ABSTRACT
         This document describes the WORDS software, a
computer program designed to evaluate a reading disabled student's
sight word vocabulary using an Apple II microcomputer. A brief
discussion of various methods of addressing reading difficulties
precedes a detailed description of the WORDS program and its use.
This description covers: (1) the organization of the program; (2) the
learner response system; (3) the examiner's role; (4) methods of
recording responses to stimulus words; (5) the program's branching
capabilities; (6) directions for data viewing; (7) student data
storage; (8) suggestions for successful operation; and (9) directions
for the Save and Print commands. Appendices include a brief
bibliography, a flow-chart of the WORDS scheme, and a printout of the
entire program. (JB)

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Words: A Microcomputer Program for Teaching and Testing

Students' Sight Word Vocabulary

David Majsterek

Central School - Libby, MT

An Innovative Block Grant project developed during the

1983-84 school year for use with learning disabled
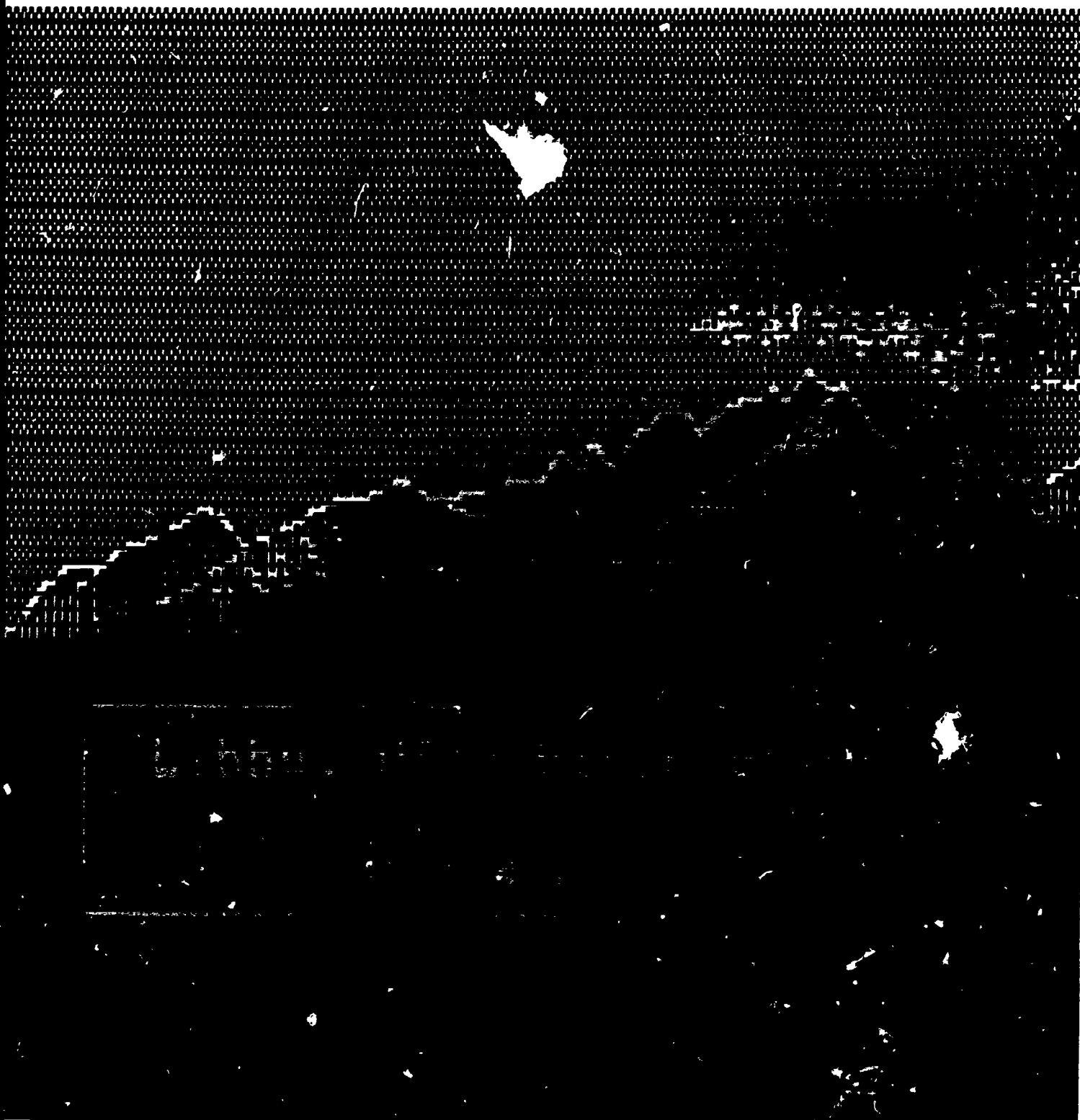
poor readers in the Libby Public Schools.

