

.REM 8

IDENTIFICATION  
\*\*\*\*\*

PRODUCT CODE: MAINDEC-11-DZRKJ-E-D  
PRODUCT NAME: RK11 BASIC LOGIC TEST I  
DATE CREATED: APRIL, 1977  
MAINTAINER: DIAGNOSTIC GROUP  
AUTHOR: JIM KAPADIA  
REVISED BY: PERVEZ ZAKI  
TOM SAWYER  
CHUCK HESS

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. NO DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS MANUAL.

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED TO THE PURCHASER UNDER A LICENSE FOR USE ON A SINGLE COMPUTER SYSTEM AND CAN BE COPIED (WITH INCLUSION OF DIGITAL'S COPYRIGHT NOTICE) ONLY FOR USE IN SUCH SYSTEM, EXCEPT AS MAY OTHERWISE BE PROVIDED IN WRITING BY DIGITAL.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1975,1977 BY DIGITAL EQUIPMENT CORPORATION

QUICK LOOK-UP OPERATING INSTRUCTIONS

FOR A QUICK REFERENCE, LOOK UP THE FOLLOWING SECTIONS:

- 1.0 ABSTRACT
- 2.0 REQUIREMENTS
- 4.1 LOADING AND OPERATOR ACTION
- 5.0 SWITCH OPTIONS

FOR A MORE COMPLETE EXPLANATION REFER TO THE TABLE OF CONTENTS BELOW AND THE FOLLOWING DOCUMENT.

TABLE OF CONTENTS

1.0	ABSTRACT
2.0	REQUIREMENTS
2.1	EQUIPMENT
2.2	PRELIMINARY PROGRAMS
2.3	EXECUTION TIME
3.0	STARTING ADDRESS
4.0	PROGRAM CONTROL MODES & OPERATOR ACTION
4.1	PAPER TAPE
4.2	RKDP DUMP MODE
4.3	RKDP CHAIN MODE
4.4	ACT11
5.0	SWITCH OPTIONS
6.0	SCOPE LOOPS
7.0	PROGRAM STRUCTURE
8.0	ERROR REPORTING
9.0	ERROR INTERPRETATION
10.0	HANDLERS AND COMMON ROUTINES
10.1	TRAP HANDLER
10.2	SCOPE HANDLER
10.3	ERROR HANDLER
10.4	CONTROL RESET ROUTINE
10.5	CONTROL READY ROUTINE
10.6	TIME DELAY ROUTINE
10.7	OTHER ROUTINES
	TTY HANDLER (I/O), ERROR TIMEOUT ROUTINE
	POWER DOWN/POWER UP ROUTINE
11.0	UNEXPECTED TIMEOUTS & RK11 INTERRUPTS
12.0	QUICK VERIFYING MODE

1.0 ABSTRACT

THE RK11 LOGIC TESTS CONSIST OF A SERIES OF TESTS AIMED AT CHECKING THE BASIC LOGIC OF THE RK11 CONTROLLER.

THE LOGIC TESTS CONSISTS OF TWO PARTS. THIS PROGRAM IS PART-I AND IT CHECKS ONLY THE DRIVE-INDEPENDENT LOGIC OF THE RK11 CONTROLLER (SEE SEC. 9-0). IT SHOULD BE NOTED THAT LOGIC TEST-I AND LOGIC TEST-II TOGETHER CONSTITUTE A COMPLETE PROGRAM AND HENCE BOTH OF THEM SHOULD BE RUN.

USED CORRECTLY THIS PROGRAM CAN BE AN EFFECTIVE ANALYTIC AND DIAGNOSTIC TOOL.

2.0 REQUIREMENTS

2.1 EQUIPMENT

- A. PDP11 WITH CONSOLE TELETYPE.
- B. 8K OF MEMORY
- C. RK11 OR RKV11 CONTROLLER

2.2 PRELIMINARY PROGRAMS

NONE

2.3 EXECUTION TIME

ERROR FREE FIRST PASS ON PDP11/20 WITH CORE MEMORY TAKES APPROXIMATELY ONE MINUTE. CONSIDERABLY LESS FOR FASTER MACHINES OR MEMORIES.

3.0 STARTING ADDRESS

200 FOR ANY MODE OF OPERATION. NORMAL START UP WITH ALL SWITCHES DOWN.

4.0 PROGRAM CONTROL MODES & OPERATOR ACTION

PAPER TAPE LOADING  
RKDP DUMP MODE  
RKDP CHAIN MODE  
ACT11

4.1 PAPER TAPE LOADING

4.1.1 LOAD PROGRAM INTO MEMORY USING STANDARD PROCEDURE FOR ABS TAPES.

4.1.2 PUT THE DRIVES ON 'WRT PROT' AND 'LOAD' AS A PRECAUTION AGAINST MALFUNCTIONING.

4.1.3 LOAD ADDRESS 200

4.1.4 SET SWITCHES IF DESIRED (SEE SEC 5.0) IF TESTING ON SIMULATOR PUT SW 10 UP.

PRESS START.

4.1.5 THE PROGRAM IDENTIFIES ITSELF (NAME, MAINDEC NO).

RK11 LOGIC TEST I  
MAINDEC-11-DZRKJ-E

4.1.6 THEN THE PROGRAM PROCEEDS WITH TESTING. AT THE END OF A PASS THE FOLLOWING TYPE-OUT OCCURS

END PASS # X

WHERE X= PASS NUMBER (1,2,3...), CONTROL IS PASSED TO THE BEGINNING OF THE PROGRAM AND RE-EXECUTION BEGINS.

4.1.7 ERROR FREE PASSES OF THE PROGRAM APPEAR AS SHOWN BELOW.

RK11 LOGIC TEST I  
MAINDEC-11-DZRKJ-E  
END PASS # 1  
END PASS # 2

...  
...

4.2 RKDP DUMP MODE

4.2.1 THE PROGRAM IS LOADED INTO THE MEMORY BY THE RKDP MONITOR

4.2.2 START AS NORMALLY USING SA 200

4.2.3 THE PROGRAM IDENTIFIES ITSELF (NAME, MAINDEC NO.) AND PROCEEDS WITH TESTING.

4.3 RKDP CHAIN MODE

THE PROGRAM IS CHAIN-LOADED FROM THE RKDP PACK. AFTER THE PROGRAM IDENTIFIES ITSELF, IT PROCEEDS WITH TESTING.

4.4 ACT11 MODE

THE PROGRAM IS LOADED BY THE ACT11 MONITOR. ON STARTING, IT PROCEEDS WITH THE EXECUTION OF THE TESTS AS BEFORE, BUT THE TITLE IS NOT TYPED OUT.

5.0 SWITCH OPTIONS

IF THE PROGRAM IS BEING RUN ON A SWITCHLESS PROCESSOR (I.E. AN 11/34) THE PROGRAM WILL DETERMINE THAT THE HARDWARE SWITCH REGISTER IS NOT PRESENT AND WILL USE A 'SOFTWARE' SWITCH REGISTER. THE 'SOFTWARE' SWITCH REGISTER IS LOCATED AT LOCATION 176 (8). THE SETTINGS OF THE 'SOFTWARE' SWITCHES ARE CONTROLLED THROUGH A KEYBOARD ROUTINE WHICH IS CALLED BY TYPING A 'CONTROL G'. THE PROGRAM WILL RECOGNIZE THE 'CONTROL G' WHENEVER THE PROGRAM ENTERS THE SCOPE ROUTINE OR BEGINS A NEW TEST. THE 'SOFTWARE' SWITCH VALUES ARE ENTERED AS AN OCTAL NUMBER IN RESPONSE TO THE PROMPT FROM THE SWITCH ENTRY ROUTINE:

'SWR = NNNNNN NEW #'

EACH TIME SWITCH SETTING ARE ENTERED, THE ENTIRE SWITCH REGISTER IMAGE MUST BE ENTERED. LEADING ZEROS ARE NOT REQUIRED. 'RUBOUT' AND 'CONTROL U' FUNCTIONS MAY BE USED TO CORRECT TYPING ERRORS DURING SWITCH ENTRY.

ON PROCESSORS WITH HARDWARE SWITCH REGISTERS, THE 'SOFTWARE' SWITCH REGISTER MAY BE USED. IF THE PROGRAM FINDS ALL 16 SWITCHES IN THE 'UP' POSITION, ALL SWITCH REGISTER REFERENCES WILL BE TO THE 'SOFTWARE' REGISTER AND THE PROCEDURES DESCRIBED ABOVE MUST BE FOLLOWED.

SW<15>=1 HALT ON ERROR  
SW<14>=1 LOOP ON TEST  
SW<13>=1 INHIBIT ERROR PRINTOUTS  
SW<12>=1 CYCLE ON ERROR TO THE PREVIOUS  
'SCOPE' STATEMENT  
SW<11>=1 INHIBIT ITERATIONS  
SW<10>=1 TESTING ON SIMULATOR  
SW<09>=1 LOOP ON SPECIFIC ERROR  
SW<08>=1 LOOP ON TEST AS PEP SW<07:00>

5.1 SW<15>

THE PROGRAM HALTS ON ENCOUNTERING AN ERROR, AFTER TYPING OUT THE ERROR MESSAGE AND PERTINENT INFORMATION. PRESSING "CONTINUE" RESTORES NORMAL OPERATION OF THE PROGRAM.

5.2 SW<14>

THE PROGRAM LOOPS ON THE SUBTEST THAT IS BEING EXECUTED WHEN THE SWITCH IS PUT ON. THIS SWITCH IS USED NORMALLY ALONG WITH SW 15. SEE SEC 8.0.

5.3 SW <13>

THIS SWITCH INHIBITS ALL ERROR MESSAGES. NORMALLY USED WHEN LOOPING ON TEST (SW 14) OR LOOPING ON

ERROR (SW 9).

5.4 SW <12>

THIS SWITCH ALLOWS THE PORGRAM TO CYCLE FROM THE POINT OF ERROR TO THE PREVIOUS SCOPE STATEMENT. NOTE THAT IN DOING SO ANY INITIALIZATION BEING DONE AT THE BEGINING OF THE SUBTEST WILL BE DONE AGAIN AND AGAIN. SEE SEC 8.0 FOR DIFFERENT SCOPE LOOPS AVAILABLE.

5.5 SW <11>

EACH SUBTEST WILL BE EXECUTED ONLY ONCE. NORMALLY

AFTER THE FIRST PASS, EACH SUBTEST IS ITERATED A NUMBER OF TIMES (USUALLY 50, 5 IN SOME CASES). SETTING THIS SWITCH INHIBITS ITERATIONS, SO THAT QUICK PASSES CAN BE MADE.

5.6 SW <10>

THIS SWITCH WHEN SET INDICATES THAT TFSTING IS BEING DONE ON A SIMULATOR. THE SWITCH SHOULD BE PUT UP BEFORE STARTING THE PROGRAM. NOTE THAT RK11C IS NOT COMPATIBLE WITH THE SIMULATOR.

5.7 SW <09>

THIS SWITCH PROVIDES THE TIGHTEST POSSIBLE SCOPE LOOP. NOTE THAT UNLIKE SW12 THE INITIALIZATION OF PARAMETERS AT THE BEGINNING OF THE SURTEST MAY NOT BE DONE IN THIS CASE. THIS SWITCH IS HELPFUL WHEN A PARTICULAR PART OF A SUBTEST IS BEING REPEATED USING DIFFERENT PARAMETERS AND YOU WANT TO SCOPE ON THE PARAMETER IN ERROR. (EXAMPLE: PKDA IS BEING WRITTEN AND READ BACK WITH COUNT PATTEPNS FROM 1 TO 177777. PATTERN 561 IS GIVING ERROR, YOU MIGHT NOT WANT TO GO THROUGH THE 560 PATTERNS, BEFORE HITTING ERROR ON THE 561TH PATTERN. IN THIS CASE SW 9 WILL GIVE YOU A SCOPE LOOP ON THE 561TH PATTERN ONLY.)

5.8 SW <08>

THIS SWITCH IS USED TO SELECT A PARTICULAR TEST (AS PER SW<00-07>) FOR EXECUTION AND SUBSEQUENT LOOPING. THUS IF TEST 15 IS TO BE SELECTED THE SWITCH SETTING WOULD BE 000415. IT SHOULD BE NOTED THAT BEFORE SELECTING TEST 15, ALL THE PREVIOUS TESTS (1-14) WILL BE EXECUTED.

6.0 SCOPE LOOPS

THERE ARE THREE KINDS OF SCOPE LOOPS AVAILABLE

1. SW14: LOOPING IS DONE FOR THE ENTIRE SUB-TEST
2. SW12: LOOPING IS DONE FROM THE POINT OF ERROR BACK TO THE PREVIOUS 'SCOPE' STATEMENT.
3. SW09: PROVIDE THE TIGHTEST POSSIBLE SCOPE LOOP  
SEE SEC. 5.7

EXAMPLE:

TST1: SCOPE  
!

INITIALIZATION

! ERROR 1  
! ERROR 2  
! ERROR 3  
! ERROR 4  
!

TST2: SCOPE

THE SEQUENCE OF LOOPING FOR DIFFERENT CASES IS EXPLAINED BELOW. NOTE THAT 'TST1' AND 'TST2' ARE TAGS WHICH DEFINE THE BOUNDARY OF A TEST, (IN THIS CASE TEST 1). TEST 1 STARTS AT 'TST1' AND ENDS JUST BEFORE 'TST2'.

IN THE ILLUSTRATION BELOW --> INDICATES THE POINT FROM WHERE RETURN IS MADE AND LOOPING IS DONE.

1. ERROR 2 OCCURS, SW 14 SET.  
TST1..ERROR 2..TST2-->TST1..ERROR 2..TST2-->TST1...
2. ERROR 2 OCCURS, SW 12 SET.  
TST1..ERROR 2-->TST1..ERROR2-->TST1...
3. ERROR 2,3, SW 14 SET.  
TST1..ERROR 2..ERROR 3..TST2-->TST1..ERROR 2..ERROR 3..TST2-->TST1...
4. ERROR 2,3, SW 12 SET.  
TST1..ERROR 2-->TST1..ERROR 2-->TST1....

NOTE THAT LOOPING IS DONE FROM THE VERY FIRST ERROR ENCOUNTERED. THE MORE BASIC AND EARLY THE EARLIER IT OCCURS AND IS DETECTED AND SHOULD BE FIXED.





8.0 ERROR REPORTING

THE ERROR TABLE STARTING AT \$ERRTB CONTAINS INFORMATION PERTAINING TO EVERY ERROR THAT CAN OCCUR. EACH ITEM IN THE TABLE CONSISTS OF FOUR ENTRIES.

- A. EM - THIS IS A POINTER TO THE ERROR MESSAGE TO BE TYPED OUT WHEN THE ERROR OCCURS.
- B. DH - THIS IS A POINTER TO THE DATA HEADER TO BE TYPED OUT.
- C. DT - THIS IS A POINTER TO THE DATA WHICH IS TO BE TYPED OUT UNDER THE HEADERS.

D. 0 - THIS IS A TERMINATOR SIGNIFYING THE END OF THE ITEM.

THE ERROR CALL IS AN EMT INSTRUCTION WITH ITS LOWER BYTE ENCODED TO INDICATE THE ERROR NUMBER. THUS "ERROR 1" WOULD BE (EMT+1) TE 104001.

EVERY ERROR CORRESPONDS TO AN ITEM IN THE ERROR TABLE. THUS "ERROR 14" WOULD CORRESPOND TO ITEM 14. AS FAR AS POSSIBLE, THE ERROR MESSAGES HAVE BEEN KEPT SHORT, BUT CLARITY IS NOT SACRIFICED FOR BREVITY. INSPITE OF THIS, IF THE USER FINDS A NEED, HE CAN LOOK UP THE ENTIRE ERROR MESSAGE IN THE ERROR ITEMS TABLE FOUND IN THE BEGINNING OF THE LISTINGS. THUS FOR "ERROR 14", "ITEM 14" IN THE ITEM TABLE CAN BE LOOKED UP. WHEN THE ERROR INSTRUCTION IS EXECUTED A TRAP OCCURS TO THE ERROR HANDLER LOCATED AT \$ERROR WHICH PROCESSES THE ERROR CALL. SEE SEC 12.3

9.0 ERROR INTERPRETATION

WHENEVER AN ERROR MESSAGE IS PRINTED OUT, ALL REGISTERS AND OTHER DATA PERTAINING TO THE ERROR ARE ALSO GIVEN. RKDS, RKER, RKBA INDICATE THE CONTENTS OF THE CORRESPONDING REGISTERS AT THE TIME OF ERROR.

