9 / (10 ↑ (I - 1)) + 1) * (10 ↑ (I - 1)): IF Z8 < 1 THEN
     Z8 = 1
1122 NUMBER = Z8: GOSUB 320: VTAB 3: HTAB 23: GOSUB 330
1124 M$ = Q$: VTAB 3: HTAB 27: GOSUB 300:M$ = "PROJECTION": VTAB 5: HTAB
     5: GOSUB 300: VTAB 5: HTAB 25: GOSUB 300:M$ = S$(S): VTAB 5: HTAB 16
     : GOSUB 300:M$ = S$(S1): VTAB 5: HTAB 36: GOSUB 300:T = 1
1145 NUMBER = Y(T): GOSUB 320: VTAB 6: HTAB 9: GOSUB 330: VTAB 6: HTAB 29
     : GOSUB 330
1148  HCOLOR= 5: FOR X = 28 TO 168 STEP 140: FOR Y = 135 TO 50 STEP  - 1:
      HPLOT X,Y TO X + 84,Y: NEXT : NEXT
1150 W = 0:S2 = S
1151 Z7 = 0:Z6 =  INT ((P(17,T,S2) / M(2,1)) / Z8 + .5):Z1 = 1: IF Z6 <  =
     7 THEN Z1 = 2
1154 Z2 = 7: IF (Z6 - Z7) < 7 THEN Z2 = Z6 - Z7
1157  FOR I = Z7 + 1 TO Z2:X = 22 + 12 * (I - Z7) + 140 * W:Y = (Z1 - 1) *
     28 + 64: GOSUB 1180: NEXT : IF Z2 >  = Z6 GOTO 1166
1160 Z1 = Z1 + 1:Z7 = Z2:Z2 = Z6: IF Z2 > (Z7 + 7) THEN Z2 = Z7 + 7
1163  GOTO 1157
1166 S2 = S1: IF W = 1 GOTO 1169
1167 W = 1: VTAB 23: HTAB 1: PRINT "PRESS RETURN TO ADD SECOND PROJECTION
     ": INPUT A$: HOME : GOTO 1151
1169  VTAB 23: HTAB 1: PRINT "ENTER NUMBER OF YEARS TO ADVANCE": PRINT "E
     NTER 0 TO END": INPUT T1: IF T1 = 0 THEN  RETURN
1170 T = T +  INT (T1 / 5 + .5): IF T > T9 THEN  RETURN
1172  GOTO 1145
1180  HCOLOR= 3
1182  HPLOT X,Y TO X - 2,Y TO X - 5,Y - 3 TO X - 5,Y - 5 TO X - 2,Y - 3 TO
     X + 2,Y - 8 TO X + 5,Y - 5 TO X + 5,Y - 3 TO X + 2,Y TO X,Y TO X,Y +
     10
1183  HPLOT  TO X - 5,Y + 15: HPLOT X,Y + 10 TO X + 5,Y + 15: HPLOT X - 5
     ,Y + 5 TO X + 5,Y + 5
1184  RETURN
2000  POKE 103,01: POKE 104,08
2010  GOTO 2000
2500  GOSUB 10
2501  IF  PEEK (770) = 173 GOTO 2505
2502  POKE 770,173: POKE 771,48: POKE 772,192: POKE 773,136: POKE 774,208
     : POKE 775,5: POKE 776,206: POKE 777,1: POKE 778,3: POKE 779,240: POKE
     780,9: POKE 781,202
2503  POKE 782,208: POKE 783,245: POKE 784,174: POKE 785,0: POKE 786,3: POKE

     787,76: POKE 788,2: POKE 789,3: POKE 790,96: POKE 791,0: POKE 792,0
2505 BUE = 6:PURPLE = 2:GEEN = 1:WHITE = 3:GLD = 5:BK = 4
2507  VTAB 12: HTAB 15: HGR : CALL INIT:M$ = " ": FOR I = 1 TO  LEN (N$):
     M$ = M$ + N$(I): NEXT : GOSUB 300: INPUT A$: TEXT : HOME
2510  PRINT "WHAT SECTOR DO YOU WANT TO": PRINT "EXAMINE NOW": PRINT "1 D
     EMOGRAPHY": PRINT "2 ECONOMY": PRINT "3 EDUCATION": PRINT "4 HEALTH"
     : PRINT "5 HOUSING": PRINT "6 NUTRITION AND AGRICULTURE"
2515  PRINT : PRINT "      OR": PRINT : PRINT "7 WOULD YOU LIKE TO GENERAT
     E ANOTHER": PRINT "  DEMOGRAPHIC PROJECTION"
2530 A9 = 7: GOSUB 7010
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2560 ON A1 GOTO 2570,3000,4000,5000,5500,6000,2000
2570  TEXT : HOME :Q1 = 0:Q2 = 0: FOR T = 1 TO 19:M(1,T) = T(28): NEXT
2580  PRINT "WHICH DEMOGRAPHIC VARIABLE WOULD YOU": PRINT "LIKE TO EXAMIN
      E": PRINT "1 TOTAL POPULATION": PRINT "2 TOTAL BIRTHS": PRINT "3 CRU
      DE BIRTH RATE": PRINT "4 CRUDE DEATH RATE": PRINT "5 POPULATION GROW
      TH RATE": PRINT "6 SIZE OF URBAN POPULATION"
2581  PRINT "7 AGE STRUCTURE OF THE POPULATION": PRINT "8 DEPENDENCY RATI