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WORDS INTRODUCTION

The reading process has been described as consisting
of two dimensions: "bottom up" and "top down" processing
(Johnston, 1983). In bottom up processing the reader
constructs meaningful language from print by putting
together textual components (letter sound combinations,
punctuation, grammatical cues, etc.). Through the
implementation of phonic skills, the reader is presumed
to generate words which are subsequently strung together
into sentences. The culmination of this process is
the gathering of meaning from the printed page.

Top down processing reflects the reader's
experiential background in generating meaning from text
and can be described as a "slot filling" process. This
type of skill is demonstrated in a student's ability to
complete cloze type sentences as well as to read "between
the lines". As such, the reading process can be descr ed
in terms of what readers brings to the page related to
their history.

Those who contend that reading falls solely under one
or the other of these dimensions are unfamiliar with the
difficulties exhibited by reading disabled students. One
needs only to work some time with these students to realize
that the development of reading skills is an idiosyncratic
phenomenon contingent upon both dimensions.

The ease with which children translate printed code into meaning also has a great deal to do with their past record of success. Canino has considered the theory of learned helplessness as it relates to achievement and has concluded that it requires research consideration as it pertains to L D children (1981). What is suggested here is that students who perceive that the ability to read is beyond their control (based on their existing difficulties) will be less inclined to put forth their maximum effort in pursuit of reading achievement. Consequently, teachers working with this group should seek to insure success in the reading program as quickly as possible if intervention is to be effective.

One measure designed to hasten successful feedback has been implementing "linguistic" reading programs These programs employ the strategy of introducing subsets of words which are graphically similar (e.g. Tan Dan can fan Nan.). Another method being suggested here stems from statistical analyses performed on sight words reported by Fry (1980). Referring to his original list of basic sight words (Fry, 1957) he has pointed out that "half of all written material in English is composed of just the first hundred Instant Words and their common varients" (1981, p. 284). Since such a large percentage of words comprises so much reading material, it would seem to

be a reasonable goal to have reading disabled students master these words at the automatic level.

The goal of the Libby, Montana mini grant design was to construct a program which presents these words to the student through the medium of an Apple II microcomputer. While originally designed as an evaluation device, this program may be enhanced by a teacher to present the new Instant Words in an instructional format. The computer program reflects only a rudimentary skill in BASIC programming and, as such, is open for modification and improvement by anyone wishing to do so.

Stimulus presentation time is relatively short (+/- .5 seconds) but can be altered in the program. The teacher may also wish to modify the program along presentation lines including distractors (video and audio), motivators (visual enhancements), stimulus location modification, and recall sequence for error re-presentation. Admittedly, this is only a first step program. However, with input from practitioners in the field who are interested in using the mic is for enhancing instruction, this program has the potential for developing sight word mastery in the reading disabled student.

WORDS PROGRAM

The WORDS program was designed to evaluate a student s
sight word vocabulary using the medium of the microcomputer.
These sight words may consist of the program's Instant Word
List compiled by Fry (1980) and included in the program.
In addition, by entering the program through CONTROL-RESET
and LISTing program numbers 2620-2710 the user can modify
the program to use whatever stimulus items may be desired.