EVERY ERROR MESSAGE CONTAINS A PC. THIS PC INDICATES THE POSITION IN PROGRAM WHERE THE ERROR CALL IS LOCATED. THE ERROR MESSAGE, BECAUSE OF PRACTICAL CONSIDERATIONS IS MADE SHORT AND MEANINGFUL. THE USER IS ADVISED TO LOOK UP THE PC IN THE PROGRAM LISTING, WHERE HE WILL FIND MORE INFORMATION ABOUT THE ERROR. IN MANY INSTANCES, A SINGLE FAULT WILL GIVE RISE TO MORE THAN ONE ERROR REPORT. A LITTLE DELIBERATION AND CAREFUL

EXAMINATION OF THE DATA GIVEN WILL BE CERTAINLY VERY HELPFUL IN PINPOINTING THE FAULT. A BRIEF EXPLANATION OF WHAT IS BEING CHECKED IN THE SUBTEST IS GIVEN AT THE BEGINNING OF EVERY SUBTEST. ALL THE NUMBERS GIVEN WITH ERROR MESSAGES ARE IN OCTAL.

### 10.0 HANDLERS AND COMMON ROUTINES

THE COMMONLY USED ROUTINES USED IN THE PROGRAM ARE CALLED IN TWO WAYS.

- A. AS A SUBROUTINE THROUGH 'JSP' CALL
- B. THROUGH A 'TRAP' HANDLER

#### 10.1 TRAP HANDLER

MANY COMMONLY USED ROUTINES IN THE PROGRAM ARE CALLED USING THE TRAP INSTRUCTION AND THE 'TRAP' HANDLER. THE LOWER BYTE OF THE TRAP INSTRUCTION IS ENCODED DIFFERENTLY FOR DIFFERENT ROUTINES. THE TRAP HANDLER IS LOCATED AT '\$TRAP'. WHEN A CALL FOR A ROUTINE IS EXECUTED, A TRAP OCCURS TO THE HANDLER AT '\$TRAP'. THE HANDLER PICKS UP THE LOWER BYTE OF THE "CALL INSTRUCTION" AND USES IT TO FORM THE STARTING ADDRESS OF THE ROUTINE TO GO TO FOR SERVICE.

#### 10.2 SCOPE HANDLER

THE 'IOT' TRAP IS USED BY THE 'SCOPE' STATEMENT. WHEN 'SCOPE' IS EXECUTED, AN IOT TRAP OCCURS TO MEMORY LOCATION '\$SCOPE'. THE SCOPE HANDLER STARTS AT '\$SCOPE'. DEPENDING ON THE SWITCH SETTINGS THE HANDLER DECIDES TO LOOP ON TEXT, INHIBIT ITERATIONS ETC. THERE ARE CERTAIN POINTERS AND FLAGS WHICH ARE ADJUSTED. THUS, IT IS NOT ADVISABLE TO START THE PROGRAM AT ANY GIVEN LOCATION SINCE THE VARIOUS POINTERS AND FLAGS MAY NOT BE CORRECTLY ADJUSTED.

#### 10.3 ERROR HANDLER

AN EMT TRAP INSTRUCTION IS USED BY THE ERROR CALL. THE LOWER BYTE IS ENCODED TO GIVE DIFFERENT ERROR CALLS. (EX: ERROR 1 = 104000+11 ERROR 16 = 104000+16). WHEN THE ERROR STATEMENT IS EXECUTED, A TRAP OCCURS TO MEMORY LOCATION '\$ERROR'. THE ERROR HANDLER IS LOCATED AT '\$ERROR'. THE HANDLER FORMS THE POINTER TO ERROR TABLE, WHICH IS USED IF AN ERROR MESSAGE IS TO BE TYPED OUT. DEPENDING ON THE SWITCH SETTINGS, A DECISION ABOUT HALTING ON ERROR,

INHIBITTING TYPEOUT, LOOPING ON ERROR ETC. IS MADE.  
IF AN ERROR MESSAGE IS TO BE TYPED OUT AN EXIT IS  
MADE TO THE ERROR MESSAGEF TYPEOUT ROUTINE LOCATED AT  
\$ERRTYP'.

10.4 CONTROL RESET ROUTINE

THE CALL FOR THIS ROUTINE IS "CNT.RESET" AND IS AN  
ENCODED 'TRAP' INSTRUCTION. WHEN "CNT.RESET" IS  
EXECUTED THE CONTROL RESET ROUTINE STARTING AT  
"CN.RST" IS ENTERED. A CONTROL RESET IS ISSUED AND  
THE PROGRAM WAITS TILL THE CONTROL READY SETS, ON  
WHICH THE ROUTINE IS EXITED. IF CONTROL READY DOES  
NOT SET WITHIN A CERTAIN TIME AN ERROR IS REPORTED.  
THE PC TYPED OUT IS THE LOCATION WHERE THE  
"CNT.RESET" CALL IS LOCATED. THE WAITING TIME IS  
2.8 MS FOR 11/20 AND 560 US FOR 11/45 WITH BIPOLAR  
MEMORY.

10.5 CONTROL READY ROUTINE

THIS ROUTINE IS CALLED BY "CNT.RDY" (AN ENCODED  
'TRAP' INSTRUCTION) AND IS LOCATED AT "CN.RDY". THE  
ROUTINE WAITS FOR THE CONTROL READY TO SET AND WHEN  
IT DOES, EXITS OUT. IF CONTROL READY DOES NOT SET  
WITHIN A SPECIFIED TIME AN ERROR MESSAGE IS GIVEN

CNTRL RDY DIDN'T SET  
PC = XXXXXX RKCS = YYYYYY

THE PC IS THE LOCATION AT WHICH THE "CNT.RDY" CALL  
IS LOCATED. THE WAITING TIME IS 949 MS FOR 11/20  
AND 189 MS FOR 11/45 WITH BIPOLAR MEMORY.

10.6 TIME DELAY ROUTINE

THIS ROUTINE PROVIDES A VARIABLE TIME DELAY. THE  
CALL IS DELAY ,N WHERE N=1 TO 17777 (OCTAL) TIME  
DELAY PROVIDED= 7.5 TIMES( X ) N MICRO SECS FOR  
11/20, 1.5N US FOR 11/45 (N CONVERTED TO DECIMAL  
BEFORE COMPUTING DELAY) IF THE USER WANTS TO CHANGE  
THE DELAY AT ANY POINT IT CAN BE DONE BY SIMPLY  
CHANGING VARIABLE 'N'.

10.7 OTHER ROUTINES

THERE ARE OTHER COMMONLY USED ROUTINES AS LISTED  
BELOW.

\$TYPE:

TYPE ROUTINE FOR TYPING OUT ASCII STRINGS.  
LOCATED AT "\$TYPE"

CALLED BY "TYPE"

\$TYPOC:  
ROUTINE FOR TYPING OUT OCTAL NUMBERS.  
LOCATED AT "\$TYPOC"  
CALLED BY "TYPOC"

\$TYPDS:  
ROUTINE FOR TYPING OUT DECIMAL NUMBERS.  
LOCATED AT "\$TYPDS"  
CALLED BY "TYPDS"

\$ERRTYP:  
ROUTINE FOR TYPING OUT ERROR MESSAGES.  
LOCATED AT \$ERRTYP  
CALLED BY "JSR \$ERRTYP"

\$PWRDN,\$PWRUP:  
ROUTINE FOR HANDLING POWER FAILURE/POWER UP.  
LOCATED AT \$PWRDN,\$PWRUP  
\$PWRFL,CALLED WHEN THERE IS A POWER FAILURE.  
\$PWRUP,CALLED WHEN THERE IS A POWER UP.

11.0 UNEXPECTED TIMEOUTS AND RK11 INTERRUPTS

WHEN AN UNEXPECTED TIMEOUT OCCURS, THE PC AT WHICH  
TIME OUT OCCURED IS TYPED OUT AND THE PROGRAM HALTS.  
IF IT IS INTACT, IT CAN BE RESTARTED BY PRESSING  
CONTINUE.

IF AN UNEXPECTED RK11 INTERRUPT OCCURS THE PROGRAM  
TYPES OUT THE PC AT WHICH THE INTERRUPT CAME IN AND  
THEN HALTS. PRESSING CONTINUE WOULD RESTART THE  
PROGRAM FROM BEGINING. SW 9- LOOPING CAPABILITY IS  
PROVIDED AS A TROUBLE SHOOTING AID.

12.0 QUICK VERIFYING MODE

THE FIRST PASS OF THE PROGRAM IS A QUICK VERIFYING  
MODE. ALL THE TESTS ARE DONE ONLY ONCE, ON  
SUBSEQUENT PASSES THE TESTS ARE ITERATED (NORMALLY  
50 TIMES, 5 IN SOME CASES). THUS THE FIRST PASS  
TAKES A SHORTER TIME TO COMPLETE, WHEREAS SUBSEQUENT  
PASSES TAKE MORE TIME.