      O": PRINT "9 CHILD DEPENDENCY RATIO"
2600 A9 = 9: GOSUB 7010
2605  IF A1 = 7 GOTO 2785
2650 Q1 = 0:Q2 = 0: GOSUB 210
2655  IF A$ = "X" THEN  GOTO 2000
2660  ON A1 GOTO 2670,2680,2690,2700,2710,2720,2785,2725,2722
2670 Z$ = "TOTAL POPULATION": FOR T = 1 TO T9:Z(T) = P(17,T,S): NEXT : GOTO
     2730
2680 Z$ = "TOTAL BIRTHS": FOR T = 1 TO T9:Z(T) = B(S,T) / 5: NEXT : GOTO
     2730
2690 Z$ = "CRUDE BIRTH RATE": FOR T = 1 TO T9:Z(T) = B(S,T) / ((P(17,T -
     1,S) + P(17,T,S)) / 400): NEXT :Q1 = 1: GOTO 2730
2700 Z$ = "CRUDE DEATH RATE": FOR T = 1 TO T9:Z(T) = M(17 + S,T) / ((P(17
     ,T - 1,S) + P(17,T,S)) / 400): NEXT :Q1 = 1: GOTO 2730
2710 Z$ = "POPULATION GROWTH RATE": FOR T = 1 TO T9:Z(T) = 100 * ((B(S,T)
      - M(17 + S,T)) / 5) / ((P(17,T - 1,S) + P(17,T,S)) / 2): NEXT :Q1 =
     2: GOTO 2730
2720  IF Q2 = 1 GOTO 2725
2721  PRINT : PRINT "DO YOU WANT TO CHANGE THE RURAL TO": PRINT "URBAN MI
     GRATION RATE FROM ";T(28) * 100;"%": PRINT "OF THE RURAL POPULATION
     MIGRATING": PRINT "TO RURAL AREAS EACH YEAR ";: GOSUB 6999: IF A$ =
     "N" GOTO 2725
2722  FOR T = 1 TO T9:Z(T) = M(1,T): NEXT : GOSUB 20: FOR T = 1 TO T9:M(1
     ,T) = Z(T): NEXT
2725 Z$ = "SIZE OF THE URBAN POPULATION":Z(1) = T(27): FOR T = 2 TO T9:Z(
     T) = Z(T - 1) * P(17,T,S) / P(17,T - 1,S) + 5 * M(1,T) * (P(17,T - 1
     ,S) - Z(T - 1)) * (P(17,T,S) / P(17,T - 1,S)) ↑ .5: NEXT : GOTO 2730

2730  GOSUB 7050: IF A$ = "N" GOTO 2570
2740  GOTO 2660
2785  PRINT : PRINT : PRINT "DO YOU WANT": PRINT "(1) AN AGE PYRAMID": PRINT

     "(2) A TABLE OF VALUES": PRINT "(3) AN AGE PYRAMID SHOWING": PRINT "
         POPULATION MOMENTUM": INPUT A1: IF A1 < 1 OR A1 > 3 GOTO 2785
2786  IF A1 = 1 OR A1 = 3 GOTO 2790
2787  GOTO 2850
2790  PRINT : PRINT : PRINT "WHICH TWO DEMOGRAPHIC PROJECTIONS": PRINT "D
     O YOU WANT TO COMPARE": INPUT A$,M$: FOR I = 1 TO 3: IF A$ = S$(I) GOTO

     2792
2791  NEXT
2792 S = I: FOR I = 1 TO 3: IF M$ = S$(I) GOTO 2794
2793  NEXT
2794 S1 = I
2795  IF A1 = 3 GOTO 2820
2796  GOSUB 700
2800  VTAB 23: HTAB 1: PRINT "DO YOU WANT TO COMPARE TWO MORE ": PRINT "P
     ROJECTIONS": GOSUB 6999: IF A$ = "Y" THEN  GOTO 2790
2810  GOTO 2570
2820 PM = 1: GOSUB 700:PM = 0: GOTO 2570
2850  PRINT : PRINT : GOSUB 240
2860  PRINT : PRINT : PRINT "DO YOU WANT TO USE THE PRINTER": GOSUB 6999:
     IF A$ <  > "Y" GOTO 2866
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2864  PR# 1
2866  FOR A = 1 TO 13 STEP 4: HOME : PRINT : PRINT : PRINT "PROJECTION ";
      S$(S): PRINT
2867  PRINT : PRINT "YEAR  ";A * 5 - 5;"-";A * 5 - 1;: HTAB 16: PRINT A *
      5;"-";A * 5 + 4;: HTAB 25: PRINT A * 5 + 5;"-";A * 5 + 9;: HTAB 34: PRIN
T
      A * 5 + 10;"-";A * 5 + 14: PRINT
2868  FOR T = 1 TO T9
2869  IF T = 1 OR Y(1) / 5 -  INT (Y(1) / 5) = 0 GOTO 2871
2870  GOTO 2872
2871 Y = Y(T): FOR I = 11 TO 14:M(I,T) = P(A + I - 11,T,S): NEXT : GOTO 2
      880
2872  IF Y(1) < 1975 GOTO 2874
2873 P = 1980 - Y(1):P1 =  - 1:Y =  INT (Y(T) / 5) * 5: GOTO 2876