The organization of WORDS consists of a video
presentation of the stimulus words (all upper case letters)
for the student to read and orally respond to the examiner.
The examiner may then enter the responses through the
keyboard or number pad in the following fashion:

A. Typing the actual response

or

B. Using a code

   1. Type "1" if the response is correct

   2. Type "2" to indicate that the error was made
      as a result of a poor sounding out strategy.

   3. Type "3" to indicate that the error was made
      as a result of other than poor sounding out.

   4. Type "4" or "DK" to indicate "Don't know".

A scheme of the presentation is included in Table 1
to indicate the flow of WORDS. Reference to this table

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in the following discussion will assist the user in
understanding how the program is set up.

   After introductory remarks and collecting of student
data (Name, date, & grade level), stimulus words are
presented for +/- .5 seconds. Examiner's recording of
responses or code appears directly on the screen along
the right hand margin, moving from top to bottom under the
word RESPONSE. Since the simulus word disappears prior
to the request for a response entry, this format serves
as a distractor to the student. The examiner may enter
in the code or actual response at this point, correcting
errors by backspacing and retyping. There is only room
for 12 letter answers on the screen. When the examiner
presses RETURN the next stimulus item will be presented
on the monitor in the same location of the previous
stimuli. Typing a question mark "?" in place of the
student's response and pressing RETURN will branch the
program to the viewing, printing and storage sectors of
WORDS.

   The program will ask if the examiner wishes to view
the collected information. Here, it is suggested that the
monitor (NOT THE TERMINAL) be turned off to allow any
further testing to be done without the distraction of
a lighted video screen on in the room, When testing is
concluded or when the child leaves the room switching on

the monitor will permit viewing and printing the stored responses, as well as, transfrerring data to a storage file.

The WORDS program disk is notched on both sides to allow for student data storage on the reverse side. There is room for some storage on the program side of the disk but it is recommended that the reverse side or a separate data disk be used. Material can be transferred after it has been stored on one disk using the Review option. Deletion ability has not been built into the program. However, implementing Apple's procedure of pressing CONTROL-RESET will exit you from the program. Typing CATALOG will permit access to entered data and removal is the standard "DELETE 'file name'" process.

If you decide not to take the option of viewing the data type NO and press return. At times you may be sent to the viewing section of the program anyway. Merely press return and answer the prompt "Do you wish to view more?" with a "N" response. The program will then ask if you wish to print the results. (Deciding not to view the data on the first pass through the program does not stop the user from saving the data and calling it up again on a Review pass.) If you do not have a printer, answer "N" to this prompt. Here is a program problem. Telling the computer to send the program to a printer which is NOT

there will result in "hanging" the system. As a result, all your data will be LOST. There must be an easy solution but I have not yet learned it. In brief, DON'T ASK THE COMPUTER TO PRINT YOUR INFORMATION UNLESS YOU HAVE THE PRINTER CONNECTED AND OPERATIONAL. FAILURE TO HEED THIS ADVISE ON THE FIRST PASS THROUGH THE PROGRAM WILL RESULT IN THE LOSS OF ALL YOUR DATA!

The last branch of the program enables you to Save this data to disk for later viewing or for printing out and viewing at a later date. A flashing prompt will advise the user that you must save the program at this point. Again, failure to do so will result in the loss of all the test information for this particular child. It should also be noted that using both first and last names (or a code number, letter, etc.) will insure that accidental erasure does not occur for another child who has the same name when information is being transferred to the disk file.

From the main menu the user can catalog the files to determine what children have been recorded on the disk. The user may quit the program from the main menu and from the program end. The Review command permits calling up data from the storage disk.

A printout of the entire program is included. Graphics were done using the Graphics Magician program from Penguin

Software. All material is copyable.