665  
666  
667  
668  
669

```
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781
```

```
*****  
*TITLE MD-11-DZRKJ-E, RK11 BASIC LOGIC TEST 1  
*COPYRIGHT (C) 1974,1977  
*DIGITAL EQUIPMENT CORP.  
*MAYNARD, MASS. 01754  
*  
*PROGRAM BY JIM KAPADIA  
*  
*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC  
*PACKAGE (MAINDEC-11-DEGAC-C3), JAN 19, 1977.  
*  
*JANUARY 1975  
*BTTL OPERATIONAL SWITCH SETTINGS  
*  
** SWITCH USE  
*****  
** 15 HALT ON ERROR  
** 14 LOOP ON TEST  
** 13 INHIBIT ERROR TYPEOUTS  
** 12 CYCLE ON ERROR TO PREVIOUS 'SCOPE' STATEMENT  
** 11 INHIBIT ITERATIONS  
** 10 TESTING ON SIMULATOR  
** 9 LOOP ON ERROR  
** 8 LOOP ON TEST IN SWR<710>  
*  
*  
*PROGRAM REVISED BY TOM SAWYER, MARCH 1976  
*REVISED BY CHUCK HESS, AUGUST 1976  
*****  
*YOU ARE ADVISED TO READ THE DOCUMENT BEFORE USING THIS PROGRAM.  
*  
*ON GETTING AN ERROR REFER TO THE LISTINGS AT THE PC POINTED  
*OUT IN THE ERROR MESSAGE. ADJACENT ERROR MESSAGES IF FOLLOWED  
*CAREFULLY COULD LEAD TO AN EASY PINPOINTING OF THE FAULT  
*  
***** BASIC DEFINITIONS *****  
*BTTL BASIC DEFINITIONS  
*  
*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***  
STACK= 1100 ;BASIC DEFINITION OF ERROR CALL  
EQUIV NOT SCOPE ;BASIC DEFINITION OF SCOPE CALL  
*  
** MISCELLANEOUS DEFINITORS  
HT= 11 ;CODE FOR HORIZONTAL TAB  
LF= 12 ;CODE FOR LINE FEED  
CF= 13 ;CODE FOR CARRIAGE RETURN  
CRLF= 200 ;CODE FOR CARRIAGE RETURN-LINE FEED  
PS= 17776 ;PROCESSOR STATUS WORD  
EQUIV PS,PSM  
*  
*****  
*MACY11 30(1046) 06-JUN-77 14140 PAGE 15  
BASIC DEFINITIONS  
*  
STKLMW= 17774 ;STACK LIMIT REGISTER  
PIR= 17772 ;PROGRAM INTERRUPT REQUEST REGISTER  
DSW= 177570 ;HARDWARE SWITCH REGISTER  
DDISP= 177570 ;HARDWARE DISPLAY REGISTER  
*  
** GENERAL PURPOSE REGISTER DEFINITIONS  
R0= 0 ;GENERAL REGISTER  
R1= 1 ;GENERAL REGISTER  
R2= 2 ;GENERAL REGISTER  
R3= 3 ;GENERAL REGISTER  
R4= 4 ;GENERAL REGISTER  
R5= 5 ;GENERAL REGISTER  
R6= 6 ;GENERAL REGISTER  
R7= 7 ;GENERAL REGISTER  
SP= 8 ;STACK POINTER  
PC= 9 ;PROGRAM COUNTER  
*  
** PRIORITY LEVEL DEFINITIONS  
PR0= 0 ;PRIORITY LEVEL 0  
PR1= 40 ;PRIORITY LEVEL 1  
PR2= 100 ;PRIORITY LEVEL 2  
PR3= 140 ;PRIORITY LEVEL 3  
PR4= 200 ;PRIORITY LEVEL 4  
PR5= 240 ;PRIORITY LEVEL 5  
PR6= 300 ;PRIORITY LEVEL 6  
PR7= 340 ;PRIORITY LEVEL 7  
*  
** SWITCH REGISTER SWITCH DEFINITIONS  
SW1= 40000  
SW1a= 40000  
SW1b= 40000  
SW1c= 20000  
SW1d= 10000  
SW1e= 4000  
SW1f= 2000  
SW1g= 1000  
SW1h= 400  
SW1i= 200  
SW1j= 100  
SW1k= 40  
SW1l= 20  
SW1m= 10  
SW1n= 4  
SW1o= 2  
SW1p= 1  
SW1q= 1  
SW1r= 1  
SW1s= 1  
SW1t= 1  
SW1u= 1  
SW1v= 1  
SW1w= 1  
SW1x= 1  
SW1y= 1  
SW1z= 1  
SW2= 1  
SW2a= 1  
SW2b= 1  
SW2c= 1  
SW2d= 1  
SW2e= 1  
SW2f= 1  
SW2g= 1  
SW2h= 1  
SW2i= 1  
SW2j= 1  
SW2k= 1  
SW2l= 1  
SW2m= 1  
SW2n= 1  
SW2o= 1  
SW2p= 1  
SW2q= 1  
SW2r= 1  
SW2s= 1  
SW2t= 1  
SW2u= 1  
SW2v= 1  
SW2w= 1  
SW2x= 1  
SW2y= 1  
SW2z= 1  
SW3= 1  
SW3a= 1  
SW3b= 1  
SW3c= 1  
SW3d= 1  
SW3e= 1  
SW3f= 1  
SW3g= 1  
SW3h= 1  
SW3i= 1  
SW3j= 1  
SW3k= 1  
SW3l= 1  
SW3m= 1  
SW3n= 1  
SW3o= 1  
SW3p= 1  
SW3q= 1  
SW3r= 1  
SW3s= 1  
SW3t= 1  
SW3u= 1  
SW3v= 1  
SW3w= 1  
SW3x= 1  
SW3y= 1  
SW3z= 1  
SW4= 1  
SW4a= 1  
SW4b= 1  
SW4c= 1  
SW4d= 1  
SW4e= 1  
SW4f= 1  
SW4g= 1  
SW4h= 1  
SW4i= 1  
SW4j= 1  
SW4k= 1  
SW4l= 1  
SW4m= 1  
SW4n= 1  
SW4o= 1  
SW4p= 1  
SW4q= 1  
SW4r= 1  
SW4s= 1  
SW4t= 1  
SW4u= 1  
SW4v= 1  
SW4w= 1  
SW4x= 1  
SW4y= 1  
SW4z= 1  
SW5= 1  
SW5a= 1  
SW5b= 1  
SW5c= 1  
SW5d= 1  
SW5e= 1  
SW5f= 1  
SW5g= 1  
SW5h= 1  
SW5i= 1  
SW5j= 1  
SW5k= 1  
SW5l= 1  
SW5m= 1  
SW5n= 1  
SW5o= 1  
SW5p= 1  
SW5q= 1  
SW5r= 1  
SW5s= 1  
SW5t= 1  
SW5u= 1  
SW5v= 1  
SW5w= 1  
SW5x= 1  
SW5y= 1  
SW5z= 1  
SW6= 1  
SW6a= 1  
SW6b= 1  
SW6c= 1  
SW6d= 1  
SW6e= 1  
SW6f= 1  
SW6g= 1  
SW6h= 1  
SW6i= 1  
SW6j= 1  
SW6k= 1  
SW6l= 1  
SW6m= 1  
SW6n= 1  
SW6o= 1  
SW6p= 1  
SW6q= 1  
SW6r= 1  
SW6s= 1  
SW6t= 1  
SW6u= 1  
SW6v= 1  
SW6w= 1  
SW6x= 1  
SW6y= 1  
SW6z= 1  
SW7= 1  
SW7a= 1  
SW7b= 1  
SW7c= 1  
SW7d= 1  
SW7e= 1  
SW7f= 1  
SW7g= 1  
SW7h= 1  
SW7i= 1  
SW7j= 1  
SW7k= 1  
SW7l= 1  
SW7m= 1  
SW7n= 1  
SW7o= 1  
SW7p= 1  
SW7q= 1  
SW7r= 1  
SW7s= 1  
SW7t= 1  
SW7u= 1  
SW7v= 1  
SW7w= 1  
SW7x= 1  
SW7y= 1  
SW7z= 1  
SW8= 1  
SW8a= 1  
SW8b= 1  
SW8c= 1  
SW8d= 1  
SW8e= 1  
SW8f= 1  
SW8g= 1  
SW8h= 1  
SW8i= 1  
SW8j= 1  
SW8k= 1  
SW8l= 1  
SW8m= 1  
SW8n= 1  
SW8o= 1  
SW8p= 1  
SW8q= 1  
SW8r= 1  
SW8s= 1  
SW8t= 1  
SW8u= 1  
SW8v= 1  
SW8w= 1  
SW8x= 1  
SW8y= 1  
SW8z= 1  
SW9= 1  
SW9a= 1  
SW9b= 1  
SW9c= 1  
SW9d= 1  
SW9e= 1  
SW9f= 1  
SW9g= 1  
SW9h= 1  
SW9i= 1  
SW9j= 1  
SW9k= 1  
SW9l= 1  
SW9m= 1  
SW9n= 1  
SW9o= 1  
SW9p= 1  
SW9q= 1  
SW9r= 1  
SW9s= 1  
SW9t= 1  
SW9u= 1  
SW9v= 1  
SW9w= 1  
SW9x= 1  
SW9y= 1  
SW9z= 1  
SW0= 1  
SW0a= 1  
SW0b= 1  
SW0c= 1  
SW0d= 1  
SW0e= 1  
SW0f= 1  
SW0g= 1  
SW0h= 1  
SW0i= 1  
SW0j= 1  
SW0k= 1  
SW0l= 1  
SW0m= 1  
SW0n= 1  
SW0o= 1  
SW0p= 1  
SW0q= 1  
SW0r= 1  
SW0s= 1  
SW0t= 1  
SW0u= 1  
SW0v= 1  
SW0w= 1  
SW0x= 1  
SW0y= 1  
SW0z= 1  
*  
** DATA BIT DEFINITIONS (BIT0 TO BIT15)  
*****
```

```
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781
```

```
17774  
17772  
177570  
177570  
00000  
00001  
00002  
00003  
00004  
00005  
00006  
00007  
00008  
00009  
00010  
00011  
00012  
00013  
00014  
00015  
00016  
00017  
00018  
00019  
00020  
00021  
00022  
00023  
00024  
00025  
00026  
00027  
00028  
00029  
00030  
00031  
00032  
00033  
00034  
00035  
00036  
00037  
00038  
00039  
00040  
00041  
00042  
00043  
00044  
00045  
00046  
00047  
00048  
00049  
00050  
00051  
00052  
00053  
00054  
00055  
00056  
00057  
00058  
00059  
00060  
00061  
00062  
00063  
00064  
00065  
00066  
00067  
00068  
00069  
00070  
00071  
00072  
00073  
00074  
00075  
00076  
00077  
00078  
00079  
00080  
00081  
00082  
00083  
00084  
00085  
00086  
00087  
00088  
00089  
00090  
00091  
00092  
00093  
00094  
00095  
00096  
00097  
00098  
00099  
00100  
00101  
00102  
00103  
00104  
00105  
00106  
00107  
00108  
00109  
00110  
00111  
00112  
00113  
00114  
00115  
00116  
00117  
00118  
00119  
00120  
00121  
00122  
00123  
00124  
00125  
00126  
00127  
00128  
00129  
00130  
00131  
00132  
00133  
00134  
00135  
00136  
00137  
00138  
00139  
00140  
00141  
00142  
00143  
00144  
00145  
00146  
00147  
00148  
00149  
00150  
00151  
00152  
00153  
00154  
00155  
00156  
00157  
00158  
00159  
00160  
00161  
00162  
00163  
00164  
00165  
00166  
00167  
00168  
00169  
00170  
00171  
00172  
00173  
00174  
00175  
00176  
00177  
00178  
00179  
00180  
00181  
00182  
00183  
00184  
00185  
00186  
00187  
00188  
00189  
00190  
00191  
00192  
00193  
00194  
00195  
00196  
00197  
00198  
00199  
00200  
00201  
00202  
00203  
00204  
00205  
00206  
00207  
00208  
00209  
00210  
00211  
00212  
00213  
00214  
00215  
00216  
00217  
00218  
00219  
00220  
00221  
00222  
00223  
00224  
00225  
00226  
00227  
00228  
00229  
00230  
00231  
00232  
00233  
00234  
00235  
00236  
00237  
00238  
00239  
00240  
00241  
00242  
00243  
00244  
00245  
00246  
00247  
00248  
00249  
00250  
00251  
00252  
00253  
00254  
00255  
00256  
00257  
00258  
00259  
00260  
00261  
00262  
00263  
00264  
00265  
00266  
00267  
00268  
00269  
00270  
00271  
00272  
00273  
00274  
00275  
00276  
00277  
00278  
00279  
00280  
00281  
00282  
00283  
00284  
00285  
00286  
00287  
00288  
00289  
00290  
00291  
00292  
00293  
00294  
00295  
00296  
00297  
00298  
00299  
00300  
00301  
00302  
00303  
00304  
00305  
00306  
00307  
00308  
00309  
00310  
00311  
00312  
00313  
00314  
00315  
00316  
00317  
00318  
00319  
00320  
00321  
00322  
00323  
00324  
00325  
00326  
00327  
00328  
00329  
00330  
00331  
00332  
00333  
00334  
00335  
00336  
00337  
00338  
00339  
00340  
00341  
00342  
00343  
00344  
00345  
00346  
00347  
00348  
00349  
00350  
00351  
00352  
00353  
00354  
00355  
00356  
00357  
00358  
00359  
00360  
00361  
00362  
00363  
00364  
00365  
00366  
00367  
00368  
00369  
00370  
00371  
00372  
00373  
00374  
00375  
00376  
00377  
00378  
00379  
00380  
00381  
00382  
00383  
00384  
00385  
00386  
00387  
00388  
00389  
00390  
00391  
00392  
00393  
00394  
00395  
00396  
00397  
00398  
00399  
00400  
00401  
00402  
00403  
00404  
00405  
00406  
00407  
00408  
00409  
00410  
00411  
00412  
00413  
00414  
00415  
00416  
00417  
00418  
00419  
00420  
00421  
00422  
00423  
00424  
00425  
00426  
00427  
00428  
00429  
00430  
00431  
00432  
00433  
00434  
00435  
00436  
00437  
00438  
00439  
00440  
00441  
00442  
00443  
00444  
00445  
00446  
00447  
00448  
00449  
00450  
00451  
00452  
00453  
00454  
00455  
00456  
00457  
00458  
00459  
00460  
00461  
00462  
00463  
00464  
00465  
00466  
00467  
00468  
00469  
00470  
00471  
00472  
00473  
00474  
00475  
00476  
00477  
00478  
00479  
00480  
00481  
00482  
00483  
00484  
00485  
00486  
00487  
00488  
00489  
00490  
00491  
00492  
00493  
00494  
00495  
00496  
00497  
00498  
00499  
00500  
00501  
00502  
00503  
00504  
00505  
00506  
00507  
00508  
00509  
00510  
00511  
00512  
00513  
00514  
00515  
00516  
00517  
00518  
00519  
00520  
00521  
00522  
00523  
00524  
00525  
00526  
00527  
00528  
00529  
00530  
00531  
00532  
00533  
00534  
00535  
00536  
00537  
00538  
00539  
00540  
00541  
00542  
00543  
00544  
00545  
00546  
00547  
00548  
00549  
00550  
00551  
00552  
00553  
00554  
00555  
00556  
00557  
00558  
00559  
00560  
00561  
00562  
00563  
00564  
00565  
00566  
00567  
00568  
00569  
00570  
00571  
00572  
00573  
00574  
00575  
00576  
00577  
00578  
00579  
00580  
00581  
00582  
00583  
00584  
00585  
00586  
00587  
00588  
00589  
00590  
00591  
00592  
00593  
00594  
00595  
00596  
00597  
00598  
00599  
00600  
00601  
00602  
00603  
00604  
00605  
00606  
00607  
00608  
00609  
00610  
00611  
00612  
00613  
00614  
00615  
00616  
00617  
00618  
00619  
00620  
00621  
00622  
00623  
00624  
00625  
00626  
00627  
00628  
00629  
00630  
00631  
00632  
00633  
00634  
00635  
00636  
00637  
00638  
00639  
00640  
00641  
00642  
00643  
00644  
00645  
00646  
00647  
00648  
00649  
00650  
00651  
00652  
00653  
00654  
00655  
00656  
00657  
00658  
00659  
00660  
00661  
00662  
00663  
00664  
00665  
00666  
00667  
00668  
00669  
00670  
00671  
00672  
00673  
00674  
00675  
00676  
00677  
00678  
00679  
00680  
00681  
00682  
00683  
00684  
00685  
00686  
00687  
00688  
00689  
00690  
00691  
00692  
00693  
00694  
00695  
00696  
00697  
00698  
00699  
00700  
00701  
00702  
00703  
00704  
00705  
00706  
00707  
00708  
00709  
00710  
00711  
00712  
00713  
00714  
00715  
00716  
00717  
00718  
00719  
00720  
00721  
00722  
00723  
00724  
00725  
00726  
00727  
00728  
00729  
00730  
00731  
00732  
00733  
00734  
00735  
00736  
00737  
00738  
00739  
00740  
00741  
00742  
00743  
00744  
00745  
00746  
00747  
00748  
00749  
00750  
00751  
00752  
00753  
00754  
00755  
00756  
00757  
00758  
00759  
00760  
00761  
00762  
00763  
00764  
00765  
00766  
00767  
00768  
00769  
00770  
00771  
00772  
00773  
00774  
00775  
00776  
00777  
00778  
00779  
00780  
00781
```













```
1270 002350 000001  
1271 002352 000201  
1272 002354 001376  
1273 002356 000200  
1274 002360 001374  
1275  
1276  
1277  
1278  
1279  
1280  
1281  
1282  
1283  
1284 002362 000004  
1285 002364 000000  
1286 002366 012737 002412 001110  
1287  
1288 002374 012737 002466 000004  
1289 002400 012700 177771  
1290 002406 012701 001244  
1291 002412 0005731  
1292  
1293  
1294 002414 000200  
1295 002416 001375  
1296 002420 012737 002126 000004  
1297 002426 0005702  
1298 002430 001415  
1299 002432 104401 002440  
1300 002436 000410  
1301  
1302 002460 000137 000370  
1303 002466  
1304 002464  
1305 002464 000407  
1306 002466 022626  
1307 002470 014137 001162  
1308 002474 104001  
1309  
1310 002476 0005721  
1311 002500 000202  
1312 002502 000744  
1313  
1314  
1315  
1316  
1317  
1318  
1319  
1320 002504 000004  
1321 002506 000005  
1322 002510 012700 177772  
1323 002516 012701 001246  
1324 002520 023711 001250  
1325  
1326  
1327  
1328  
1329  
1330 002536 000411  
1331 002540 0005771 000000  
1332 002544 001406  
1333 002546 011137 001162  
1334 002552 017137 000000 001164  
1335 002560 104002  
1336 002562 0005771  
1337 002564 000200  
1338 002566 001354  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346 002570 000004  
1347 002572 012737 002504 001110  
1348  
1349 002600 012700 000002  
1350 002604 010070 176440  
1351 002610 017701 176434  
1352 002620 000001  
1353 002622 001406  
1354 002624 010037 001162  
1355 002630 017737 176414 001164  
1356 002636 104003  
1357 002640 000300  
1358 002642 000027 000020  
1359 002646 001356  
1360  
1361  
1362  
1363  
1364  
1365  
1366 002650 000004  
1367 002652 012737 002564 001110  
1368  
1369  
1370 002660 012700 000020  
1371 002664 010070 176350  
1372 002670 017701 176354  
1373 002674 042701 000200  
1374 002700 000001  
1375 002702 001406  
1376 002704 010037 001162  
1377 002710 017737 176334 001164  
1378 002716 104003  
1379 002720 000300  
1380 002722 022704 000100  
1381 002726 001356
```

```
1326 002524 001005  
1327 002526 022771 000200 000000  
1328 002534 001004  
1329 002536 000411  
1330 002540 0005771 000000  
1331 002544 001406  
1332 002546 011137 001162  
1333 002552 017137 000000 001164  
1334 002560 104002  
1335 002562 0005771  
1336 002564 000200  
1337 002566 001354  
1338 002566 001354  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346 002570 000004  
1347 002572 012737 002504 001110  
1348  
1349 002600 012700 000002  
1350 002604 010070 176440  
1351 002610 017701 176434  
1352 002620 000001  
1353 002622 001406  
1354 002624 010037 001162  
1355 002630 017737 176414 001164  
1356 002636 104003  
1357 002640 000300  
1358 002642 000027 000020  
1359 002646 001356  
1360  
1361  
1362  
1363  
1364  
1365  
1366 002650 000004  
1367 002652 012737 002564 001110  
1368  
1369  
1370 002660 012700 000020  
1371 002664 010070 176350  
1372 002670 017701 176354  
1373 002674 042701 000200  
1374 002700 000001  
1375 002702 001406  
1376 002704 010037 001162  
1377 002710 017737 176334 001164  
1378 002716 104003  
1379 002720 000300  
1380 002722 022704 000100  
1381 002726 001356
```