2874 P = 1980 - Y(2):P1 = 0:Y =  INT (Y(T) / 5) + 5: IF T < > T7 GOTO 28
      76
2875 P1 =  - 1:P = 1980 - Y(1)
2876  FOR I = 11 TO 14:M(I,T) = P(A + I - 11,T + P1,S) * (((P(A + I - 11,
      T + 1 + P1,S) / P(A + I - 11,T + P1,S)) ↑ .2) ↑ P): NEXT
2880  PRINT Y;: HTAB 6: PRINT  INT (M(11,T));: HTAB 15: PRINT  INT (M(12,
      T));: HTAB 24: PRINT  INT (M(13,T));: HTAB 33: PRINT  INT (M(14,T))
2881  NEXT
2882  GOSUB 2989
2883  NEXT : PRINT : PRINT
2988  PR# 0: GOTO 2570
2989  PR# 0: VTAB 20: HTAB 1: PRINT "PRESS RETURN TO CONTINUE": INPUT M$:
      IF A$ = "Y" THEN  PR# 1
2990  RETURN
3000  GOSUB 10
3005  IF E(5,T9,1) = 0 GOTO 3008
3006  PRINT "DO YOU WANT TO DO THE ECONOMIC": PRINT "PROJECTIONS AGAIN (Y
      OR N)": GOSUB 6999: IF A$ = "N" GOTO 3290
3008  FOR T = 1 TO T9:M(9,T) = T(50):M(5,T) = T(57): NEXT
3010  GOSUB 10: PRINT "DO YOU WANT TO": PRINT "1 CHANGE THE LABOR FORCE":
      PRINT "  PARTICIPATION RATE": PRINT "2 CHANGE THE RATE OF TECHNICAL
      ": PRINT "  PROGRESS": PRINT "3 CHANGE THE AMOUNT OF FOREIGN": PRINT
      "  AID RECEIVED": PRINT "4 CONTINUE"
3030 A9 = 4: GOSUB 7010
3040  ON A1 GOTO 3070,3100,3120,3150
3070 Z$ = "PARTICIPATION RATE OF POP 15-64": FOR T = 1 TO T9:Z(T) = M(9,T
      ): NEXT : GOSUB 20: FOR T = 1 TO T9:M(9,T) = Z(T): NEXT : GOTO 3010
3100  PRINT : PRINT : PRINT "THE ANNUAL RATE OF TECHNICAL": PRINT "PROGRE
      SS IS ";T(59): PRINT : PRINT "PLEASE ENTER THE NEW RATE": INPUT T(59
      ): GOTO 3010
3120 Z$ = "% GNP RECEIVED AS FOREIGN AID": FOR T = 1 TO T9:Z(T) = M(5,T):
      NEXT : GOSUB 20: FOR T = 1 TO T9:M(5,T) = Z(T): NEXT : GOTO 3010
3150  HOME : VTAB 12: PRINT "CALCULATING ECONOMIC PROJECTION..."
3160  FOR S = 1 TO 3
3161 E(2,1,S) = T(54):E(3,1,S) = T(30):E(4,1,S) = T(52):E(5,1,S) = T(29):
      E(7,1,S) = T(31)
3162 E(6,1,S) = E(5,1,S) / P(17,1,1)
3163  IF P(17,2,S) = 0 THEN  GOTO 3285
3165  FOR T = 1 TO T9:M(S,T) = 0
3170  FOR A = 4 TO 13:M(S,T) = M(S,T) + P(A,T,S) * M(9,T): NEXT
3175  IF T = 1 THEN  GOTO 3280
3185 CF = T(31) / (T(29) * (.8563 - (2.28E - 5) * T(29) / T(17)))
3200 E(2,T,S) = E(2,T - 1,S) + 5 * (M(5,T) * E(5,T - 1,S) - T(55) * E(2,T
      - 1,S))
3205 E(3,T,S) = E(3,T - 1,S) + 5 * (E(5,T - 1,S) - E(7,T - 1,S) + M(5,T) *
      E(5,T - 1,S) - T(55) * E(2,T - 1,S) - T(56) * E(2,T - 1,S) - T(63) *
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3210 I = T(53) * (1 - (E(4,T - 1,S) / M(S,T - 1))) / (1 - E(4,1,S) / M(S,
     1))
3215 E(4,T,S) = (1 + I * (E(3,T,S) - E(3,T - 1,S)) / (E(3,T - 1,S))) * E(
     4,T - 1,S)
3240  IF E(4,T,S) > .98 * M(S,T) THEN E(4,T,S) = .98 * M(S,T)
3245 E(5,T,S) = T(62) * ((1 + T(59)) ↑ (T * 5 - 5)) * (E(3,T,S) ↑ T(60)) *
     (E(4,T,S) ↑ T(61))
3250 E(6,T,S) = E(5,T,S) / P(17,T,S)
3255 E(7,T,S) = E(5,T,S) * (.8563 - E(6,T,S) * 2.28E - 5) * CF
3280  NEXT T
3285  NEXT S
3290  GOSUB 10
3300  PRINT "WHICH ECONOMIC VARIABLES WOULD YOU": PRINT "LIKE TO EXAMINE"
     : PRINT "1 GNP": PRINT "2 GNP PER CAPITA": PRINT "3 CAPITAL PER WORK
     ER": PRINT "4 SIZE OF THE LABOR FORCE": PRINT "5 NEW JOB REQUIREMENT
     S"