References

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Table 1

WORDS Scheme
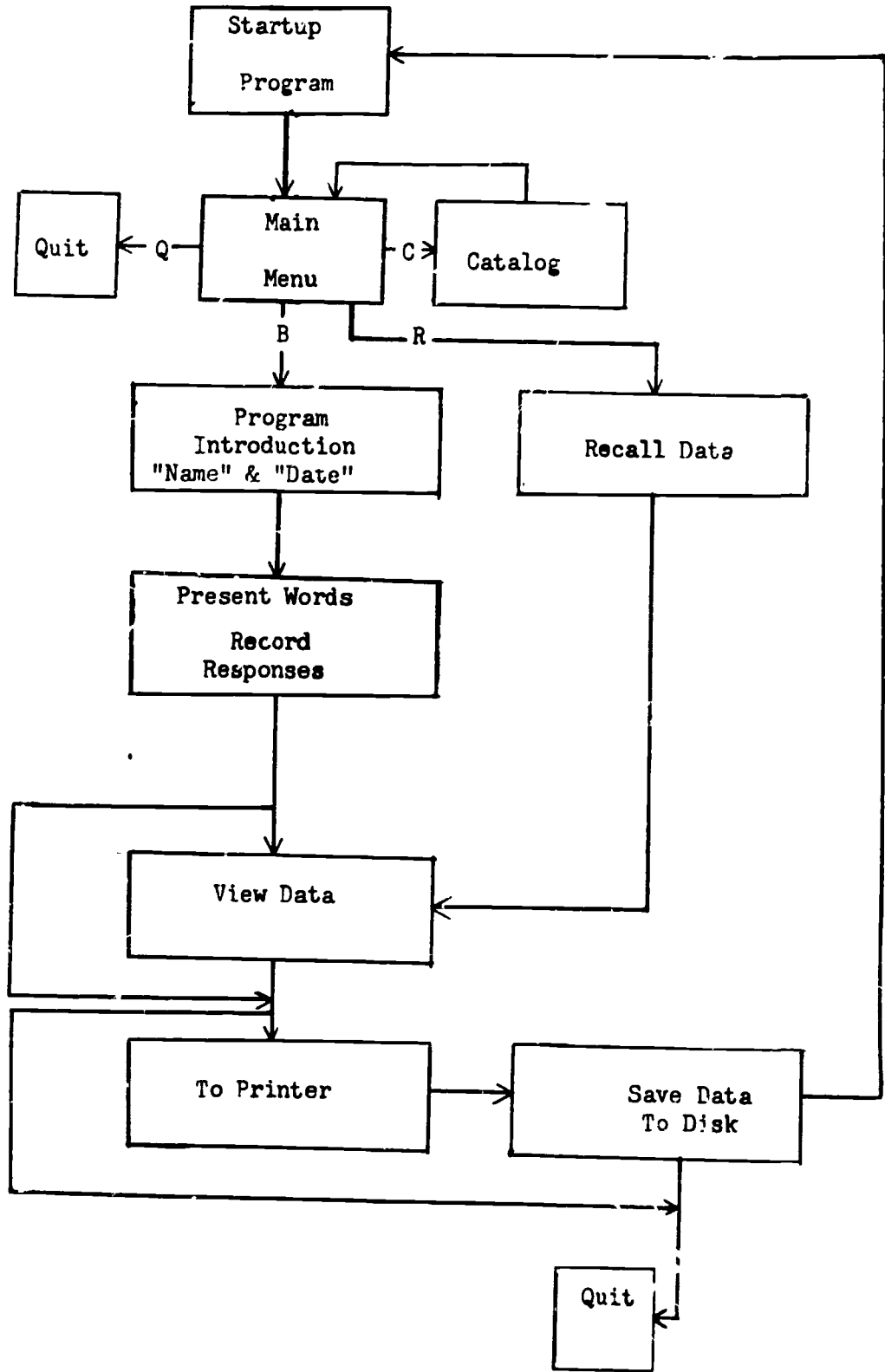
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100   TEXT : HOME
900   DIM A$(301)
910   DIM B$(301)
1000   GOTO 1060
1010 D$ =  CHR$ (13) +  CHR$ (4)
1015   REM  *** CATALOG ROUTINE FROM MENU ***
1020   HOME
1030   PRINT D$;"CATALOG"
1040   INVERSE : PRINT "     PRESS ANY KEY TO RETURN TO MENU    ": NORMAL
   : GET X$
1050   GOTO 1100
1060   HOME
1070   REM  *** MENU ROUTINE ***
1100   HOME : VTAB 10: HTAB 6: PRINT "DO YOU WISH TO "
1110   VTAB 13: HTAB 9: PRINT "BEGIN A NEW FILE    -    TYPE B"
1120   VTAB 14: HTAB 9: PRINT "CATALOG           -    TYPE C"
1130   VTAB 15: HTAB 9: PRINT "QUIT              -    TYPE Q"
1140   VTAB 16: HTAB 9: PRINT "REVIEW A FILE       -    TYPE R"
1145   PRINT : HTAB 37: GET X$
1160   IF X$ <  > "C" AND X$ <  > "B" AND X$ <  > "Q" AND X$ <  > "R" THEN
   1100
1170   IF X$ = "C" THEN 1010
1180   IF X$ = "Q" THEN  HOME : IF X$ = "Q" THEN  END
1190   HOME : IF X$ = "B" GOTO 1240
1200   REM  ALL MENU ALTERNATIVES ARE ADDRESSED AT THIS POINT.
1210   REM  BEGIN TO CREATE DATA OR EVALUATE         FORMERLY STORED DATA
   *********
1220   VTAB 10: INPUT "STUDENT'S NAME: ";NA$
1225   IF NA$ = "" GOTO 1220
1230   GOTO 3670: REM  *** ROUTINE TO GET STORED DATA FROM DISK ***
1240   VTAB 10: INPUT "ENTER STUDENT'S NAME: ";NA$
1245   IF NA$ = "" GOTO 1240
1250   PRINT : PRINT : HTAB 5: INPUT "ENTER TESTING DATE (E.G. 02 15 45)
                                         ";DA$
1255   PRINT : INPUT "    ENTER GRADE LEVEL ";G$
1260   INVERSE : VTAB 20: INPUT "     PRESS RETURN TO BEGIN     ";R$
1270   HOME
1280   VTAB 18: REM   *** DEMONST~~TION ROUTINE ***
1290   ~~INT : PRINT " TO DEM ~  ~TE: TYPE THE WORD PLAY...      (THIS W
   ILL SHOW WHERE STIMULU~ ~5U     WILL APPEAR.)
