RPC 4000

Program K3-01.0

GP *GENERAL PRECISION, INC.* / COMMERCIAL COMPUTER DIVISION

ABSTRACT

The "Address Search 1" program K3-01.0 will examine the data-address
and/or next-address fields of every word in memory to ascertain whether
they contain a specified address. When the address is found in a word,
the word's location and contents will be printed on the typewriter.
The search will continue until all of memory has been examined. The
sectors occupied by the subject program and tracks 125 and 126 of
double-access memory will not be searched.

STORAGE

MAIN MEMORY REQUIRED	158 Sectors
RECIRCULATING SECTORS USED	None
INDEX REGISTER	Used for address modification and fast access storage

UPPER AND LOWER ACCUMULATOR

Both upper and lower accumulators are used by the program and
their contents at entry will be destroyed when an exit from
the program is made.

Prior to entering the program the lower accumulator must be
ONE WORD length; at exit the program leaves the lower accumu-
lator in ONE WORD length.

INPUT

All input parameters are supplied to "Address Search 1" via the key-
board or tape reader.

Two input parameters are required:

1. The address for which memory is to be searched. This
   address is entered in decimal track and sector notation.

INPUT (Cont.)

2. One of the following codes to indicate the mode of search:

D examine the data-address field of each word of
memory.

N examine the next-address field of each word
of memory.

B examine both data-address and next-address
fields of each word of memory.

CALLING SEQUENCE

This routine is normally entered by manually transferring control to
the hexadecimal address assigned to]0010.

The symbolic entry address "]0010" is the only location in "Address
Search 1" that may be "called" or referred to by some other sym-
bolically coded program.

OUTPUT

Two items of information are printed in decimal each time the address
being searched for is found.

1. The location of the word containing the specified address.

2. The contents of that word.

There is no printed output if the searched for address is not found
in memory.

ROAR DEPENDENT FEATURES

    ROAR HEADER TAG REQUIRED   Yes

    COMMUNICATION SYMBOLS

Symbol	Definition
]0010	The entry point of "Address Search 1"

    REGIONS ASSIGNED

Symbol	Number of Sectors
/	7

OPERATING PROCEDURE

  1. OPERATING TIME

    The time is contingent on the mode of search and the number of times
the searched-for address is found.

  2. ACCURACY

    The routine will search for any address; but, if that address is
greater than 12763, the actual search address is modulo 12764 (that
is, 13100 will be entered as 00400, etc.).

  3. LOADING PROCEDURE

    The relocatable tape of this program must be loaded using
Change and Transfer 1, Program J1-01.0.

    The symbolic tape of this program must be assembled by ROAR, with
both a region reservation for region "Slash" (/) and a header tag.

OPERATING PROCEDURE   (Cont.)

   4.   INPUT/OUTPUT DEVICES REQUIRED

       Any input or output device may be selected but typewriter
       input/output is normal.

       Input via TYPEWRITER TO COMPUTER and output via COMPUTER
       TO TYPEWRITER must be manually selected prior to entering
       this routine.

       The margin stops should be separated by at least 25
       spaces. The output format does not require any tab
       settings.

   5.   SENSE SWITCH OPTIONS

       None

   6.   INFORMATION PRINT-OUTS

       Normal output only

   7.   PROGRAM STOPS

       None

   8.   ENTRANCE TO ROUTINE

       Depress ONE OPERATION

       Depress SET INPUT MODE

       Depress EXECUTE LOWER ACCUMULATOR

       Deselect any I/O devices selected off-line

       Depress MASTER RESET

       Depress TYPEWRITER TO COMPUTER

OPERATING PROCEDURE   (Cont.)

   8. ENTRANCE TO ROUTINE   (Cont.)

      Depress COMPUTER TO TYPEWRITER

      Depress START READ

      Type 8 zeros (to clear the lower accumulator)

      Type the hexadecimal address assigned to]0010 and a stop code

      Raise EXECUTE LOWER ACCUMULATOR

      Raise ONE OPERATION

      Depress START COMPUTE

   9. OPERATION OF ROUTINE

      The computer should now be under control of "Address Search 1"
      and waiting for input from the typewriter.

      Type the decimal address for which the search is to be made
      and a stop code.

      Wait for ready light on typewriter.

      Type the code for mode of search and a stop code
      (D-data address, N-next address, B-both addresses).

      Search of memory begins with the first optimum sector fol-
      lowing the last location occupied by the subject routine and
      continues until all of memory has been searched. The sectors
      occupied by the subject routine and the trailing heads 125-
      126 of double access memory are not searched.

      Control is returned to]0010 for the input of new parameters
      as each memory search is completed.

OPERATING PROCEDURE   (Cont.)

10. EXIT FROM ROUTINE

   Depress ONE OPERATION

   Depress SET INPUT MODE

   Depress EXECUTE LOWER ACCUMULATOR

   Depress START READ

   Type 8 zeros (to clear the lower accumulator)

   Type the hexadecimal address of the exit location to which
   control is to be transferred and a stop code.

   Raise EXECUTE LOWER ACCUMULATOR

   Raise ONE OPERATION

   Control will be transferred to the exit location when START
   COMPUTE is depressed.

COMMENTS

   The foregoing description refers to]0010 as the first location in this
   routine. If using the relocatable tape, the address of]0010 will be
   the same as the value of the modifier (SDDDDD*).

EXAMPLES

   None

ADDRESS SEARCH 1

SUMMARY

CONTENTS AT ENTRY

UPPER accumulator	Zero
LOWER accumulator	Zero
INDEX register	Not applicable

SYMBOLIC ENTRY	]0010
REGION ASSIGNMENT	/ (7 Sectors)
RECIRCULATING SECTORS USED	None

CONTENTS AT EXIT

UPPER accumulator	Search address (at 17 or 30)
LOWER accumulator	Mask (at 17 or 30)
INDEX register	Sector plus one of last found search address (at 30)

MANDATORY ROAR INPUT CODES

TAG(Any)***
REG/DDDDD*DDDDD**

NOTE: The mandatory ROAR input codes apply only when assembling the symbolic tape of this routine.

Read Code D,N,B ← Read Search Address ← ⊐OOIO

Code =D — YES → DD: ⊐OOIO → SW

NO ↓

Code =N — YES → NN: ⊐OOIO → SW Search Addr And Mask → N Address Of Accumulators

NO ↓

BB: NN → SW

Search Address And Mask → D Address Of Accumulators

LOOP: Search A Track Of Memory

Address Found — YES → FND: Store Found Track And Found Sector + I

NO ↓

ON: Track + I → Track

End Of Search — YES → Do SW → ⊐OOIO / NN

NO ↓

By-Pass Tracks 125 & 126

Last Found Location In Track Printed — YES / NO

Print Found Location And Its Contents

PRNT: Load Words In / Region With Information To Be Printed

SML: Repeat Search Of Track