3301  PRINT "6 LABOR FORCE AND CHILD DEPENDENTS":A9 = 6: GOSUB 7010
3370  IF Q2 = 1 THEN  GOTO 337.
3372  GOSUB 210
3373  IF A$ = "X" THEN  GOTO 2000
3374  IF A1 <  > 1 AND A1 <  > 2 AND A1 <  > 3 GOTO 3378
3375  PRINT : PRINT : PRINT "DO YOU WANT THE OUPUT TO BE IN ": PRINT "(1)
       U.S. DOLLARS": PRINT "(2) ";C$: INPUT A2: IF A2 <  > 1 AND A2 <  >
     2 GOTO 3375
3378  ON A1 GOTO 3380,3390,3400,3410,3420,3500
3380 Z$ = "GNP (1975 US DOLLARS)": FOR T = 1 TO T9:Z(T) = E(5,T,S): NEXT
     : IF A2 = 1 GOTO 3440
3381 Z$ = "GNP (1975 " + C$ + ")": FOR T = 1 TO T9:Z(T) = Z(T) * T(64): NEXT

     : GOTO 3440
3390 Z$ = "GNP PER CAPITA (1975 US DOLLARS)": FOR T = 1 TO T9:Z(T) = E(6,
     T,S): NEXT : IF A2 = 1 GOTO 3440
3391 Z$ = "GNP PER CAPITA (1975 " + C$ + ")": FOR T = 1 TO T9:Z(T) = Z(T)
      * T(64): NEXT : GOTO 3440
3400 Z$ = "CAPITAL PER WORKER (1975 US DOLLARS)": FOR T = 1 TO T9:Z(T) =
     E(3,T,S) / E(4,T,S): NEXT : IF A2 = 1 GOTO 3440
3401 Z$ = "CAPITAL PER WORKER (1975 " + C$ + ")": FOR T = 1 TO T9:Z(T) =
     Z(T) * T(64): NEXT : GOTO 3440
3410 Z$ = "LABOR FORCE": FOR T = 1 TO T9:Z(T) = 0: FOR A = 4 TO 13:Z(T) =
     Z(T) + P(A,T,S) * M(9,T): NEXT : NEXT : GOTO 3440
3420 Z$ = "NEW JOB REQUIREMENTS PER YEAR":M(6,0) = P(17,0,1) * T(51) / P(
     17,1,1): FOR T = 1 TO T9:M(6,T) = 0: FOR A = 4 TO 13:M(6,T) = M(6,T)
      + P(A,T,S) * M(9,T): NEXT : NEXT
3421  FOR T = 1 TO T9 - 1:Z(T) = ((M(6,T + 1) / M(6,T - 1)) ↑ .1 - 1) * M
     (6,T): NEXT :Z(T9) = M(6,T) * ((M(6,T) / M(6,T - 1)) ↑ .2 - 1): GOTO
     3440
3440  GOSUB 7050: IF A$ = "N" GOTO 3290
3450  GOTO 3378
3500 Z$ = "LABOR FORCE AND CHILD DEPENDENTS": FOR T = 1 TO T9:Z(T) = M(S,
     T): NEXT :LF = 1: GOSUB 7050: IF A$ = "N" GOTO 3520
3510  GOTO 3500
3520 LF = 0: HOME : VTAB 22: PRINT "PRESS RETURN TO ADD DEPENDENTS ";: INPUT

     A$:S = 1
3521  HCOLOR= 0: FOR Y = 85 TO 95: HPLOT 8,Y TO 279,Y: NEXT : HCOLOR= WHI
     TE: HPLOT XL,YH TO XL,150 TO XH,150 TO XH,YH:NUMBER =  INT (Z9 / Z2)
     : GOSUB 320: HTAB 1: VTAB 19: GOSUB 330
3530 Q2 = 1:LF = 2:SK = 1: FOR T = 1 TO T7:Z(T) = P(1,T,S) + P(2,T,S) + P
     (3,T,S): NEXT : GOSUB 7050:SK = 0:LF = 0: IF A$ = "N" GOTO 3290
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3994  GOTO 3990
4000  GOSUB 10: FOR T = 0 TO T9:M(1,T) = T(67):M(2,T) = T(68): NEXT
4010  HOME :X =  FRE (0): PRINT "DO YOU WANT TO": PRINT : PRINT "1 CHANGE
      THE PRIMARY ENROLLMENT": PRINT "  RATE OF ";T(67)
4011  PRINT "2 CHANGE THE SECONDARY ENROLLMENT": PRINT "  RATE OF ";T(68)
      : PRINT "3 CONTINUE":A9 = 3: GOSUB 7010
4020  ON A1 GOTO 4030,4040,4045
4030  FOR T = 1 TO T9:Z(T) = M(1,T): NEXT :Z$ = "PRIMARY ENROLLMENT RATE"
      : GOSUB 20