                                         POINT THIS OUT TO STUDENT
   NOW.         "
1300   NORMAL : PRINT "    PRESS RETURN AFTER DEMONSTRATION.... "
1310   INVER E : VTAB 10: HTAB .0: INPUT I$: NORMAL
1320   HOME : PRINT ' PRINT : INVERSE : PRINT "TO THE EXAMINER": NORMAL :
   PRINT "    AF.ER STIMULUS WORD IS PRESENTED,      TYPE STUDENT'S
   RESPONSE OR A CODE       YOU MAY FIND MORE CONCISE.         "
1330   PRINT : PRINT "     TO TERMINATE ITEM PRESENTATION         TYPE '
   ?' AND PRESS RETURN         "
1340   VTAB 14: FLASH : PRINT "GET READY ";NA$: NORMAL : VTAB 20: HTAB 13
   : PRINT "PRESS ANY KEY TO CONTINUE": GET X$
1350   NORMAL : HOME : GOSUB 2470: REM  *** TO PRESENTATION BEGINNING.
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2470   FOR I = 1 TO 301: READ A$(I): REM    *** PROGRAM PRESENTATION BEGIN
       S HERE ***
2480   NEXT I
2485   FOR J = 1 TO 301
2490   VTAB 10: HTAB 10
2500   PRINT A$(J): FOR K = 1 TO 400: NEXT K
2510   SPEED= 230
2520   HOME : VTAB 8: HTAB 9: PRINT ""
2521   VTAB 9: HTAB 9: PRINT ""
2522   VTAB 10: HTAB 9: PRINT ""
2523 VT AT 11: HTAB 9: PRINT ""
2530   SPEED= 255
2540   HOME
2550   POKE 33,1: POKE 32,39: HOME
2560   INPUT "RESPONSE: ";B$(J): HOME
2570   POKE 34,0: POKE 35,23: POKE 33,40: POKE 32,0
2580   HOME
2600   IF B$(J) = "?" THEN  GOTO 2730
2605   NEXT J
2615   REM  *** HERE IS WHERE PROGRAM CAN BE CHANGED BY
2616   REM  *** DELETING OLD DATA (#S 2620 -2720) AND ADDING NEW DATA.
2617   REM  *** OR BY INSERTING DATA STATEMENT PRIOR TO LINE 2620. ***
2620   DATA   THE,OF,AND,A,TO,IN,IS,YOU,THAT,IT,HE,WAS,FOR,ONE,ARE,AS,WITH
       ,HIS,THEY,I,AT,BE,THIS,HAVE,FROM,OR,ONE,HAD,BY,WORD,BUT,NOT,WHAT,ALL
       ,WHERE,WE,WHEN,YOUR,CAN,SAID,THERE,USE,AN
2630   DATA   EACH,WHICH,SHE,DO,HOW,THERE,IF,WILL,UP,OTHER,ABOUT,OUT,MANY
       ,THEN,THEM,THESE,SO,SOME,HER,WOULD,MAKE,LIKE,HIM, INTO,TIME,HAS,LOOK