16: CLR K1  
JNC R1  
RNE R5  
INCB R0  
BNE R8

\*\*\*\*\*  
TEST 1  
;THIS TEST CHECKS IF EVERY RK11 REGISTER CAN BE REFERENCED  
;REFERENCED WITHOUT TIMING OUT. IF A TIME OUT OCCURS THE ERROR IS  
;REPORTED & AN ERROR FLAG (R2) IS INCREMENTED. IF THERE WAS  
;AN ERROR DURING THIS TEST, THE ENTIRE PROGRAM IS ABORTED  
\*\*\*\*\*  
;SET RETURN ADRES FOR LUP  
;ON ERROR (R9)  
;SET UP ADDRESS FOR TIMEOUT VECTOR  
;INITIALIZE R0 TO KEEP TRACK OF REGIS REFERENCED  
;INITIALIZE R1 WITH RKDS ADDRESS  
;REFERENCE THE REGISTER,  
;IF IT CAN'T BE, TIMEOUT TRAP WILL OCCUR  
;SHIFT THE POINTER  
;FALL REGISTERS REFERENCED?  
;IF NOT, LOOP BACK & REFERENCE NEXT REGISTER  
;WAS THERE AN ERROR?  
;NO,BRANCH  
;TYPE ASCII STRING  
;GET OVER THE ASCII  
;IF NOT, LOOP BACK & REFERENCE NEXT REGISTER  
;IF YES, ABORT THIS ENTIRE TEST  
;EXIT  
;GET ADDRESS OF REGISTER THAT TIMED OUT  
;TIMED OUT WHEN REFERENCING RK11  
;REGISTERS  
;POSITION POINTER TO THE NEXT REGISTER ADDRESS  
;SET FLAG INDICATING ERROR  
;BRANCH BACK & REFERENCE THE NXT REGISTER  
\*\*\*\*\*  
;CHECK RK11 INITIALIZATION  
;THIS TEST CHECKS THAT THE CONTROLLER LOGIC IS INITIALIZED  
;CORRECTLY. R0, R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969, R970, R971, R972, R973, R974, R975, R976, R977, R978, R979, R980, R981, R982, R983, R984, R985, R986, R987, R988, R989, R990, R991, R992, R993, R994, R995, R996, R997, R998, R999, R1000, R1001, R1002, R1003, R1004, R1005, R1006, R1007, R1008, R1009, R1010, R1011, R1012, R1013, R1014, R1015, R1016, R1017, R1018, R1019, R1020, R1021, R1022, R1023, R1024, R1025, R1026, R1027, R1028, R1029, R1030, R1031, R1032, R1033, R1034, R1035, R1036, R1037, R1038, R1039, R1040, R1041, R1042, R1043, R1044, R1045, R1046, R1047, R1048, R1049, R1050, R1051, R1052, R1053, R1054, R1055, R1056, R1057, R1058, R1059, R1060, R1061, R1062, R1063, R1064, R1065, R1066, R1067, R1068, R1069, R1070, R1071, R1072, R1073, R1074, R1075, R1076, R1077, R1078, R1079, R1080, R1081, R1082, R1083, R1084, R1085, R1086, R1087, R1088, R1089, R1090, R1091, R1092, R1093, R1094, R1095, R1096, R1097, R1098, R1099, R1100, R1101, R1102, R1103, R1104, R1105, R1106, R1107, R1108, R1109, R1110, R1111, R1112, R1113, R1114, R1115, R1116, R1117, R1118, R1119, R1120, R1121, R1122, R1123, R1124, R1125, R1126, R1127, R1128, R1129, R1130, R1131, R1132, R1133, R1134, R1135, R1136, R1137, R1138, R1139, R1140, R1141, R1142, R1143, R1144, R1145, R1146, R1147, R1148, R1149, R1150, R1151, R1152, R1153, R1154, R1155, R1156, R1157, R1158, R1159, R1160, R1161, R1162, R1163, R1164, R1165, R1166, R1167, R1168, R1169, R1170, R1171, R1172, R1173, R1174, R1175, R1176, R1177, R1178, R1179, R1180, R1181, R1182, R1183, R1184, R1185, R1186, R1187, R1188, R1189, R1190, R1191, R1192, R1193, R1194, R1195, R1196, R1197, R1198, R1199, R1200, R1201, R1202, R1203, R1204, R1205, R1206, R1207, R1208, R1209, R1210, R1211, R1212, R1213, R1214, R1215, R1216, R1217, R1218, R1219, R1220, R1221, R1222, R1223, R1224, R1225, R1226, R1227, R1228, R1229, R1230, R1231, R1232, R1233, R1234, R1235, R1236, R1237, R1238, R1239, R1240, R1241, R1242, R1243, R1244, R1245, R1246, R1247, R1248, R1249, R1250, R1251, R1252, R1253, R1254, R1255, R1256, R1257, R1258, R1259, R1260, R1261, R1262, R1263, R1264, R1265, R1266, R1267, R1268, R1269, R1270, R1271, R1272, R1273, R1274, R1275, R1276, R1277, R1278, R1279, R1280, R1281, R1282, R1283, R1284, R1285, R1286, R1287, R1288, R1289, R1290, R1291, R1292, R1293, R1294, R1295, R1296, R1297, R1298, R1299, R1300, R1301, R1302, R1303, R1304, R1305, R1306, R1307, R1308, R1309, R1310, R1311, R1312, R1313, R1314, R1315, R1316, R1317, R1318, R1319, R1320, R1321, R1322, R1323, R1324, R1325, R1326, R1327, R1328, R1329, R1330, R1331, R1332, R1333, R1334, R1335, R1336, R1337, R1338, R1339, R1340, R1341, R1342, R1343, R1344, R1345, R1346, R1347, R1348, R1349, R1350, R1351, R1352, R1353, R1354, R1355, R1356, R1357, R1358, R1359, R1360, R1361, R1362, R1363, R1364, R1365, R1366, R1367, R1368, R1369, R1370, R1371, R1372, R1373, R1374, R1375, R1376, R1377, R1378, R1379, R1380, R1381, R1382, R1383, R1384, R1385, R1386, R1387, R1388, R1389, R1390, R1391, R1392, R1393, R1394, R1395, R1396, R1397, R1398, R1399, R1400, R1401, R1402, R1403, R1404, R1405, R1406, R1407, R1408, R1409, R1410, R1411, R1412, R1413, R1414, R1415, R1416, R1417, R1418, R1419, R1420, R1421, R1422, R1423, R1424, R1425, R1426, R1427, R1428, R1429, R1430, R1431, R1432, R1433, R1434, R1435, R1436, R1437, R1438, R1439, R1440, R1441, R1442, R1443, R1444, R1445, R1446, R1447, R1448, R1449, R1450, R1451, R1452, R1453, R1454, R1455, R1456, R1457, R1458, R1459, R1460, R1461, R1462, R1463, R1464, R1465, R1466, R1467, R1468, R1469, R1470, R1471, R1472, R1473, R1474, R1475, R1476, R1477, R1478, R1479, R1480, R1481, R1482, R1483, R1484, R1485, R1486, R1487, R1488, R1489, R1490, R1491, R1492, R1493, R1494, R1495, R1496, R1497, R1498, R1499, R1500, R1501, R1502, R1503, R1504, R1505, R1506, R1507, R1508, R1509, R1510, R1511, R1512, R1513, R1514, R1515, R1516, R1517, R1518, R1519, R1520, R1521, R1522, R1523, R1524, R1525, R1526, R1527, R1528, R1529, R1530, R1531, R1532, R1533, R1534, R1535, R1536, R1537, R1538, R1539, R1540, R1541, R1542, R1543, R1544, R1545, R1546, R1547, R1548, R1549, R1550, R1551, R1552, R1553, R1554, R1555, R1556, R1557, R1558, R1559, R1560, R1561, R1562, R1563, R1564, R1565, R1566, R1567, R1568, R1569, R1570, R1571, R1572, R1573, R1574, R1575, R1576, R1577, R1578, R1579, R1580, R1581, R1582, R1583, R1584, R1585, R1586, R1587, R1588, R1589, R1590, R1591, R1592, R1593, R1594, R1595, R1596, R1597, R1598, R1599, R1600, R1601, R1602, R1603, R1604, R1605, R1606, R1607, R1608, R1609, R1610, R1611, R1612, R1613, R1614, R1615, R1616, R1617, R1618, R1619, R1620, R1621, R1622, R1623, R1624, R1625, R1626, R1627, R1628, R1629, R1630, R1631, R1632, R1633, R1634, R1635, R1636, R1637, R163





```
1406 W36314 001347
1407 W36314 010137
1008 W36322 010237 001164
1009 F36326 104011
1610
1611 W03630 005205
1612 W03632 001402
1613 F03634 005301
1614 F03636 001363
1615
1616
1617
1618
1619
1620
1621
1622 W03640 000004
1623 F03642 012700 000001
1624 F03646 013701 001254
1625 W03646 013701 001254
1626 F03652 012737 003660 001110
1627
1628
1629 W03660 010011
1630 F03662 011102
1631 W03664 020002
1632 W03666 001405
1633 W03670 010037
1634 F03674 012237 001164
1635 F03700 104013
1636
1637 W03702 006300
1638 W03704 001365
1639
1640
1641
1642
1643
1644
1645 W03706 000004
1646 W03710 012737 000010 001206
1647 F03716 013700 001254
1648 W03722 012710 177777
1649 W03726 005010
1650 W03730 005710
1651 W03732 001405
1652 W03734 010037
1653 W03740 010037 001164
1654 W03744 104010
1655
1656 W03746 005001 177773
1657 W03750 012705 001110
1658 W03754 012737 003762
1659 W03762 010110
1661
```

```
1662 W03764 011002
1663 W03766 020102
1664 W03770 001407
1665 W03772 010137 001164
1666 W03776 011037 001164
1667 W04002 104013
1668
1669 W04004 005305
1670 W04006 001402
1671 F04010 005301
1672 F04012 001363
1673
1674
1675
1676
1677
1678
1679 W04014 000004 173226
1680 W04016 005077 000001
1681 W04022 012700 001256
1682 W04026 013701 001256
1683 F04032 012737 004040 001110
1684
1685 W04040 010011
1686 W04042 011102
1687 W04044 020002
1688 W04046 001405
1689 W04050 010037
1690 W04054 010237 001164
1691 W04060 104015
1692
1693 W04062 006300
1694 W04064 001365
1695
1696
1697
1698
1699
1700
1701
1702
1703 W04066 000004 000010 001206
1704 W04070 012737 000136
1705 W04072 013100 001256
1706 W04074 012710 177777
1707
1708 W04100 005010
1709 W04106 005010
1710 W04110 001405
1711 W04114 010037 001164
1712 W04120 011037 001164
1713 F04124 104010
1714
1715 W04126 005001 177773
1716 W04130 012705 004142 001110
1717 W04134 012737
```

```

36
R1,REG0
R2,REG1
11
INC
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R60
R61
R62
R63
R64
R65
R66
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
R89
R90
R91
R92
R93
R94
R95
R96
R97
R98
R99
R100
R101
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
R115
R116
R117
R118
R119
R120
R121
R122
R123
R124
R125
R126
R127
R128
R129
R130
R131
R132
R133
R134
R135
R136
R137
R138
R139
R140
R141
R142
R143
R144
R145
R146
R147
R148
R149
R150
R151
R152
R153
R154
R155
R156
R157
R158
R159
R160
R161
R162
R163
R164
R165
R166
R167
R168
R169
R170
R171
R172
R173
R174
R175
R176
R177
R178
R179
R180
R181
R182
R183
R184
R185
R186
R187
R188
R189
R190
R191
R192
R193
R194
R195
R196
R197
R198
R199
R200
R201
R202
R203
R204
R205
R206
R207
R208
R209
R210
R211
R212
R213
R214
R215
R216
R217
R218
R219
R220
R221
R222
R223
R224
R225
R226
R227
R228
R229
R230
R231
R232
R233
R234
R235
R236
R237
R238
R239
R240
R241
R242
R243
R244
R245
R246
R247
R248
R249
R250
R251
R252
R253
R254
R255
R256
R257
R258
R259
R260
R261
R262
R263
R264
R265
R266
R267
R268
R269
R270
R271
R272
R273
R274
R275
R276
R277
R278
R279
R280
R281
R282
R283
R284
R285
R286
R287
R288
R289
R290
R291
R292
R293
R294
R295
R296
R297
R298
R299
R300
R301
R302
R303
R304
R305
R306
R307
R308
R309
R310
R311
R312
R313
R314
R315
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
R334
R335
R336
R337
R338
R339
R340
R341
R342
R343
R344
R345
R346
R347
R348
R349
R350
R351
R352
R353
R354
R355
R356
R357
R358
R359
R360
R361
R362
R363
R364
R365
R366
R367
R368
R369
R370
R371
R372
R373
R374
R375
R376
R377
R378
R379
R380
R381
R382
R383
R384
R385
R386
R387
R388
R389
R390
R391
R392
R393
R394
R395
R396
R397
R398
R399
R400
R401
R402
R403
R404
R405
R406
R407
R408
R409
R410
R411
R412
R413
R414
R415
R416
R417
R418
R419
R420
R421
R422
R423
R424
R425
R426
R427
R428
R429
R430
R431
R432
R433
R434
R435
R436
R437
R438
R439
R440
R441
R442
R443
R444
R445
R446
R447
R448
R449
R450
R451
R452
R453
R454
R455
R456
R457
R458
R459
R460
R461
R462
R463
R464
R465
R466
R467
R468
R469
R470
R471
R472
R473
R474
R475
R476
R477
R478
R479
R480
R481
R482
R483
R484
R485
R486
R487
R488
R489
R490
R491
R492
R493
R494
R495
R496
R497
R498
R499
R500
R501
R502
R503
R504
R505
R506
R507
R508
R509
R510
R511
R512
R513
R514
R515
R516
R517
R518
R519
R520
R521
R522
R523
R524
R525
R526
R527
R528
R529
R530
R531
R532
R533
R534
R535
R536
R537
R538
R539
R540
R541
R542
R543
R544
R545
R546
R547
R548
R549
R550
R551
R552
R553
R554
R555
R556
R557
R558
R559
R560
R561
R562
R563
R564
R565
R566
R567
R568
R569
R570
R571
R572
R573
R574
R575
R576
R577
R578
R579
R580
R581
R582
R583
R584
R585
R586
R587
R588
R589
R590
R591
R592
R593
R594
R595
R596
R597
R598
R599
R600
R601
R602
R603
R604
R605
R606
R607
R608
R609
R610
R611
R612
R613
R614
R615
R616
R617
R618
R619
R620
R621
R622
R623
R624
R625
R626
R627
R628
R629
R630
R631
R632
R633
R634
R635
R636
R637
R638
R639
R640
R641
R642
R643
R644
R645
R646
R647
R648
R649
R650
R651
R652
R653
R654
R655
R656
R657
R658
R659
R660
R661
R662
R663
R664
R665
R666
R667
R668
R669
R670
R671
R672
R673
R674
R675
R676
R677
R678
R679
R680
R681
R682
R683
R684
R685
R686
R687
R688
R689
R690
R691
R692
R693
R694
R695
R696
R697
R698
R699
R700
R701
R702
R703
R704
R705
R706
R707
R708
R709
R710
R711
R712
R713
R714
R715
R716
R717
R718
R719
R720
R721
R722
R723
R724
R725
R726
R727
R728
R729
R730
R731
R732
R733
R734
R735
R736
R737
R738
R739
R740
R741
R742
R743
R744
R745
R746
R747
R748
R749
R750
R751
R752
R753
R754
R755
R756
R757
R758
R759
R760
R761
R762
R763
R764
R765
R766
R767
R768
R769
R770
R771
R772
R773
R774
R775
R776
R777
R778
R779
R780
R781
R782
R783
R784
R785
R786
R787
R788
R789
R790
R791
R792
R793
R794
R795
R796
R797
R798
R799
R800
R801
R802
R803
R804
R805
R806
R807
R808
R809
R810
R811
R812
R813
R814
R815
R816
R817
R818
R819
R820
R821
R822
R823
R824
R825
R826
R827
R828
R829
R830
R831
R832
R833
R834
R835
R836
R837
R838
R839
R840
R841
R842
R843
R844
R845
R846
R847
R848
R849
R850
R851
R852
R853
R854
R855
R856
R857
R858
R859
R860
R861
R862
R863
R864
R865
R866
R867
R868
R869
R870
R871
R872
R873
R874
R875
R876
R877
R878
R879
R880
R881
R882
R883
R884
R885
R886
R887
R888
R889
R890
R891
R892
R893
R894
R895
R896
R897
R898
R899
R900
R901
R902
R903
R904
R905
R906
R907
R908
R909
R910
R911
R912
R913
R914
R915
R916
R917
R918
R919
R920
R921
R922
R923
R924
R925
R926
R927
R928
R929
R930
R931
R932
R933
R934
R935
R936
R937
R938
R939
R940
R941
R942
R943
R944
R945
R946
R947
R948
R949
R950
R951
R952
R953
R954
R955
R956
R957
R958
R959
R960
R961
R962
R963
R964
R965
R966
R967
R968
R969
R970
R971
R972
R973
R974
R975
R976
R977
R978
R979
R980
R981
R982
R983
R984
R985
R986
R987
R988
R989
R990
R991
R992
R993
R994
R995
R996
R997
R998
R999
R1000
R1001
R1002
R1003
R1004
R1005
R1006
R1007
R1008
R1009
R1010
R1011
R1012
R1013
R1014
R1015
R1016
R1017
R1018
R1019
R1020
R1021
R1022
R1023
R1024
R1025
R1026
R1027
R1028
R1029
R1030
R1031
R1032
R1033
R1034
R1035
R1036
R1037
R1038
R1039
R1040
R1041
R1042
R1043
R1044
R1045
R1046
R1047
R1048
R1049
R1050
R1051
R1052
R1053
R1054
R1055
R1056
R1057
R1058
R1059
R1060
R1061
R1062
R1063
R1064
R1065
R1066
R1067
R1068
R1069
R1070
R1071
R1072
R1073
R1074
R1075
R1076
R1077
R1078
R1079
R1080
R1081
R1082
R1083
R1084
R1085
R1086
R1087
R1088
R1089
R1090
R1091
R1092
R1093
R1094
R1095
R1096
R1097
R1098
R1099
R1100
R1101
R1102
R1103
R1104
R1105
R1106
R1107
R1108
R1109
R1110
R1111
R1112
R1113
R1114
R1115
R1116
R1117
R1118
R1119
R1120
R1121
R1122
R1123
R1124
R1125
R1126
R1127
R1128
R1129
R1130
R1131
R1132
R1133
R1134
R1135
R1136
R1137
R1138
R1139
R1140
R1141
R1142
R1143
R1144
R1145
R1146
R1147
R1148
R1149
R1150
R1151
R1152
R1153
R1154
R1155
R1156
R1157
R1158
R1159
R1160
R1161
R1162
R1163
R1164
R1165
R1166
R1167
R1168
R1169
R1170
R1171
R1172
R1173
R1174
R1175
R1176
R1177
R1178
R1179
R1180
R1181
R1182
R1183
R1184
R1185
R1186
R1187
R1188
R1189
R1190
R1191
R1192
R1193
R1194
R1195
R1196
R1197
R1198
R1199
R1200
R1201
R1202
R1203
R1204
R1205
R1206
R1207
R1208
R1209
R1210
R1211
R1212
R1213
R1214
R1215
R1216
R1217
R1218
R1219
R1220
R1221
R1222
R1223
R1224
R1225
R1226
R1227
R1228
R1229
R1230
R1231
R1232
R1233
R1234
R1235
R1236
R1237
R1238
R1239
R1240
R1241
R1242
R1243
R1244
R1245
R1246
R1247
R1248
R1249
R1250
R1251
R1252
R1253
R1254
R1255
R1256
R1257
R1258
R1259
R1260
R1261
R1262
R1263
R1264
R1265
R1266
R1267
R1268
R1269
R1270
R1271
R1272
R1273
R1274
R1275
R1276
R1277
R1278
R1279
R1280
R1281
R1282
R1283
R1284
R1285
R1286
R1287
R1288
R1289
R1290
R1291
R1292
R1293
R1294
R1295
R1296
R1297
R1298
R1299
R1300
R1301
R1302
R1303
R1304
R1305
R1306
R1307
R1308
R1309
R1310
R1311
R1312
R1313
R1314
R1315
R1316
R1317
R1318
R1319
R1320
R1321
R1322
R1323
R1324
R1325
R1326
R1327
R1328
R1329
R1330
R1331
R1332
R1333
R1334
R1335
R1336
R1337
R1338
R1339
R1340
R1341
R1342
R1343
R1344
R1345
R1346
R1347
R1348
R1349
R1350
R1351
R1352
R1353
R1354
R1355
R1356
R1357
R1358
R1359
R1360
R1361
R1362
R1363
R1364
R1365
R1366
R1367
R1368
R1369
R1370
R1371
R1372
R1373
R1374
R1375
R1376
R1377
R1378
R1379
R1380
R1381
R1382
R1383
R1384
R1385
R1386
R1387
R1388
R1389
R1390
R1391
R1392
R1393
R1394
R1395
R1396
R1397
R1398
R1399
R1400
R1401
R1402
R1403
R1404
R1405
R1406
R1407
R1408
R1409
R1410
R1411
R1412
R1413
R1414
R1415
R1416
R1417
R1418
R1419
R1420
R1421
R1422
R1423
R1424
R1425
R1426
R1427
R1428
R1429
R1430
R1431
R1432
R1433
R1434
R1435
R1436
R1437
R1438
R1439
R1440
R1441
R1442
R1443
R1444
R1445
R1446
R1447
R1448
R1449
R1450
R1451
R1452
R1453
R1454
R1455
R1456
R1457
R1458
R1459
R1460
R1461
R1462
R1463
R1464
R1465
R1466
R1467
R1468
R1469
R1470
R1471
R1472
R1473
R1474
R1475
R1476
R1477
R1478
R1479
R1480
R1481
R1482
R1483
R1484
R1485
R1486
R1487
R1488
R1489
R1490
R1491
R1492
R1493
R1494
R1495
R1496
R1497
R1498
R1499
R1500
R1501
R1502
R1503
R1504
R1505
R1506
R1507
R1508
R1509
R1510
R1511
R1512
R1513
R1514
R1515
R1516
R1517
R1518
R1519
R1520
R1521
R1522
R1523
R1524
R1525
R1526
R1527
R1528
R1529
R1530
R1531
R1532
R1533
R1534
R1535
R1536
R1537
R1538
R1539
R1540
R1541
R1542
R1543
R1544
R1545
R1546
R1547
R1548
R1549
R1550
R1551
R1552
R1553
R1554
R1555
R1556
R1557
R1558
R1559
R1560
R1561
R1562
R1563
R1564
R1565
R1566
R1567
R1568
R1569
R1570
R1571
R1572
R1573
R1574
R1575
R1576
R1577
R1578
R1579
R1580
R1581
R1582
R1583
R1584
R1585
R1586
R1587
R1588
R1589
R1590
R1591
R1592
R1593
R1594
R1595
R1596
R1597
R1598
R1599
R1600
R1601
R1602
R1603
R1604
R1605
R1606
R1607
R1608
R1609
R1610
R1611
R1612
R1613
R1614
R1615
R1616
R1617
R1618
R1619
R1620
R1621
R1622
R1623
R1624
R1625
R1626
R1627
R1628
R1629
R1630
R1631
R1632
R1633
R1634
R1635
R1636
R1637
R1638
R1639
R1640
R1641
R1642
R1643
R1644
R1645
R1646
R1647
R1648
R1649
R1650
R1651
R1652
R1653
R1654
R1655
R1656
R1657
R1658
R1659
R1660
R1661
R1662
R1663
R1664
R1665
R1666
R1667
R1668
R1669
R1670
R1671
R1672
R1673
R1674
R1675
R1676
R1677
R1678
R1679
R1680
R1681
R1682
R1683
R1684
R1685
R1686
R1687
R1688
R1689
R1690
R1691
R1692
R1693
R1694
R1695
R1696
R1697
R1698
R1699
R1700
R1701
R1702
R1703
R1704
R1705
R1706
R1707
R1708
R1709
R1710
R1711
R1712
R1713
R1714
R1715
R1716
R1717
R1718
R1719
R1720
R1721
R1722
R1723
R1724
R1725
R1726
R1727
R1728
R1729
R1730
R1731
R1732
R1733
R1734
R1735
R1736
R1737
R1738
R1739
R1740
R1741
R1742
R1743
R1744
R1745
R1746
R1747
R1748
R1749
R1750
R1751
R1752
R1753
R1754
R1755
R1756
R1757
R1758
R1759
R1760
R1761
R1762
R1763
R1764
R1765
R1766
R1767
R1768
R1769
R1770
R1771
R1772
R1773
R1774
R1775
R1776
R1777
R1778
R1779
R1780
R1781
R1782
R1783
R1784
R1785
R1786
R1787
R1788
R1789
R1790
R1791
R1792
R1793
R1794
R1795
R1796
R1797
R1798
R1799
R1800
R1801
R1802
R1803
R1804
R1805
R1806
R1807
R1808
R1809
R1810
R1811
R1812
R1813
R1814
R1815
R1816
R1817
R1818
R1819
R1820
R1821
R1822
R1823
R1824
R1825
R1826
R1827
R1828
R1829
R1830
R1831
R1832
R1833
R1834
R1835
R1836
R1837
R1838
R1839
R1840
R1841
R1842
R1843
R1844
R1845
R1846
R1847
R1848
R1849
R1850
R1851
R1852
R1853
R1854
R1855
R1856
R1857
R1858
R1859
R1860
R1861
R1862
R1863
R1864
R1865
R1866
R1867
R1868
R1869
R1870
R1871
R1872
R1873
R1874
R1875
R1876
R1877
R1878
R1879
R1880
R1881
R1882
R1883
R1884
R1885
R1886
R1887
R1888
R1889
R1890
R1891
R1892
R1893
R1894
R1895
R1896
R1897
R1898
R1899
R1900
R1901
R1902
R1
```