4031  FOR T = 1 TO T9:M(1,T) = Z(T): NEXT : GOTO 4010
4040 Z$ = "SECONDARY ENROLLMENT RATE": FOR T = 1 TO T9:Z(T) = M(2,T): NEXT
      : GOSUB 20: FOR T = 1 TO T9:M(2,T) = Z(T): NEXT : GOTO 4010
4045  GOSUB 10: PRINT "WHICH EDUCATION DISPLAY DO YOU": PRINT "WANT TO EX
      AMINE": PRINT : PRINT "1 COMPARISON OF PRIMARY EDUCATION": PRINT "
      ENROLLMENT FOR TWO PROJECTIONS"
4046  PRINT "2 PRIMARY AGE CHILDREN": PRINT "3 PRIMARY STUDENTS": PRINT "
      4 SECONDARY AGE CHILDREN": PRINT "5 SECONDARY STUDENTS"
4047 A9 = 5: GOSUB 7010
4049 Q1 = 0:Q2 = 0: GOSUB 210: IF A$ = "X" GOTO 2000
4050  ON A1 GOTO 4052,4400,4410,4420,4430
4052  PRINT : PRINT : PRINT : PRINT "WHICH TWO PROJECTIONS WOULD YOU LIKE
      ": PRINT "TO COMPARE": INPUT A$,M$: FOR I = 1 TO 3: IF A$ = S$(I) THEN
      S = I
4053  NEXT
4054  FOR I = 1 TO 3: IF M$ = S$(I) THEN S1 = I
4055  NEXT
4060  FOR T = 1 TO T9:Z(T) = (P(2,T,S) + P(3,T,S)) * T(65):M(4,T) = Z(T):
      NEXT :Z$ = "PRIMARY AGE CHILDREN":C$ = "G": GOSUB 363
4065 M$ = "TOTAL PRIMARY CHILDREN": VTAB 5: HTAB 6: GOSUB 300: HCOLOR= 3:
      HPLOT 194,40 TO X,Y
4070  FOR T = 1 TO T9:Z(T) = Z(T) * M(1,T):M(5,T) = Z(T): NEXT : GOSUB 60
      0
4090 M$ = "IN SCHOOL": VTAB 18: HTAB 30: GOSUB 300
4100 M$ = "NOT IN SCHOOL": VTAB 9: HTAB 6: GOSUB 300: HCOLOR= 3: HPLOT 50
      ,75 TO XL + 5,YH - (((M(4,1) + M(5,1)) / 2 - Z0) / (Z9 - Z0)) * (YH -
      YL)
4102  HCOLOR= 2: FOR T = 1 TO T9:M(6,T) = M(4,T): NEXT :T1 = 1: GOSUB 430
      0
4103  GOTO 4104: HPLOT 124,52 TO X - 2,Y - 1
4104  VTAB 23: HTAB 1: PRINT "PRESS RETURN TO ADD THE NEXT PROJECTION ";:
      INPUT A$
4105  FOR T = 1 TO T9:Z(T) = (P(2,T,S1) + P(3,T,S1)) * T(65): NEXT :S = S
      1: HCOLOR= 1: HPLOT 1,1: GOSUB 600
4106  FOR T = 1 TO T7 - 1: IF Z(T) <  = M(5,T) GOTO 4113
4107  NEXT
4112  IF T >  = T7 GOTO 4120
4113 T1 = T: HCOLOR= 1: FOR T = 1 TO T9:M(6,T) = M(5,T): NEXT : GOSUB 430
      0
4114 M$ = "CAPACITY SAVINGS": VTAB 7: HTAB 6: GOSUB 300: HCOLOR= 3: HPLOT
      150,50 TO XH - 5,(Y6 + Y5) / 2
4120  VTAB 23: HTAB 1: PRINT "PRESS RETURN TO CONTINUE ";: INPUT A$
4124  GOTO 2500
4300  FOR T = T1 TO T7 - 1
4301  IF Z(T) = M(6,T) GOTO 4324
4302 X1 = ((Y(T) - Y(1)) / (Y(T7) - Y(1))) * (XH - XL) + XL
4304 X2 = ((Y(T + 1) - Y(1)) / (Y(T7) - Y(1))) * (XH - XL) + XL
4306 YD = YH - YL:ZD = Z9 - Z0
4308 Y1 = YH - ((Z(T) - Z0) / ZD) * YD
4310 Y2 = YH - ((Z(T + 1) - Z0) / ZD) * YD
4312 Y3 = YH - ((M(6,T) - Z0) / ZD) * YD
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4314 Y4 = YH - ((M(6,T + 1) - Y0) / LD) * YD
4316  FOR X = X1 TO X2
4318 Y5 = Y2 + (Y1 - Y2) * (X2 - X) / (X2 - X1)
4320 Y6 = Y4 + (Y3 - Y4) * (X2 - X) / (X2 - X1) + 2
4322  HPLOT X,Y5 TO X,Y6: NEXT : NEXT
4324  RETURN