       ,TWO,MORE,WRITE,GO,SEE
2640   DATA   NUMBER, NO,WAY,COULD,PEOPLE,MY,THAN,FIRST,WATER,BEEN,CALL,W
       HO,OIL,NOW,FIND,LONG,DOWN,DAY,DID,GET,COME,MADE,MAY,PART,OVER
2650   DATA  NEW,SOUND,TAKE,ONLY,LITTLE, WORK,KNOW,PLACE,YEAR, LIKE,ME,BA
       CK,GIVE,MUST,VERY,AFTER, THING,YOUR,JUST,NAME,GOOD,SENTENCE,MAN,THIN
       K,SAY,GREAT,WHERE,HELP,THROUGH, MUCH,BEFORE,LINE,RIGHT,TOO
2660   DATA  MEAN, OLD,ANY,SAME,TELL,BOY,FOLLOW,CAME, WANT,SHOW,ALSO,AROU
       ND,FORM,THREE,SMALL,SET,PUT,IN,DOES, ANOTHER,WELL,LARGE,MUST,BIG,EVE
       N,SUCH,BECAUSE,TURN,HERE,WHY,ASK,WENT,MEN,READ
2670   DATA   NEED,LAND,DIFFERENT,HOME,US,MOVE,TRY,KIND,HAND,PICTURE,AGAI
       N,CHANGE,OFF,PLAY,SPELL,A'R,AWAY,ANIMAL,HOUSE,POINT,PAGE,LETTER,MOTH
       ER,ANSWER,FOUND,STUDY,STILL,LEARN,SHOULD,AMERICA,WORLD
2680   DATA   HIGH,EVERY,NEAR,ADD,BETWEEN,OWN,BELOW,COUNTRY,PLANT,LAST, SC
       HOOL,FATHER,KEEP,TREE,NEVER,START, CITY,EARTH,EYE,LIGHT,THOUGHT,STOR
       Y,HEAD,UNDER,SAW
2681   DATA  FOOD
2690   DATA  LEFT,DON'T,FEW,WHILE,ALONG,MIGHT,CLOSE,SOMETHING,SEEM,NEXT,H
       ARD,OPEN,EXAMPLE,BEGIN,LIFE,ALWAYS,THOSE,BOTH,PAPER,TOGETHER,GOT,GRO
       UP, OFTEN,RUN,IMPORTANT
2700   DATA   UNTIL,CHILDREN,SIDE,FEET,CAR,MILE,NIGHT, WALK,WHITE,SEE,BEGA
       N,GROW,TOOK,RIVER,FOR,CARRY,STATE,ONCE,BOOK,NEAR,STOP,WITHOUT,SECOND
       ,LATE,MISS
2710   DATA  IDEA,ENOUGH,EAT,FACE, WATCH,FAR,INDIAN,REAL,ALMOST,LET,ABOVE
       ,GIRL,SOMETIMES,MOUNTAIN,CUT,YOUNG,TALK,SOON,LIST,SONG,LEAVE,FAMILY,
       BODY,MUSIC,COLOR
2725   DATA  ?
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2730   VTAB 5: PRINT "RESPONSES HAVE BEEN RECORDED IN COMPUTER    TERMINAL
       AND ARE READY TO VIEW.           IF YOU WISH TO SEE ";NA$;"'S ": PRINT
       "         RESPONSES AT THIS TIME TYPE 'Y'          AND PRESS RETURN.