1830	004450	012722	177777	261	MOV	R1	R1	R1	R1	177777,(R2)+	;	SET R1S IN R1WC
1831	004451	005201			RNE	R2	R2	R2	R2		;	RKBA
1832	004456	001374									;	RKRA IF R11C
1833											;	CLEAR REGISTER (WHOSE ADDR IS IN R0)
1834	004466	003410	001250		CLR	R0	R0	R0	R0		;	WAS THE CLEARED REGISTER R0C3?
1835	004462	013702			CPD	R0	R0	R0	R0		;	YES
1836	004465	020002			BEQ	R0	R0	R0	R0		;	NO-CHECK IF IT WAS INADVERTENTLY
1837	004470	001406									;	CLEARED BECAUSE OF ADDRESSING
1838											;	ERROR
1839	004472	011203	170200		MOV	R2	R3	R3	R3		;	IF R0, REPORT ERROR
1840	004470	042703	007576		BIC	R1	R2	R3	R3		;	INCREMENT POINTER TO NEXT REGISTER
1841	004500	022703			CPD	R1	R2	R3	R3		;	SET COUNT FOR 3 REGISTERS
1842	004504	001020		381	BNE	R0	R0	R0	R0		;	WAS THE CLEARED REGISTER SAME AS
1843	004506	005722			TEST	R2	R1	R1	R1		;	THE REGISTER POINTED TO BY R2
1844	004510	012701	177775	481	MOV	R2	R0	R0	R0		;	YES
1845	004514	023200			CPD	R2	R0	R0	R0		;	NO, CHECK IF THE REGIS UNDER TEST
1846					BEQ	R0	R0	R0	R0		;	(POINTED BY R2) WAS INADVERTENTLY
1848	004516	001404									;	CLEARED WHEN CLEARING THE REGIS
1849											;	POINTED TO BY R0, DUE TO
1850											;	ADDRESSING ERROR
1851											;	GET CONTENTS OF REGIS BEING CHECKED
1853	004520	011203			MOV	R2	R3	R3	R3		;	FOR INADVERTENT CLEARING
1854	004522	010304			MOV	R3	R4	R4	R4		;	CHECK IF ANY BIT WAS ERRORNEOUSLY CLEARED
1855	004524	005104			COM	R4	R4	R4	R4		;	IF R0, REPORT ERROR
1856	004530	001007		581	BNE	R0	R0	R0	R0		;	INCREMENT PTR TO NEXT REGISTER
1857	004532	005722			TEST	R2	R1	R1	R1		;	INCREMENT COUNT
1858	004534	005201			INC	R1	R1	R1	R1		;	CHECK THE REGIS
1859	004538	001367			BNE	R0	R0	R0	R0		;	IF INCREMENT PTR TO THE NEXT REGIS TO
1860	004536	005720			TEST	R0	R0	R0	R0		;	HAVE ALL THE REGIS BEEN CHECKED?
1861	004536	005200			INC	R0	R0	R0	R0		;	IF NOT, LOOP BACK
1862	004540	001330			BNE	R0	R0	R0	R0		;	EXIT, IF DONE
1863	004542	000415			BR	R0	R0	R0	R0		;	GET ADRES OF REGISTER THAT WAS
1864	004544	000415			BR	R0	R0	R0	R0		;	TRIED TO REFERENCE
1865	004546	010037	001162	681	MOV	R0	R0	R0	R0		;	GET ADRES OF REGISTER THAT WAS
1866											;	REFERENCED INSTEAD
1867	004552	010237	001164		MOV	R2	R0	R0	R0		;	GET CONTENTS OF REG THAT WAS
1868					NOV	R0	R0	R0	R0		;	ADDRESSED & MEANT TO BE CLEARED
1869	004556	011037	001166		NOV	R0	R0	R0	R0		;	GET CONTENTS OF REGISTER THAT GOT
1870					NOV	R3	R0	R0	R0		;	CHANGED INSTEAD
1871	004562	010337	001170		NOV	R3	R0	R0	R0		;	POSSIBLE ADDRESSING ERROR, TRIED
1872											;	ADDRESSING R11 REGISTER, ANOTHER ONE
1873	004566	104020			NOV	R3	R0	R0	R0		;	WAS THE REGISTER IN R0 WAS THE
1874											;	ADRESSED, REG IN R2
1875											;	WAS THE ONE THAT GOT ADRESSED INSTEAD
1876											;	RETURN TO THE
1877											;	RIGHT POINT
1878	004570	023702	001250		CPD	R0	R0	R0	R0		;	*****
1879	004574	001744			BR	R0	R0	R0	R0		;	*****
1880	004576	000754			BR	R0	R0	R0	R0		;	*****
1881											;	*****
1882											;	*****
1883											;	*****
1884											;	*****
1885											;	*****

ND=11-DZBKJ-E, RK11 BASIC LOGIC TEST 1 MACY11 30(1046) 06-JUN-77 14140 PAGE 37  
 DZBKJ.E.P11 19-APP-77 09114 CHECK THAT HI & LO BYTES OF R0C3 CAN BE ADDRESSED

1886	004600	000004	177774								;	*****
1887	004602	019702	177775								;	*****
1888	004606	001700	000360								;	*****
1889	004610	012700	177777								;	*****
1890	004612	000424	000424								;	*****
1891	004616	012700	000424								;	*****
1892	004618	012700	000424								;	*****
1893	004622	000002									;	*****
1894	004624	000002									;	*****
1895	004626	000002									;	*****
1896	004630	012700	001250	6481	NOV	R0	R0	R0	R0		;	*****
1897	004630	012700	001250		NOV	R0	R0	R0	R0		;	*****
1898	004630	012700	001250		NOV	R0	R0	R0	R0		;	*****
1899	004640	005200			INC	R0	R0	R0	R0		;	*****
1900	004642	001374			BNE	R0	R0	R0	R0		;	*****
1901	004644	013701	001250	281	MOV	R0	R0	R0	R0		;	*****
1902	004650	005011			CPD	R0	R0	R0	R0		;	*****
1903	004652	016104	143300		NOV	R1	R4	R4	R4		;	*****
1904	004654	017703	177776		NOV	R0	R0	R0	R0		;	*****
1905	004660	022702			CPD	R0	R0	R0	R0		;	*****
1906	004664	001011	177600		BNE	R0	R0	R0	R0		;	*****
1907	004666	042703			BIC	R0	R0	R0	R0		;	*****
1908	004672	001417	001162		BEQ	R0	R0	R0	R0		;	*****
1909	004674	005037	001164		CLR	R0	R0	R0	R0		;	*****
1910	004700	010337	001164		NOV	R3	R0	R0	R0		;	*****
1911	004704	104022			ERROR	R0	R0	R0	R0		;	*****
1912											;	*****
1913											;	*****
1914	004706	000411	000377	381	RR	R0	R0	R0	R0		;	*****
1915	004710	042703			BIC	R0	R0	R0	R0		;	*****
1916	004714	001406			BEQ	R0	R0	R0	R0		;	*****
1917	004716	005037	001162		CLR	R0	R0	R0	R0		;	*****
1918											;	*****
1919	004722	000303	001164		SWAB	R0	R0	R0	R0		;	*****
1920	004724	010337			NOV	R3	R0	R0	R0		;	*****
1921	004730	104023			ERROR	R0	R0	R0	R0		;	*****
1922											;	*****
1923											;	*****
1924	004732	012700	177774	481	NOV	R0	R0	R0	R0		;	*****
1925	004736	013705	001250	581	NOV	R0	R0	R0	R0		;	*****
1926	004742	005725			TEST	R0	R0	R0	R0		;	*****
1927	004744	005200			INC	R0	R0	R0	R0		;	*****
1928	004746	001417			BEQ	R0	R0	R0	R0		;	*****
1929	004750	011503			NOV	R0	R0	R0	R0		;	*****
1930											;	*****
1931	004752	005103			COM	R3	R3	R3	R3		;	*****
1932											;	*****
1933	004754	001772			BEQ	R0	R0	R0	R0		;	*****
1934											;	*****
1935	004756	010137	001162		NOV	R1	R0	R0	R0		;	*****
1936											;	*****
1937	004762	010537	001164		NOV	R1	R0	R0	R0		;	*****
1938											;	*****
1939	004766	012737	177777	001166	NOV	R1	R0	R0	R0		;	*****
1940											;	*****
1941	004774	005103			COM	R3	R3	R3	R3		;	*****







```

MD=11-DZRKJ-E, RK11 BASIC LOGIC TEST 1
DZRKJE_P11 19-APP-77 09114
2166
2167
2168
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
2205
2206
2207
2208
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2220
2221
2222