4400 Z$ = "PRIMARY AGE CHILDREN": FOR T = 1 TO T9:Z(T) = (P(2,T,S) + P(3,
     T,S)) * T(65): NEXT : GOTO 4440
4410 Z$ = "PRIMARY STUDENTS": FOR T = 1 TO T9:Z(T) = (P(2,T,S) + P(3,T,S)
     ) * T(65) * M(1,T): NEXT : GOTO 4440
4420 Z$ = "SECONDARY AGE CHILDREN": FOR T = 1 TO T9:Z(T) = (P(3,T,S) + P(
     4,T,S)) * T(66): NEXT : GOTO 4440
4430 Z$ = "SECONDARY STUDENTS": FOR T = 1 TO T9:Z(T) = (P(3,T,S) + P(4,T,
     S)) * T(66) * M(2,T): NEXT
4440  GOSUB 7050: IF A$ = "N" GOTO 4045
4450  GOTO 4050
5000  HOME : FOR T = 1 TO T9:M(1,T) = T(69):M(2,T) = T(70): NEXT
5005  GOSUB 10
5010  PRINT "DO YOU WANT TO": PRINT "1 CHANGE THE NUMBER OF PEOPLE": PRINT
     "  PER PHYSICIAN": PRINT "2 CHANGE THE NUMBER OF PEOPLE": PRINT "  P
     ER HOSPITAL BED": PRINT "3 CONTINUE":A9 = 3: GOSUB 7010
5020  ON A1 GOTO 5030,5040,5050
5030 Z$ = "PEOPLE PER PHYSICIAN": FOR T = 1 TO T9:Z(T) = M(1,T): NEXT : GOSUB

     20: FOR T = 1 TO T9:M(1,T) = Z(T): NEXT : GOTO 5005
5040 Z$ = "PEOPLE PER HOSPITAL BED": FOR T = 1 TO T9:Z(T) = M(2,T): NEXT
     : GOSUB 20: FOR T = 1 TO T9:M(2,T) = Z(T): NEXT : GOTO 5005
5050  GOSUB 10: PRINT "WHICH HEALTH INDICATOR DO YOU WANT": PRINT "TO EXA
     MINE": PRINT : PRINT "1 NUMBER OF PHYSICIANS REQUIRED"
5060  PRINT "2 NUMBER OF HOSPITAL BEDS REQUIRED": PRINT "3 POPULATION AT
     HIGH HEALTH RISK": PRINT "  (MOTHERS AND CHILDREN UNDER 5)": PRINT
5070 A9 = 3: GOSUB 7010
5090 Q1 = 0:Q2 = 0: GOSUB 210: IF A$ = "X" GOTO 2000
5190  ON A1 GOTO 5110,5120,5130
5110 Z$ = "NUMBER OF DOCTORS REQUIRED": FOR T = 1 TO T9:Z(T) = P(17,T,S) /
     M(1,T): NEXT : GOTO 5140
5120 Z$ = "NUMBER OF HOSPITAL BEDS REQUIRED": FOR T = 1 TO T9:Z(T) = P(17
     ,T,S) / M(2,T): NEXT : GOTO 5140
5130 Z$ = "POPULATION AT HIGH HEALTH RISK": FOR T = 1 TO T9:Z(T) = P(1,T,
     S) + (P(4,T,S) + P(5,T,S) + P(6,T,S) + P(7,T,S) + P(8,T,S) + P(9,T,S
     )) * T(25): NEXT
5140  GOSUB 7050: IF A$ = "N" GOTO 5050
5150  GOTO 5100
5500  GOSUB 10: PRINT "WHICH HOUSING VARIABLE DO YOU WANT": PRINT "TO EXA
     MINE": PRINT
5510  PRINT "1 NUMBER OF HOUSEHOLDS": PRINT "2 NUMBER OF HOUSEHOLDS REQUI
     RING": PRINT "  NEW HOUSING": PRINT "3 AVERAGE HOUSEHOLD SIZE"
5520 A9 = 3: GOSUB 7010
5540 Q1 = 0:Q2 = 0: GOSUB 210: IF A$ = "X" GOTO 2000
5541 I = 0: FOR A = 5 TO 13:I = I + P(A,1,S): NEXT :J = (P(17,1,S) / T(71
     )) / (I / 2)
5542 M(1,0) = J * P(17,0,1) * (I / P(17,1,1)) / 2
5543  FOR T = 1 TO T9:I = 0: FOR A = 5 TO 13:I = I + P(A,T,S): NEXT
5544 M(1,T) = J * I / 2:M(3,T) = P(17,T,S) / M(1,T): NEXT
5546  FOR T = 1 TO T9 - 1:M(2,T) = ((M(1,T + 1) / M(1,T - 1)) ↑ .1 - 1) *
     M(1,T) + .02 * M(1,T): NEXT
5548 M(2,T9) = ((M(1,T9) / M(1,T9 - 1)) ↑ .2 - 1) * M(1,T9) + .02 * M(1,T
     9)
5550  ON A1 GOTO 5560,5570,5580