2740   PRINT "(YOU MAY WISH LEAVE THE TERMINAL ON AND  SWITCH OFF THE MON
       ITOR TO CONTINUE        OTHER TESTING AND VIEW RESULTS LATER.   CAUTIO
       N: DO NOT TURN OFF TERMINAL.)      "
2750   PRINT : PRINT : INPUT X$
2760   IF X$ = "YES" GOTO 2810: IF X$ = "Y" GOTO 2810
2770   REM  OFF TO VIEWING OPTION *****
2780   IF X$ = "NO" GOTO 3440
2790   REM  OFF TO PRINT OPTION
2800   IF X$ = "N" GOTO 3440
2810   HOME : POKE 34,0: POKE 35,23: POKE 33,40: POKE 32,0: HOME
2820   INVERSE : PRINT "STIMULUS WORD / RESPONSE WORD              FOR ";
       NA$: PRINT "ON ";DA$;"   GRADE LEVEL: ";G$: NORMAL : PRINT "PRESS AN
       Y KEY TO CONTINUE....": GET X$
2830   FOR L = 1 TO 15: PRINT A$(L);" / ";B$(L)
2835   NEXT L: GOSUB 3430
2840   FOR L = 16 TO 30: PRINT A$(L);" / ";B$(L)
2845   NEXT L: GOSUB 3430
2850   FOR L = 31 TO 45: PRINT A$(L);" / ";B$(L)
2855   NEXT L: GOSUB 3430
2860   FOR L = 46 TO 60: PRINT A$(L);" / ";B$(L)
2865   NEXT L: GOSUB 3430
2870   FOR L = 61 TO 75: PRINT A$(L);" / ";B$(L)
2875   NEXT L: GOSUB 3430
2880   FOR L = 76 TO 90: PRINT A$(L);" / ";B$(L)
2885   NEXT L: GOSUB 3430
2890   FOR L = 91 TO 105: PRINT A$(L);" / ";B$(L)
2895   NEXT L: GOSUB 3430
2900   FOR L = 106 TO 120: PRINT A$(L);" / ";B$(L)
2905   NEXT L: GOSUB 3430
2910   FOR L = 121 TO 135: PRINT A$(L);" / ";B$(L)
2915   NEXT L: GOSUB 3430
2920   FOR L = 136 TO 150: PRINT A$(L);" / ";B$(L)
2925   NEXT L: GOSUB 3430
2930   FOR L = 151 TO 165: PRINT A$(L);" / ";B$(L)
2935   NEXT L: GOSUB 3430
2940   FOR L = 166 TO 180: PRINT A$(L);" / ";B$(L)
2945   NEXT L: GOSUB 3430
2950   FOR L = 181 TO 195: PRINT A$(L);" / ";B$(L)
2955   NEXT L: GOSUB 3430
2960   FOR L = 196 TO 210: PRINT A$(L);" / ";B$(L)
2965   NEXT L: GOSUB 3430
2970   FOR L = 211 TO 220: PRINT A$(L);" / ";B$(L)
2975   NEXT L: GOSUB 3430
2980   FOR L = 221 TO 235: PRINT A$(L);" / ";B$(L)
2985   NEXT L: GOSUB 3430
2990   FOR L = 236 TO 250: PRINT A$(L);" / ";B$(L)
2995   NEXT L: GOSUB 3430
3000   FOR L = 251 TO 265: PRINT A$(L);" / ";B$(L)
3005   NEXT L: GOSUB 3430
3010   FOR L = 266 TO 280: PRINT A$(L);" / ";B$(L)
3015   NEXT L: GOSUB 3430
3020   FOR L = 281 TO 295: PRINT A$(L);" / ";B$(L)
3025   NEXT L: GOSUB 3430
3030   FOR L = 296 TO 300: PRINT A$(L);" / ";B$(L)
3035   NEXT L
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3410  PRINT : PRINT : PRINT "TO CONTINUE, PRESS ANY KEY ": GET X$