```

```

MAY11 30(1046) 06-JUN-77 14140 PAGE 42
CNT,RDY: WAIT FOR CONTROL READY ROUTINE
CN,RDY
THIS ROUTINE WAITS FOR THE CONTROL READY BIT TO SET AND WHEN IT
SETS EXITS OUT. IF WITHIN A CERTAIN TIME CNTRL RDY DOES
NOT SET AN ERROR IS REPORTED. WAITING TIME IS R83 NS FOR 11/20
1175 NS FOR 11/45 WITH BIPOLAR MEMORY.
CALLA CNT,RDY
CN,RST: MOV #1,RKCS ;ISSUE A CONTROL RESET
;SET UP COUNT ;SKIP OVER CN,RDY
BR CN,RDY+4
CN,RDY: CLR RREG3
181 ORCS ;DID CNTRL=RDY SET?
EMI 36 ;YES, EXIT
RREG3 ;WAITED LONG
BNE 18 ;IF NOT, GO BAK & WAIT
BIT #SW13,R8SWR ;INHIBIT TIMEOUT?
;IF YES, SKIP TIMEOUT
;TYPE ASCII STRING
;GET OVER THE ASCII
116501 MOV (SP),=(SP) ;GO TYPE PC IN THE MAIN PROGRAM,
648 SUB #2,(SP) ;WHERE ERROR OCCURRED
;TYPE ASCII STRING
;GET OVER THE ASCII
116781 TYPE ,678
668 BR 668 ;TYPE ASCII STRING
;GET RKS
;GO TYPE IF
381 RTI ;RETURN FROM THIS
;ROUTINE TO THE MAIN
;PROGRAM
THIS PART OF THE PROGRAM CONTAINS THE COMMON ROUTINES CALLED
FROM THE SISMAC,SML PACKAGE
.SBTL SCOPE HANDLER ROUTINE
*****
THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
AND LOAD THE TEST NUMBER(RSTNM) INTO THE DISPLAY<R5108>
AND LOAD THE ERROR FLAG (SERFLG) INTO DISPLAY<R5109>
THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
*SW14=1 LOOP ON TEST
*SW11=1 INHIBIT ITERATIONS
*SW09=1 LOOP ON ERROR
*SW08=1 LOOP ON TEST IN SWR<710>
*CALL SCOPE ;SCOPE=10T
*
MAY11 30(1046) 06-JUN-77 14140 PAGE 43
SCOPE HANDLER ROUTINE
SCOPE: CK8WR ;TEST FOR CHANGE IN SOFT-SWR
181 BIT #BIT14,8SWR ;LOOP ON PRESENT TEST?
;YES IF SW14=1
;*****START OF CODE FOR THE XOR TESTER*****
;IF RUNNING ON THE "XOR" TESTER CHANGE
;THIS INSTRUCTION TO A "NOP" (NOP=240)
;SAVE THE CONTENTS OF THE ERROR VECTOR
;TIME FOR TIMEOUT
;PRESTORE THE ERROR VECTOR
;GO TO THE NEXT TEST
;CLEAR THE STACK AFTER A TIME OUT
;PRESTORE THE ERROR VECTOR
;LOOP ON THE PRESENT TEST
;*****END OF CODE FOR THE XOR TESTER*****
;LOOP ON SPEC. TEST?
;IF NO
;ON THE RIGHT TEST? SWR<710>
;IF YES
;HAS AN ERROR OCCURRED?
;IF NO
;MAX. ERRORS FOR THIS TEST OCCURRED?
;LOOP ON ERROR?
;IF NO LOOP ADDRESS TO LAST SCOPE
;ZERO THE ERROR FLAG
;CLEAR THE NUMBER OF ITERATIONS TO MAKE
;ESCAPE TO THE NEXT TEST
;INHIBIT ITERATIONS?
;IF YES
;IF FIRST PASS OF PROGRAM
;INHIBIT ITERATIONS
;INCREMENT ITERATION COUNT
;CHECK THE NUMBER OF ITERATIONS MADE
;IF BY MORE ITERATION REQUIRED
;INITIALIZE THE ITERATION COUNTER
;SET NUMBER OF ITERATIONS TO DO
;COUNT TEST NUMBERS
;SAVE SCOPE LOOP ADDRESS
;CLEAR THE LOOP ADDRESS
;CLEAR THE ESCAPE FROM ERROR ADDRESS
;COUNT ALONG ONE(1) ERROR ON NEXT TEST
;DISPLAY TEST NUMBER
;JUDGE RETURN ADDRESS
;FINES PB
;MAX. NUMBER OF ITERATIONS
*****
.SBTL ERROR HANDLER ROUTINE
;SW15=1 HALT ON ERROR

```

```

MD=11-DZRKJ-E, RK11 BASIC LOGIC TEST 1
DZRKJE_P11 19-APP-77 09114
2223
2224
2225
2226
2227
2228
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
2240
2241
2242
2243
2244
2245
2246
2247
2248
2249
2250
2251
2252
2253
2254
2255
2256
2257
2258
2259
2260
2261
2262
2263
2264
2265
2266
2267
2268
2269
2270
2271
2272
2273
2274
2275
2276
2277

```

```

2270      2270      000114      104407      001103      000046      301      000000      172712      381      000000      172712      381
2271      2271      000118      105237      001103      000046      301      000000      172712      381      000000      172712      381
2272      2272      000122      106175      001102      000046      301      000000      172712      381      000000      172712      381
2273      2273      000132      013177      001102      000046      301      000000      172712      381      000000      172712      381
2274      2274      000132      045737      001112      000046      301      000000      172712      381      000000      172712      381
2275      2275      000132      045737      001116      000046      301      000000      172712      381      000000      172712      381
2276      2276      000132      011537      001116      000046      301      000000      172712      381      000000      172712      381
2277      2277      000132      162737      000002      001116      000046      301      000000      172712      381      000000      172712      381
2278      2278      000150      117737      172742      001114      000046      301      000000      172712      381      000000      172712      381
2279      2279      000156      232777      020000      172754      000046      301      000000      172712      381      000000      172712      381
2280      2280      000164      001004      000046      301      000000      172712      381      000000      172712      381
2281      2281      000166      004137      006264      000046      301      000000      172712      381      000000      172712      381
2282      2282      000172      104401      001213      000046      301      000000      172712      381      000000      172712      381
2283      2283      000176      023137      000042      000046      301      000000      172712      381      000000      172712      381
2284      2284      000206      005177      172726      000046      301      000000      172712      381      000000      172712      381
2285      2285      000214      000000      000000      000046      301      000000      172712      381      000000      172712      381
2286      2286      000220      104407      001000      000046      301      000000      172712      381      000000      172712      381
2287      2287      000226      001316      001106      000046      301      000000      172712      381      000000      172712      381
2288      2288      000230      013176      001000      000046      301      000000      172712      381      000000      172712      381
2289      2289      000234      032777      001000      000046      301      000000      172712      381      000000      172712      381
2290      2290      000242      001402      001110      000046      301      000000      172712      381      000000      172712      381
2291      2291      000244      013176      001210      000046      301      000000      172712      381      000000      172712      381
2292      2292      000250      005137      001210      000046      301      000000      172712      381      000000      172712      381
2293      2293      000256      001402      001210      000046      301      000000      172712      381      000000      172712      381
2294      2294      000262      000000      000046      301      000000      172712      381      000000      172712      381
2295      2295      000264      004137      006264      000046      301      000000      172712      381      000000      172712      381
2296      2296      000270      104407      001000      000046      301      000000      172712      381      000000      172712      381
2297      2297      000276      001316      001106      000046      301      000000      172712      381      000000      172712      381
2298      2298      000280      013176      001000      000046      301      000000      172712      381      000000      172712      381
2299      2299      000284      032777      001000      000046      301      000000      172712      381      000000      172712      381
2300      2300      000292      001402      001110      000046      301      000000      172712      381      000000      172712      381
2301      2301      000294      013176      001210      000046      301      000000      172712      381      000000      172712      381
2302      2302      000296      005137      001210      000046      301      000000      172712      381      000000      172712      381
2303      2303      000300      001004      001213      000046      301      000000      172712      381      000000      172712      381
2304      2304      000306      104401      001213      000046      301      000000      172712      381      000000      172712      381
2305      2305      000310      000626      000046      301      000000      172712      381      000000      172712      381
2306      2306      000312      005130      000046      301      000000      172712      381      000000      172712      381
2307      2307      000314      005130      000046      301      000000      172712      381      000000      172712      381
2308      2308      000316      005130      000046      301      000000      172712      381      000000      172712      381
2309      2309      000316      005130      000046      301      000000      172712      381      000000      172712      381
2310      2310      000316      005130      000046      301      000000      172712      381      000000      172712      381
2311      2311      000316      005130      000046      301      000000      172712      381      000000      172712      381
2312      2312      000316      005130      000046      301      000000      172712      381      000000      172712      381
2313      2313      000316      005130      000046      301      000000      172712      381      000000      172712      381
2314      2314      000316      005130      000046      301      000000      172712      381      000000      172712      381
2315      2315      000316      005130      000046      301      000000      172712      381      000000      172712      381
2316      2316      000316      005130      000046      301      000000      172712      381      000000      172712      381
2317      2317      000316      005130      000046      301      000000      172712      381      000000      172712      381
2318      2318      000316      005130      000046      301      000000      172712      381      000000      172712      381
2319      2319      000316      005130      000046      301      000000      172712      381      000000      172712      381
2320      2320      000316      005130      000046      301      000000      172712      381      000000      172712      381
2321      2321      000316      005130      000046      301      000000      172712      381      000000      172712      381
2322      2322      000316      005130      000046      301      000000      172712      381      000000      172712      381
2323      2323      000316      005130      000046      301      000000      172712      381      000000      172712      381
2324      2324      000316      005130      000046      301      000000      172712      381      000000      172712      381
2325      2325      000316      005130      000046      301      000000      172712      381      000000      172712      381
2326      2326      000316      005130      000046      301      000000      172712      381      000000      172712      381
2327      2327      000316      005130      000046      301      000000      172712      381      000000      172712      381
2328      2328      000316      005130      000046      301      000000      172712      381      000000      172712      381
2329      2329      000316      005130      000046      301      000000      172712      381      000000      172712      381
2330      2330      000316      005130      000046      301      000000      172712      381      000000      172712      381
2331      2331      000316      005130      000046      301      000000      172712      381      000000      172712      381
2332      2332      000316      005130      000046      301      000000      172712      381      000000      172712      381
2333      2333      000316      005130      000046      301      000000      172712      381      000000      172712      381

```

MD=11-DZKJ-E, PK11 BASIC LOGIC TEST 1  
 DZKJ-E,PK11 19-APR-77 09114

MACY11 30(1046) 06-JUN-77 14140 PAGE 45  
 ERROR MESSAGE TYPEOUT ROUTINE

```

2334      2334      000320      006300      001272      000046      301      000000      172712      381      000000      172712      381
2335      2335      000322      062700      001272      000046      301      000000      172712      381      000000      172712      381
2336      2336      000326      013037      000336      000046      301      000000      172712      381      000000      172712      381
2337      2337      000332      001464      000046      301      000000      172712      381      000000      172712      381
2338      2338      000334      104401      000046      301      000000      172712      381      000000      172712      381
2339      2339      000336      000000      000046      301      000000      172712      381      000000      172712      381
2340      2340      000340      104401      001213      000046      301      000000      172712      381      000000      172712      381
2341      2341      000344      012037      006354      000046      301      000000      172712      381      000000      172712      381
2342      2342      000350      001404      000046      301      000000      172712      381      000000      172712      381
2343      2343      000352      104401      000046      301      000000      172712      381      000000      172712      381
2344      2344      000354      000000      000046      301      000000      172712      381      000000      172712      381
2345      2345      000356      104401      001213      000046      301      000000      172712      381      000000      172712      381
2346      2346      000362      011000      000046      301      000000      172712      381      000000      172712      381
2347      2347      000364      001000      000046      301      000000      172712      381      000000      172712      381
2348      2348      000366      001000      000046      301      000000      172712      381      000000      172712      381
2349      2349      000366      001000      000046      301      000000      172712      381      000000      172712      381
2350      2350      000370      144401      001213      000046      301      000000      172712      381      000000      172712      381
2351      2351      000374      000207      000046      301      000000      172712      381      000000      172712      381
2352      2352      000376      013046      000046      301      000000      172712      381      000000      172712      381
2353      2353      000400      104402      000046      301      000000      172712      381      000000      172712      381
2354      2354      000402      005170      000046      301      000000      172712      381      000000      172712      381
2355      2355      000406      001770      000046      301      000000      172712      381      000000      172712      381
2356      2356      000406      104401      000046      301      000000      172712      381      000000      172712      381
2357      2357      000412      000071      000046      301      000000      172712      381      000000      172712      381
2358      2358      000414      020040      000046      301      000000      172712      381      000000      172712      381
2359      2359      000414      000420      000046      301      000000      172712      381      000000      172712      381
2360      2360      000420      000420      000046      301      000000      172712      381      000000      172712      381
2361      2361      000420      000420      000046      301      000000      172712      381      000000      172712      381
2362      2362      000420      000420      000046      301      000000      172712      381      000000      172712      381
2363      2363      000420      000420      000046      301      000000      172712      381      000000      172712      381
2364      2364      000420      000420      000046      301      000000      172712      381      000000      172712      381
2365      2365      000420      000420      000046      301      000000      172712      381      000000      172712      381
2366      2366      000420      000420      000046      301      000000      172712      381      000000      172712      381
2367      2367      000420      000420      000046      301      000000      172712      381      000000      172712      381
2368      2368      000420      000420      000046      301      000000      172712      381      000000      172712      381
2369      2369      000420      000420      000046      301      000000      172712      381      000000      172712      381
2389      2389      000512      105777      172426      000046      301      000000      172712      381      000000      172712      381

```

MD=11-DZKJ-E, PK11 BASIC LOGIC TEST 1  
 DZKJ-E,PK11 19-APR-77 09114

MACY11 30(1046) 06-JUN-77 14140 PAGE 46  
 ERROR HANDLER ROUTINE

```

*SBTTL TY INPUT ROUTINE
*****
*CHABL LBS
*****
**SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
**ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
**SERVISE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP CALL
**WHEN OPERATING IN TY FLAG MODE.
**IS THE SOFTWARE SWITCH SELECTED?
**BRANCH IF NO
**CHAR THERE?
**IF NO, DON'T WAIT AROUND
**SAVE THE CHAR
**SERIALIZE THE ASCII
**IS IT A CONTROL GT
**NO, RETURN TO USER
**ARE WE RUNNING IN AUTO-MODE?
**BRANCH IF YES
**ECHO THE CONTROL-G ('G')
**SAVE CURRENT COMMENTS
**GO TYPE--OCTAL ASCII(ALL DIGITS)
**PROMPT FOR NEW SWR
**CLEAR COUNTER
**THE NEW SWR
**CHAR THERE?