5560 Z$ = "NUMBER OF HOUSEHOLDS": GOTO 5590
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5570 Z$ = "HOUSEHOLDS REQUIRING NEW HOUSING": GOTO 5590
5580 Z$ = "AVERAGE HOUSEHOLD SIZE"
5590  FOR T = 1 TO T9:Z(T) = M(A1,T): NEXT
5600  GOSUB 7050: IF A$ = "N" GOTO 5500
5610  GOTO 5543
6000  FOR T = 1 TO T9:M(1,T) = T(74):M(2,T) = T(75): NEXT :M(4,1) = T(73)

6010  GOSUB 10
6020  PRINT "DO YOU WANT TO CHANGE": PRINT : PRINT "1 THE FOOD SUPPLY GRO
     WTH RATE": PRINT "  FROM ";T(74) * 100;" PERCENT PER YEAR": PRINT "2
      THE AMOUNT OF ARABLE LAND": PRINT "  FROM ";T(75);" HECTARES"
6030  PRINT "3 OR CONTINUE":A9 = 3: GOSUB 7010
6080  ON A1 GOTO 6100,6110,6150
6100 Z$ = "ANNUAL RATE OF GROWTH IN FOOD SUPPLY": GOTO 6120
6110 Z$ = "THE AMOUNT OF ARABLE LAND"
6120  FOR T = 0 TO T9:Z(T) = M(A1,T): NEXT : GOSUB 20: FOR T = 0 TO T9:M(
     A1,T) = Z(T): NEXT : GOTO 6010
6150  GOSUB 10
6160  PRINT "WHICH FOOD AND NUTRITION VARIABLE": PRINT "WOULD YOU LIKE TO
      EXAMINE": PRINT : PRINT "1 TOTAL KILOCALORIES REQUIRED": PRINT "2 T
     OTAL SUPPLY OF KILOCALORIES"
6170  PRINT "3 RATIO OF KILOCALORIE SUPPLY TO": PRINT "  REQUIREMENTS": PRINT

     "4 AMOUNT OF ARABNLE LAND PER PERSON":A9 = 4: GOSUB 7010
6235  IF Q2 = 1 GOTO 6240
6237  GOSUB 210: IF A$ = "X" GOTO 2000
6240  FOR T = 1 TO T9
6260 M(3,T) = 1400 * P(1,T,S) + 2066 * P(2,T,S) + 2475 * P(3,T,S) * .6 +
     T(72) * (1.05 * P(3,T,S) * .4 + 1.038 * P(4,T,S) + P(5,T,S) + P(6,T,
     S) + P(7,T,S) + P(8,T,S) + .95 * (P(9,T,S) + P(10,T,S)) + .9 * (P(11
     ,T,S) + P(12,T,S)) + .8 * (P(13,T,S) + P(14,T,S)) + .7 * (P(15,T,S) +
     P(16,T,S)))
6270  IF T = 1 GOTO 6280
6275 M(4,T) = M(4,T - 1) * (1 + M(1,T)) ↑ 5
6280 M(5,T) = M(4,T) / M(3,T):M(6,T) = M(2,T) / P(17,T,S)
6300  NEXT
6310  ON A1 GOTO 6330,6340,6350,6360
6330 Z$ = "TOTAL KILOCALORIE REQUIREMENTS": GOTO 6370
6340 Z$ = "TOTAL KILOCALORIE SUPPLY": GOTO 6370
6350 Z$ = "RATIO ENERGY SUPPLY/REQUIREMENTS": GOTO 6370
6360 Z$ = "ARABLE LAND/CAPITA (HECTARES)
6361  IF Q2 = 1 GOTO 6370
6362  PRINT "DO YOU WANT A GRAPH (G),BAR CHART (B),": PRINT "TABLE (T) OR
      PICTORIAL DISPLAY (P)": INPUT G$: IF G$ <  > "G" AND G$ <  > "B" AND
     G$ <  > "P" AND G$ <  > "T" GOTO 6362
6363  IF G$ = "G" OR G$ = "B" OR G$ = "T" GOTO 6370
6364 Z$ = "PEOPLE PER HECTARE OF ARABLE LAND":Q$ = "PERSON": PRINT "WHICH
      TWO PROJECTIONS": PRINT "DO YOU WANT TO COMPARE": INPUT A$,M$: FOR
     I = 1 TO 3: IF A$ = S$(I) THEN S = I
6365  NEXT : FOR I = 1 TO 3: IF M$ = S$(I) THEN S1 = I
6366  NEXT : IF P(17,T9,S) = 0 OR P(17,T9,S1) = 0 GOTO 6364
6369  GOSUB 1100: GOTO 6150
6370  FOR T = 1 TO T9:Z(T) = M(A1 + 2,T): NEXT
6390  GOSUB 7050: IF A$ = "N" GOTO 6150
6400  GOTO 6240