3420  GOTO 3440
3430  PRINT : PRINT : INPUT "DO YOU WISH TO VIEW MORE? Y OR N: ";X$: IF
      X$ = "Y" THEN  RETURN : IF X$ = "YES" THEN  RETURN
3440  HOME : VTAB 10: PRINT "*****************************************
                                        ** DO YOU WISH TO PRINT THIS DAT
      A? Y/N  **                                  *"
3445  VTAB 13: PRINT "*                                  **x********
      ****************************": HTAB 31: GET X$
3446  HOME
3450  IF X$ = "Y" GOTO 3470: IF X$ = "YES" GOTO 3470: REM  OFF TO THE PR
      INT CYCLE
3460  GOTO 3520: REM  OFF TO THE DISK
3470  PRINT "MAKE SURE THAT PRINTER IS ON .          ": PRINT : PRINT : PRINT
      : PRINT "PRESS SPACE BAR TO BEGIN PRINTING. ": GET X$
3480  PR# 1
3490  PRINT "WORD STIMULUS  - WORD RESPONSE FOR:    ";NA$;" ON ";DA$: PRINT
      : PRINT : PRINT
3500  GOSUB 4840
3510  PR# 0
3520  VTAB 10: FLASH : PRINT "IF YOU DO NOT SAVE THIS DATA AT THIS    PO
      INT, YOU WILL LOSE IT FOREVER!         ": NORMAL : PRINT "IN ORDER TO
      SAVE THIS INFORMATION ON A  DISK TYPE 'S' NOW.
      ". PRINT : PRINT
3530  PRINT : PRINT "TYPE ANY OTHER LETTER TO RETURN TO MENU": GET X$
3540  HOME : IF X$ <  > "S" GOTO 6000
3550  PRINT "NOW SAVING WORDS - ";NA$
3560 D$ =  CHR$ (4)
3570  PRINT D$;"OPEN WORDS - ";NA$
3580  PRINT D$;"WRITE WORDS - ";NA$
3584  PRINT G$
3585  PRINT DA$
3590  FOR M = 1 TO 300: PRINT A$(M): PRINT B$(M)
3595  NEXT M
3600  PRINT D$;"CLOSE WORDS - ";NA$
3610  VTAB 10: PRINT "*******************************************"
3620  HOME : PRINT "DATA IS STORED.": INPUT "TYPE B TO RETURN TO BEGINNI
      NG OF         PROGRAM.                     TYPE Q TO QUIT.
      ";QB$
3630  PRINT : PRINT "*****************************************"
3640  IF QB$ = "Q" THEN  END
3650  IF QB$ = "B" GOTO 6000
3670  HOME : REM  *** GETTING STORED DATA FROM DISK ***
3680 D$ =  CHR$ (4)
3690  PRINT D$;"OPEN WORDS - ";NA$
3700  PRINT D$;"READ WORDS - ";NA$
3704  INPUT G$
3705  INPUT DA$
3710  FOR M = 1 TO 300
3720  INPUT A$(M)
3725  INPUT B$(M)
3730  NEXT M
4810  PRINT D$;"CLOSE WORDS - ";NA$
4820  PRINT : PRINT : PRINT : PRINT : PRINT : PRINT
4830  GOTO 2730
4840  FOR M = 1 TO 300
4850  PRINT A$(M);"  /  ";B$(M)
4860  NEXT M
5940  RETURN
6000 D$ =  CHR$ (13) +  CHR$ (4)
6001  PRINT D$"RUN WORDS"
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