```

```
2390 006516 100375 RPL 78 ;IF NOT TRY AGAIN  
2391 006520 117746 172422 MOV# ;PICK UP CHAR  
2392 006524 042716 177600 RIC ;MAKE IT 7-BIT ASCII  
2393  
2394  
2395 006530 021627 000025 ;IS IT A CONTROL-UP  
2396 006534 091005 ;BRANCH IF NOT  
2397 006538 067140 000006 ;YES, ECHO CONTROL-U ('U)  
2398 006542 062706 000006 ;IGNORE PREVIOUS INPUT  
2399 006546 000757 ;LET'S TRY IT AGAIN  
2400  
2401  
2402 006550 021627 000015 ;IS IT A <CR>?  
2403 006554 001022 ;BRANCH IF NO  
2404 006558 005766 000004 ;YES, IS IT THE FIRST CHART  
2405 006562 091403 ;BRANCH IF YES  
2406 006566 016677 000002 172346 ;SAVE NEW CHR  
2407 006570 062706 000006 ;CLEAR UP STACK  
2408 006574 104401 001313 ;ECHO <CR> AND <JF>  
2409 006578 123727 001135 000001 ;RE-ENABLE TTY KBD INTERRUPTS?  
2410 006582 091003 ;BRANCH IF NOT  
2411 006586 012777 000100 172324 ;RE-ENABLE TTY KBD INTERRUPTS  
2412 006590 000002 ;RETURN  
2413 006594 004737 007344 ;ECHO CHAR  
2414 006598 021627 000006 ;FCHAR < 0?  
2415 006602 091403 ;BRANCH IF YES  
2416 006606 092420 000067 ;FCHAR > 7?  
2417 006610 091003 ;BRANCH IF YES  
2418 006614 093015 ;STRIP-OFF ASCII  
2419 006618 042726 000006 ;BRANCH IF YES  
2420 006622 091403 ;IS THIS THE FIRST CHAR  
2421 006626 095766 000002 ;NO, SHIFT PRESENT  
2422 006630 091403 ;CHAR OVER TO MAKE  
2423 006634 096316 ;ROOM FOR NEW ONE.  
2424 006638 096316 ;KEEP COUNT OF CHAR.  
2425 006642 095266 000002 ;GET IN NEW CHAR  
2426 006646 095616 177776 ;TYPE <CR><LF>  
2427 006650 090707 ;SIMULATE CONTROL-U  
2428 006654 104401 001212 ;  
2429 006658 000720 ;  
2430  
2431  
2432  
2433  
2434  
2435  
2436  
2437  
2438  
2439  
2440  
2441  
2442 006702 011646 ;PUSH DOWN THE PC  
2443 006706 016666 000004 ;SAVE THE P5  
2444 006710 105777 172326 ;WAIT FOR  
2445 006714 100375 ;A CHARACTER  
2446  
2447  
2448  
2449  
2450  
2451  
2452  
2453  
2454  
2455  
2456  
2457  
2458  
2459  
2460  
2461  
2462  
2463  
2464  
2465  
2466  
2467  
2468  
2469  
2470  
2471  
2472  
2473  
2474  
2475  
2476  
2477  
2478  
2479  
2480  
2481  
2482  
2483  
2484  
2485  
2486  
2487  
2488  
2489  
2490  
2491  
2492  
2493  
2494  
2495  
2496  
2497  
2498  
2499  
2500
```

```
2446 006720 117766 172322 000004 ;READ THE TTY  
2447 006724 042766 177600 000004 ;GET RID OF JUNK IF ANY  
2448 006728 026627 000004 000023 ;IS IT A CONTROL-8?  
2449 006732 091013 ;BRANCH IF NO  
2450 006736 105777 172174 ;WAIT FOR A CHARACTER  
2451 006740 100375 ;LOOP UNTIL ITS THERE  
2452 006744 172170 000000 ;GET CHARACTER  
2453 006748 042716 177600 ;MAKE IT 7-BIT ASCII  
2454 006752 026627 000021 ;IS IT A CONTROL-0?  
2455 006756 091366 ;IF NOT DISCARD IT  
2456 006760 000750 ;YES, RESUME  
2457 006764 026627 000004 000140 ;IS IT UPPER CASE?  
2458 006768 092407 000004 000175 ;BRANCH IF YES  
2459 006772 026627 000004 000175 ;IS IT A SPECIAL CHART  
2460 006776 093003 ;BRANCH IF YES  
2461 006780 042766 ;MAKE IT UPPER CASE  
2462 006784 000002 ;GO BACK TO USER  
2463 006788 ;  
2464 006792 ;  
2465 006796 ;  
2466 006800 ;  
2467 006804 ;  
2468 006808 ;  
2469 006812 ;  
2470 006816 010346 ;SAVE R3  
2471 006820 012703 ;GET ADDRESS  
2472 006824 021703 ;BUFFER FULL?  
2473 006828 101100 ;BR IF YES  
2474 006832 101100 ;READ ONE CHARACTER FROM THE TTY  
2475 006836 101100 ;GET CHARACTER  
2476 006840 125513 ;IS IT A ROT  
2477 006844 122713 000177 ;SKIP IF NOT  
2478 006848 091003 ;ECHO THE CHARACTER  
2479 006852 104401 001212 ;CLEAR THE BUFFER AND LOOP  
2480 006856 111337 007126 ;CHECK FOR RETURN  
2481 006860 104401 007126 ;LOOP IF NOT RETURN  
2482 006864 122723 000015 ;CLEAR RETURN (THE 15)  
2483 006868 091356 177777 ;TYPE A LINE FEED  
2484 006872 104401 001214 ;ECHO THE CHARACTER  
2485 006876 104401 001214 ;CHECK FOR RETURN  
2486 006880 012603 ;CLEAR RETURN (THE 15)  
2487 006884 011646 ;TYPE A LINE FEED  
2488 006888 016666 000004 000002 ;RESTORE R3  
2489 006892 012766 007130 000004 ;ADJUST THE STACK AND PUT ADDRESS OF THE  
2490 006896 090002 ; FIRST ASCII CHARACTER ON IT  
2491 006900 ;  
2492 006904 ;  
2493 006908 ;  
2494 006912 000010 ;RETURN  
2495 006916 052336 ;STORAGE FOR ASCII CHAR, TO TYPE  
2496 006920 095015 ;TERMINATOR  
2497 006924 095015 ;CONTROL 8 BYTES FOR TTY INPUT  
2498 006928 095015 053523 ;CONTROL 'U'  
2499 006932 095015 020122 ;CONTROL 'G'  
2500 006936 095015 095015 ;CONTROL 'G'  
2501 006940 036440 ;  
2502 006944 ;  
2503 006948 ;  
2504 006952 ;  
2505 006956 ;  
2506 006960 ;  
2507 006964 ;  
2508 006968 ;  
2509 006972 ;  
2510 006976 ;  
2511 006980 ;  
2512 006984 ;  
2513 006988 ;  
2514 006992 ;  
2515 006996 ;  
2516 007000 ;  
2517 007004 ;  
2518 007008 ;  
2519 007012 ;  
2520 007016 ;  
2521 007020 ;  
2522 007024 ;  
2523 007028 ;  
2524 007032 ;  
2525 007036 ;  
2526 007040 ;  
2527 007044 ;  
2528 007048 ;  
2529 007052 ;  
2530 007056 ;  
2531 007060 ;  
2532 007064 ;  
2533 007068 ;  
2534 007072 ;  
2535 007076 ;  
2536 007080 ;  
2537 007084 ;  
2538 007088 ;  
2539 007092 ;  
2540 007096 ;  
2541 007100 ;  
2542 007104 ;  
2543 007108 ;  
2544 007112 ;  
2545 007116 ;  
2546 007120 ;  
2547 007124 ;  
2548 007128 ;  
2549 007132 ;  
2550 007136 ;  
2551 007140 ;  
2552 007144 ;  
2553 007148 ;  
2554 007152 ;  
2555 007156 ;  
2556 007160 ;  
2557 007164 ;  
2558 007168 ;  
2559 007172 ;  
2560 007176 ;  
2561 007180 ;  
2562 007184 ;  
2563 007188 ;  
2564 007192 ;  
2565 007196 ;  
2566 007200 ;  
2567 007204 ;  
2568 007208 ;  
2569 007212 ;  
2570 007216 ;  
2571 007220 ;  
2572 007224 ;  
2573 007228 ;  
2574 007232 ;  
2575 007236 ;  
2576 007240 ;  
2577 007244 ;  
2578 007248 ;  
2579 007252 ;  
2580 007256 ;  
2581 007260 ;  
2582 007264 ;  
2583 007268 ;  
2584 007272 ;  
2585 007276 ;  
2586 007280 ;  
2587 007284 ;  
2588 007288 ;  
2589 007292 ;  
2590 007296 ;  
2591 007300 ;  
2592 007304 ;  
2593 007308 ;  
2594 007312 ;  
2595 007316 ;  
2596 007320 ;  
2597 007324 ;  
2598 007328 ;  
2599 007332 ;  
2600 007336 ;  
2601 007340 ;  
2602 007344 ;  
2603 007348 ;  
2604 007352 ;  
2605 007356 ;  
2606 007360 ;  
2607 007364 ;  
2608 007368 ;  
2609 007372 ;  
2610 007376 ;  
2611 007380 ;  
2612 007384 ;  
2613 007388 ;  
2614 007392 ;  
2615 007396 ;  
2616 007400 ;  
2617 007404 ;  
2618 007408 ;  
2619 007412 ;  
2620 007416 ;  
2621 007420 ;  
2622 007424 ;  
2623 007428 ;  
2624 007432 ;  
2625 007436 ;  
2626 007440 ;  
2627 007444 ;  
2628 007448 ;  
2629 007452 ;  
2630 007456 ;  
2631 007460 ;  
2632 007464 ;  
2633 007468 ;  
2634 007472 ;  
2635 007476 ;  
2636 007480 ;  
2637 007484 ;  
2638 007488 ;  
2639 007492 ;  
2640 007496 ;  
2641 007500 ;  
2642 007504 ;  
2643 007508 ;  
2644 007512 ;  
2645 007516 ;  
2646 007520 ;  
2647 007524 ;  
2648 007528 ;  
2649 007532 ;  
2650 007536 ;  
2651 007540 ;  
2652 007544 ;  
2653 007548 ;  
2654 007552 ;  
2655 007556 ;  
2656 007560 ;  
2657 007564 ;  
2658 007568 ;  
2659 007572 ;  
2660 007576 ;  
2661 007580 ;  
2662 007584 ;  
2663 007588 ;  
2664 007592 ;  
2665 007596 ;  
2666 007600 ;  
2667 007604 ;  
2668 007608 ;  
2669 007612 ;  
2670 007616 ;  
2671 007620 ;  
2672 007624 ;  
2673 007628 ;  
2674 007632 ;  
2675 007636 ;  
2676 007640 ;  
2677 007644 ;  
2678 007648 ;  
2679 007652 ;  
2680 007656 ;  
2681 007660 ;  
2682 007664 ;  
2683 007668 ;  
2684 007672 ;  
2685 007676 ;  
2686 007680 ;  
2687 007684 ;  
2688 007688 ;  
2689 007692 ;  
2690 007696 ;  
2691 007700 ;  
2692 007704 ;  
2693 007708 ;  
2694 007712 ;  
2695 007716 ;  
2696 007720 ;  
2697 007724 ;  
2698 007728 ;  
2699 007732 ;  
2700 007736 ;  
2701 007740 ;  
2702 007744 ;  
2703 007748 ;  
2704 007752 ;  
2705 007756 ;  
2706 007760 ;  
2707 007764 ;  
2708 007768 ;  
2709 007772 ;  
2710 007776 ;  
2711 007780 ;  
2712 007784 ;  
2713 007788 ;  
2714 007792 ;  
2715 007796 ;  
2716 007800 ;  
2717 007804 ;  
2718 007808 ;  
2719 007812 ;  
2720 007816 ;  
2721 007820 ;  
2722 007824 ;  
2723 007828 ;  
2724 007832 ;  
2725 007836 ;  
2726 007840 ;  
2727 007844 ;  
2728 007848 ;  
2729 007852 ;  
2730 007856 ;  
2731 007860 ;  
2732 007864 ;  
2733 007868 ;  
2734 007872 ;  
2735 007876 ;  
2736 007880 ;  
2737 007884 ;  
2738 007888 ;  
2739 007892 ;  
2740 007896 ;  
2741 007900 ;  
2742 007904 ;  
2743 007908 ;  
2744 007912 ;  
2745 007916 ;  
2746 007920 ;  
2747 007924 ;  
2748 007928 ;  
2749 007932 ;  
2750 007936 ;  
2751 007940 ;  
2752 007944 ;  
2753 007948 ;  
2754 007952 ;  
2755 007956 ;  
2756 007960 ;  
2757 007964 ;  
2758 007968 ;  
2759 007972 ;  
2760 007976 ;  
2761 007980 ;  
2762 007984 ;  
2763 007988 ;  
2764 007992 ;  
2765 007996 ;  
2766 008000 ;  
2767 008004 ;  
2768 008008 ;  
2769 008012 ;  
2770 008016 ;  
2771 008020 ;  
2772 008024 ;  
2773 008028 ;  
2774 008032 ;  
2775 008036 ;  
2776 008040 ;  
2777 008044 ;  
2778 008048 ;  
2779 008052 ;  
2780 008056 ;  
2781 008060 ;  
2782 008064 ;  
2783 008068 ;  
2784 008072 ;  
2785 008076 ;  
2786 008080 ;  
2787 008084 ;  
2788 008088 ;  
2789 008092 ;  
2790 008096 ;  
2791 008100 ;  
2792 008104 ;  
2793 008108 ;  
2794 008112 ;  
2795 008116 ;  
2796 008120 ;  
2797 008124 ;  
2798 008128 ;  
2799 008132 ;  
2800 008136 ;  
2801 008140 ;  
2802 008144 ;  
2803 008148 ;  
2804 008152 ;  
2805 008156 ;  
2806 008160 ;  
2807 008164 ;  
2808 008168 ;  
2809 008172 ;  
2810 008176 ;  
2811 008180 ;  
2812 008184 ;  
2813 008188 ;  
2814 008192 ;  
2815 008196 ;  
2816 008200 ;  
2817 008204 ;  
2818 008208 ;  
2819 008212 ;  
2820 008216 ;  
2821 008220 ;  
2822 008224 ;  
2823 008228 ;  
2824 008232 ;  
2825 008236 ;  
2826 008240 ;  
2827 008244 ;  
2828 008248 ;  
2829 008252 ;  
2830 008256 ;  
2831 008260 ;  
2832 008264 ;  
2833 008268 ;  
2834 008272 ;  
2835 008276 ;  
2836 008280 ;  
2837 008284 ;  
2838 008288 ;  
2839 008292 ;  
2840 008296 ;  
2841 008300 ;  
2842 008304 ;  
2843 008308 ;  
2844 008312 ;  
2845 008316 ;  
2846 008320 ;  
2847 008324 ;  
2848 008328 ;  
2849 008332 ;  
2850 008336 ;  
2851 008340 ;  
2852 008344 ;  
2853 008348 ;  
2854 008352 ;  
2855 008356 ;  
2856 008360 ;  
2857 008364 ;  
2858 008368 ;  
2859 008372 ;  
2860 008376 ;  
2861 008380 ;  
2862 008384 ;  
2863 008388 ;  
2864 008392 ;  
2865 008396 ;  
2866 008400 ;  
2867 008404 ;  
2868 008408 ;  
2869 008412 ;  
2870 008416 ;  
2871 008420 ;  
2872 008424 ;  
2873 008428 ;  
2874 008432 ;  
2875 008436 ;  
2876 008440 ;  
2877 008444 ;  
2878 008448 ;  
2879 008452 ;  
2880 008456 ;  
2881 008460 ;  
2882 008464 ;  
2883 008468 ;  
2884 008472 ;  
2885 008476 ;  
2886 008480 ;  
2887 008484 ;  
2888 008488 ;  
2889 008492 ;  
2890 008496 ;  
2891 008500 ;  
2892 008504 ;  
2893 008508 ;  
2894 008512 ;  
2895 008516 ;  
2896 008520 ;  
2897 008524 ;  
2898 008528 ;  
2899 008532 ;  
2900 008536 ;  
2901 008540 ;  
2902 008544 ;  
2903 008548 ;  
2904 008552 ;  
2905 008556 ;  
2906 008560 ;  
2907 008564 ;  
2908 008568 ;  
2909 008572 ;  
2910 008576 ;  
2911 008580 ;  
2912 008584 ;  
2913 008588 ;  
2914 008592 ;  
2915 008596 ;  
2916 008600 ;  
2917 008604 ;  
2918 008608 ;  
2919 008612 ;  
2920 008616 ;  
2921 008620 ;  
2922 008624 ;  
2923 008628 ;  
2924 008632 ;  
2925 008636 ;  
2926 008640 ;  
2927 008644 ;  
2928 008648 ;  
2929 008652 ;  
2930 008656 ;  
2931 008660 ;  
2932 008664 ;  
2933 008668 ;  
2934 008672 ;  
2935 008676 ;  
2936 008680 ;  
2937 008684 ;  
2938 008688 ;  
2939 008692 ;  
2940 008696 ;  
2941 008700 ;  
2942 008704 ;  
2943 008708 ;  
2944 008712 ;  
2945 008716 ;  
2946 008720 ;  
2947 008724 ;  
2948 008728 ;  
2949 008732 ;  
2950 008736 ;  
2951 008740 ;  
2952 008744 ;  
2953 008748 ;  
2954 008752 ;  
2955 008756 ;  
2956 008760 ;  
2957 008764 ;  
2958 008768 ;  
2959 008772 ;  
2960 008776 ;  
2961 008780 ;  
2962 008784 ;  
2963 008788 ;  
2964 008792 ;  
2965 008796 ;  
2966 008800 ;  
2967 008804 ;  
2968 008808 ;  
2969 008812 ;  
2970 008816 ;  
2971 008820 ;  
2972 008824 ;  
2973 008828 ;  
2974 008832 ;  
2975 008836 ;  
2976 008840 ;  
2977 008844 ;  
2978 008848 ;  
2979 008852 ;  
2980 008856 ;  
2981 008860 ;  
2982 008864 ;  
2983 008868 ;  
2984 008872 ;  
2985 008876 ;  
2986 008880 ;  
2987 008884 ;  
2988 008888 ;  
2989 008892 ;  
2990 008896 ;  
2991 008900 ;  
2992 008904 ;  
2993 008908 ;  
2994 008912 ;  
2995 008916 ;  
2996 008920 ;  
2997 008924 ;  
2998 008928 ;  
2999 008932 ;  
3000 008936 ;  
3001 008940 ;  
3002 008944 ;  
3003 008948 ;  
3004 008952 ;  
3005 008956 ;  
3006 008960 ;  
3007 008964 ;  
3008 008968 ;  
3009 008972 ;  
3010 008976 ;  
3011 008980 ;  
3012 008984 ;  
3013 008988 ;  
3014 008992 ;  
3015 008996 ;  
3016 009000 ;  
3017 009004 ;  
3018 009008 ;  
3019 009012 ;  
3020 009016 ;  
3021 009020 ;  
3022 009024 ;  
3023 009028 ;  
3024 009032 ;  
3025 009036 ;  
3026 009040 ;  
3027 009044 ;  
3028 009048 ;  
3029 009052 ;  
3030 009056 ;  
3031 009060 ;  
3032 009064 ;  
3033 009068 ;  
3034 009072 ;  
3035 009076 ;  
3036 009080 ;  
3037 009084 ;  
3038 009088 ;  
3039 009092 ;  
3040 009096 ;  
3041 009100 ;  
3042 009104 ;  
3043 009108 ;  
3044 009112 ;  
3045 009116 ;  
3046 009120 ;  
3047 009124 ;  
3048 009128 ;  
3049 009132 ;  
3050 009136 ;  
3051 009140 ;  
3052 009144 ;  
3053 009148 ;  
3054 009152 ;  
3055 009156 ;  
3056 009160 ;  
3057 009164 ;  
3058 009168 ;  
3059 009172 ;  
3060 009176 ;  
3061 009180 ;  
3062 009184 ;  
3063 009188 ;  
3064 009192 ;  
3065 009196 ;  
3066 009200 ;  
3067 009204 ;  
3068 009208 ;  
3069 009212 ;  
3070 009216 ;  
3071 009220 ;  
3072 009224 ;  
3073 009228 ;  
3074 009232 ;  
3075 009236 ;  
3076 009240 ;  
3077 009244 ;  
3078 009248 ;  
3079 009252 ;  
3080 009256 ;  
3081 009260 ;  
3082 009264 ;  
3083 009268 ;  
3084 009272 ;  
3085 009276 ;  
3086 009280 ;  
3087 009284 ;  
3088 009288 ;  
3089 009292 ;  
3090 009296 ;  
3091 009300 ;  
3092 009304 ;  
3093 009308 ;  
3094 009312 ;<
```





```

2726 010946 010946 000002 $TRAP1 MOV R0,=(SP)
2727 010970 010970 000002 MOV 2(SP),R0
2728 010974 007340 TST -R0,R0
2729 010976 113000 MOVB (R0),R0
2730 010978 000000 ASL R0
2731 010978 000000 MOV $TRAPD(R0),R0
2732 010978 000000 RFS R0
2733 010978 000000 RFS R0
2734 010978 000000 RFS R0
2735 010978 000000 RFS R0
2736 010978 011646 $TRAP2 MOV (SP),=(SP)
2737 010978 010966 $TRAP2 MOV 4(SP),2(SP)
2738 010978 000002 RFI
2739 010978 000002 RFI
2740 010978 000002 RFI
2741 010978 000002 RFI
2742 010978 000002 RFI
2743 010978 000002 RFI
2744 010978 000002 RFI
2745 010978 000002 RFI
2746 010978 000002 RFI
2747 010978 000002 RFI
2748 010978 000002 RFI
2749 010978 000002 RFI
2750 010978 000002 RFI
2751 010978 000002 RFI
2752 010978 000002 RFI
2753 010978 000002 RFI
2754 010978 000002 RFI
2755 010978 000002 RFI
2756 010978 000002 RFI
2757 010978 000002 RFI
2758 010978 000002 RFI
2759 010978 000002 RFI
2760 010978 000002 RFI
2761 010978 000002 RFI
2762 010978 000002 RFI
2763 010978 000002 RFI
2764 010978 000002 RFI
2765 010978 000002 RFI
2766 010978 000002 RFI
2767 010978 000002 RFI
2768 010978 000002 RFI
2769 010978 000002 RFI
2770 010978 000002 RFI
2771 010978 000002 RFI
2772 010978 000002 RFI
2773 010978 000002 RFI
2774 010978 000002 RFI
2775 010978 000002 RFI
2776 010978 000002 RFI
2777 010978 000002 RFI
2778 010978 000002 RFI
2779 010978 000002 RFI
2780 010978 000002 RFI
2781 010978 000002 RFI