6999  INPUT A$: IF A$ = "Y" OR A$ = "N" THEN  RETURN
7000  PRINT : PRINT "PLEASE RESPOND WITH Y (YES) OR N (NO) ";: INPUT A$: IF
     A$ = "Y" OR A$ = "N" THEN  RETURN
7001  GOTO 7000
7010  PRINT : PRINT "ENTER 1 THROUGH ";A9;" TO INDICATE": PRINT "YOUR CHO
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7010  PRINT : PRINT "ENTER 0 TO END THIS SECTION"
7011  INPUT A1: IF A1 < 0 OR A1 > A9 GOTO 7015
7012  IF A1 = 0 THEN  POP
7013  IF A1 = 0 GOTO 2500
7014  RETURN
7015  PRINT : PRINT "RESPONSE MUST BE BETWEEN 0 AND ";A9: PRINT "PLEASE R
      ESUBMIT YOUR RESPONSE": GOTO 7011
7050  IF Q2 = 1 THEN  GOSUB 600
7060  IF Q2 <  > 1 THEN  GOSUB 360
7065  IF G$ <  > "T" GOTO 7070
7066 S = S + 1:Q2 = 1: RETURN
7070  HOME : VTAB 23: HTAB 1: PRINT "DISPLAY ANOTHER PROJECTION (Y OR N)"
      : GOSUB 6999
7080  IF A$ = "N" THEN  RETURN
7110  GOSUB 240: IF A$ = "X" GOTO 2000
7120 Q2 = 1: RETURN
8000  TEXT : HOME
8005  ON Z1 GOTO 8010,8015,8020,8025,8030
8010 M$ = " ": GOTO 8040
8015 M$ = "THOUSANDS": GOTO 8040
8020 M$ = "MILLIONS": GOTO 8040
8025 M$ = "BILLIONS": GOTO 8040
8030 M$ = "TRILLIONS"
8040  IF Q1 = 1 THEN M$ = "PER THOUSAND"
8045  IF Q1 = 2 THEN M$ = "PERCENT/YEAR"
8047 Z2 = 10 ↑ ((Z1 - 1) * 3): IF Z1 <  = 0 THEN Z2 = 1
8049  FOR T = 1 TO T7:M(10 + S,T) = Z(T): NEXT : IF S = 3 GOTO 8055
8051  IF P(17,2,S + 1) <  > 0 THEN  RETURN
8055  IF P$ = "Y" GOTO 8058
8056  IF P$ = "N" GOTO 8059
8057  HOME : PRINT "DO YOU HAVE A PRINTER (Y OR N) ";: GOSUB 6999:P$ = A$
      : IF P$ = "N" GOTO 8059
8058  PR# 1
8059  PRINT : PRINT : HTAB 10: FOR I = 1 TO  LEN (N$): PRINT N$(I);: NEXT
      : PRINT : PRINT Z$: PRINT M$: PRINT : PRINT "YEAR";: HTAB 19: PRINT
      "PROJECTION ": HTAB 11: PRINT S$(1);: HTAB 23: PRINT S$(2);: HTAB 34
      : PRINT S$(3): PRINT
8060  FOR T = 1 TO T7
8061  IF T = 1 OR Y(1) / 5 -  INT (Y(1) / 5) = 0 GOTO 8063
8062  GOTO 8064
8063 Y = Y(T):M1 = M(11,T):M2 = M(12,T):M3 = M(13,T): GOTO 8070
8064  IF Y(1) < 1975 GOTO 8066
8065 P = 1980 - Y(1):P1 =  - 1:Y =  INT (Y(T) / 5) * 5: GOTO 8068
8066 P = 1980 - Y(2):P1 = 0:Y =  INT (Y(T) / 5) * 5 + 5: IF T <  > T7 GOTO
      8068
8067 P1 =  - 1:P = 1980 - Y(1)
8068 M1 = M(11,T + P1) * (((M(11,T + 1 + P1) / M(11,T + P1)) ↑ .2) ↑ P):M
      2 = M(12,T + P1) * (((M(12,T + 1 + P1) / M(12,T + P1)) ↑ .2) ↑ P):M3
      = M(13,T + P1) * (((M(13,T + 1 + P1) / M(13,T + P1)) ↑ .2) ↑ P)
8070  PRINT Y;"      ";INT (M1 * 100 / Z2 + .5) / 100;: HTAB 22: PRINT  INT
      (M2 * 100 / Z2 + .5) / 100;: HTAB 33: PRINT  INT (M3 * 100 / Z2 + .5
      ) / 100
8071  NEXT
8080  PR# 0: PRINT : PRINT : PRINT "PRESS RETURN TO CONTINUE": INPUT A$:A
      $ = "N": RETURN
9999  END
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