```

NO-D1-02RJK-E, RK11 BASIC LOGIC TEST 1 MACY11 30(1046) 06-JUN-77 14140 PAGE 53  
 DRRKJE.P11 19-APR-77 09114 POWER DOWN AND UP ROUTINES

```

2782 010214 012737 010326 000024 MOV $PPRRUP,$PPRRVEC
2783 010222 000000 HALT
2784 010224 000776 BR -2
2785 010224 000776 BR -2
2786 010224 000776 BR -2
2787 010224 000776 BR -2
2788 010224 012737 010320 000024 $POWER UP ROUTINE
2789 010224 012737 010324 000024 $ILLUP,$PPRRVEC
2790 010224 000000 CLR $SAVRS
2791 010224 000000 INC $SAVRS
2792 010224 000000 BNE $SAVRS
2793 010224 000000 MOV $R0,$R0
2794 010224 000000 MOV $R1,$R1
2795 010224 000000 MOV $R2,$R2
2796 010224 000000 MOV $R3,$R3
2797 010224 000000 MOV $R4,$R4
2798 010224 000000 MOV $R5,$R5
2799 010224 000000 MOV $R6,$R6
2800 010224 000000 MOV $R7,$R7
2801 010224 000000 MOV $R8,$R8
2802 010224 000000 MOV $R9,$R9
2803 010224 000000 MOV $R10,$R10
2804 010224 000000 MOV $R11,$R11
2805 010224 000000 MOV $R12,$R12
2806 010224 000000 MOV $R13,$R13
2807 010224 000000 MOV $R14,$R14
2808 010224 000000 MOV $R15,$R15
2809 010224 000000 MOV $R16,$R16
2810 010224 000000 MOV $R17,$R17
2811 010224 000000 MOV $R18,$R18
2812 010224 000000 MOV $R19,$R19
2813 010224 000000 MOV $R20,$R20
2814 010224 000000 MOV $R21,$R21
2815 010224 000000 MOV $R22,$R22
2816 010224 000000 MOV $R23,$R23
2817 010224 000000 MOV $R24,$R24
2818 010224 000000 MOV $R25,$R25
2819 010224 000000 MOV $R26,$R26
2820 010224 000000 MOV $R27,$R27
2821 010224 000000 MOV $R28,$R28
2822 010224 000000 MOV $R29,$R29
2823 010224 000000 MOV $R30,$R30
2824 010224 000000 MOV $R31,$R31
2825 010224 000000 MOV $R32,$R32
2826 010224 000000 MOV $R33,$R33
2827 010224 000000 MOV $R34,$R34
2828 010224 000000 MOV $R35,$R35
2829 010224 000000 MOV $R36,$R36
2830 010224 000000 MOV $R37,$R37
2831 010224 000000 MOV $R38,$R38
2832 010224 000000 MOV $R39,$R39
2833 010224 000000 MOV $R40,$R40
2834 010224 000000 MOV $R41,$R41
2835 010224 000000 MOV $R42,$R42
2836 010224 000000 MOV $R43,$R43
2837 010224 000000 MOV $R44,$R44

```



2838	010474	000			
2839	019475	102	051525	044440	
2840	019502	044516	020124	044504	
2841	019510	023104	007516	020124	
2842	019516	046103	040505	020122	
2843	019524	045522	051503	000	
2844	019531	103	052116	046122	
2845	019536	051040	051505	052105	
2846	019544	042042	042111	023516	
2847	019552	020124	046103	040505	
2848	019560	020122	045522	051503	
2849	019574	047105	047111	020107	
2850	019602	043447	023517	000	
2851	019607	103	052116	046122	
2852	019614	051040	054504	042040	
2853	019622	042111	023516	020124	
2854	019630	042523	020124	043101	
2855	019636	042524	020122	047103	
2856	019644	051124	020114	042522	
2857	019652	042523	000124		
2858	019656	042522	044507	052123	
2859	019664	051105	047040	052117	
2860	019672	041440	042514	051101	
2861	019700	042105	000		
2862	019703	122	053513	020103	
2863	019710	051105	047522	000122	
2864	019716	045522	040502	042440	
2865	019721	031122	031117	000	
2866	019731	103	052116	046122	
2867	019736	051040	051505	052105	
2868	019743	042042	042111	023516	
2869	019752	020124	046103	040505	
2870	019763	020122	042522	044507	
2871	019766	052113	051105	000	
2872	019773	122	042113	020101	
2873	011000	051105	047522	000122	
2874	011006	052502	020123	047111	
2875	011014	052111	042040	042111	
2876	011022	023516	020124	045103	
2877	011030	020122	042522	044507	
2878	011036	052113	000122		
2879	011042	042101	051104	051505	
2880	011050	044503	043516	042440	
2881	011056	051122	051117	052055	

2894	011064	044522	042105	052040	
2895	011072	020117	042101	051104	
2896	011100	051505	020123	042522	
2897	011106	030507	020054	047507	
2898	011114	020124	047522	031107	
2899	011122	000			
2900	011123	104	042111	023516	
2901	011130	020124	046103	040505	
2902	011136	020122	045522	051503	
2903	011144	046043	053517	041040	
2904	011152	052131	000105		
2905	011156	044504	047104	052047	
2906	011163	041440	042514	051101	
2907	011172	051040	044513	020123	
2908	011200	044510	044107	041040	
2909	011206	052131	000105		
2910	011212	051124	042511	020104	
2911	011220	047524	041440	042514	
2912	011226	051101	051040	051513	
2913	011234	020123	010507	02131	
2914	011242	023505	020054	044103	
2915	011250	047101	042507	020104	
2916	011256	051047	043505	051511	
2917	011264	000047			
2921	011266	040506	046111	042105	
2922	011274	020240	020117	046103	
2923	011302	040505	020122	051047	
2924	011310	043505	041055	052131	
2925	011316	023505	000		
2926	011321	122	041513	020123	
2927	011326	046101	042524	042522	
2928	011334	020104	047117	041440	
2929	011342	042514	051101	047111	
2930	011350	020107	051047	043505	
2931	011356	041055	052131	023505	
2932	011364	000			
2933	011365	124	044522	042105	
2934	011372	052040	020117	046103	
2935	011400	040505	020122	051047	
2936	011406	043505	041055	052131	
2937	011414	023461	020054	044103	
2938	011422	047101	042507	020104	
2939	011430	051047	043505	041055	
2940	011436	052131	023462	000	
2941	011443	125	042516	050130	
2942	011450	042524	020104		
2943	011456	045522	030461	044440	
2944	011464	052116	051105	052522	
2945	011472	052124	000		



BADINT 002212  
 BADTMO 002126  
 BIT0 = 000001  
 BIT00 = 000001  
 BIT01 = 000002  
 BIT02 = 000004  
 BIT03 = 000010  
 BIT04 = 000020  
 BIT05 = 000040  
 BIT06 = 000100  
 BIT07 = 000200  
 BIT08 = 000400  
 BIT09 = 000800  
 BIT10 = 001600  
 BIT11 = 003200  
 BIT12 = 006400  
 BIT13 = 0012000  
 BIT14 = 0024000  
 BIT15 = 0048000  
 BIT16 = 0096000  
 BIT17 = 0019200  
 BIT18 = 0038400  
 BIT19 = 0076800  
 BIT20 = 0015360  
 BIT21 = 0030720  
 BIT22 = 0061440  
 BIT23 = 0012288  
 BIT24 = 0024576  
 BIT25 = 0049152  
 BIT26 = 0098304  
 BIT27 = 00196608  
 BIT28 = 00393216  
 BIT29 = 00786432  
 BIT30 = 001572864  
 BIT31 = 003145728  
 BIT32 = 006291456  
 BIT33 = 0012582912  
 BIT34 = 0025165824  
 BIT35 = 0050331648  
 BIT36 = 00100663008  
 BIT37 = 00201326016  
 BIT38 = 00402652032  
 BIT39 = 00805304064  
 BIT40 = 001610608128  
 BIT41 = 003221216256  
 BIT42 = 006442432512  
 BIT43 = 001288486624  
 BIT44 = 002576973248  
 BIT45 = 005153946496  
 BIT46 = 0010307890912  
 BIT47 = 0020615781824  
 BIT48 = 0041231563648  
 BIT49 = 0082463127296  
 BIT50 = 0016482624576  
 BIT51 = 0032965249152  
 BIT52 = 0065930498304  
 BIT53 = 00131860996608  
 BIT54 = 00263721993216  
 BIT55 = 00527443986432  
 BIT56 = 00105488792864  
 BIT57 = 00210977585728  
 BIT58 = 00421955171456  
 BIT59 = 00843910342912  
 BIT60 = 00168782067824  
 BIT61 = 00337564135648  
 BIT62 = 00675128271296  
 BIT63 = 001350256425984  
 BIT64 = 002700512851968  
 BIT65 = 005401025703936  
 BIT66 = 0010802051478784  
 BIT67 = 0021604102957568  
 BIT68 = 0043208205915136  
 BIT69 = 0086416411830272  
 BIT70 = 0017283283660544  
 BIT71 = 0034566567321088  
 BIT72 = 0069133134642176  
 BIT73 = 0013826626928352  
 BIT74 = 0027653253856704  
 BIT75 = 0055306507713408  
 BIT76 = 001104101456  
 BIT77 = 002208202912  
 BIT78 = 004416405824  
 BIT79 = 008832811648  
 BIT80 = 0017665622976  
 BIT81 = 0035331255952  
 BIT82 = 0070662511904  
 BIT83 = 001413067776  
 BIT84 = 002826135552  
 BIT85 = 005652271104  
 BIT86 = 00112451776  
 BIT87 = 002249035536  
 BIT88 = 004498071072  
 BIT89 = 0089961424448  
 BIT90 = 0017992288896  
 BIT91 = 0035984577792  
 BIT92 = 0071969155584  
 BIT93 = 0014387239296  
 BIT94 = 0028774478592  
 BIT95 = 0057548957184  
 BIT96 = 0011511696  
 BIT97 = 0023023392  
 BIT98 = 0046046784  
 BIT99 = 0092093568  
 BIT00 = 0018418176  
 BIT01 = 0036836352  
 BIT02 = 0073672704  
 BIT03 = 0014706944  
 BIT04 = 0029413888  
 BIT05 = 0058827776  
 BIT06 = 001171456  
 BIT07 = 002342912  
 BIT08 = 004685824  
 BIT09 = 009371648  
 BIT10 = 001874304  
 BIT11 = 003748608  
 BIT12 = 007497216  
 BIT13 = 00149456  
 BIT14 = 00298912  
 BIT15 = 00597824  
 BIT16 = 001197136  
 BIT17 = 002394272  
 BIT18 = 004788544  
 BIT19 = 009577088  
 BIT20 = 001946304  
 BIT21 = 003892608  
 BIT22 = 007785216  
 BIT23 = 001573184  
 BIT24 = 003146368  
 BIT25 = 006292736  
 BIT26 = 0012582912  
 BIT27 = 0025165824  
 BIT28 = 0050331648  
 BIT29 = 00100663008  
 BIT30 = 00201326016  
 BIT31 = 00402652032  
 BIT32 = 00805304064  
 BIT33 = 001610608128  
 BIT34 = 003221216256  
 BIT35 = 006442432512  
 BIT36 = 001288486624  
 BIT37 = 002576973248  
 BIT38 = 005153946496  
 BIT39 = 0010307890912  
 BIT40 = 0020615781824  
 BIT41 = 0041231563648  
 BIT42 = 0082463127296  
 BIT43 = 0016482624576  
 BIT44 = 0032965249152  
 BIT45 = 0065930498304  
 BIT46 = 00131860996608  
 BIT47 = 00263721993216  
 BIT48 = 00527443986432  
 BIT49 = 00105488792864  
 BIT50 = 00210977585728  
 BIT51 = 00421955171456  
 BIT52 = 00843910342912  
 BIT53 = 0017283283660544  
 BIT54 = 0034566567321088  
 BIT55 = 0069133134642176  
 BIT56 = 0013826626928352  
 BIT57 = 0027653253856704  
 BIT58 = 0055306507713408  
 BIT59 = 001104101456  
 BIT60 = 002208202912  
 BIT61 = 004416405824  
 BIT62 = 008832811648  
 BIT63 = 0017665622976  
 BIT64 = 0035331255952  
 BIT65 = 0070662511904  
 BIT66 = 001413067776  
 BIT67 = 002826135552  
 BIT68 = 005652271104  
 BIT69 = 00112451776  
 BIT70 = 002249035536  
 BIT71 = 004498071072  
 BIT72 = 0089961424448  
 BIT73 = 0017992288896  
 BIT74 = 0035984577792  
 BIT75 = 0071969155584  
 BIT76 = 0014387239296  
 BIT77 = 0028774478592  
 BIT78 = 0057548957184  
 BIT79 = 0011511696  
 BIT80 = 0023023392  
 BIT81 = 0046046784  
 BIT82 = 0092093568  
 BIT83 = 0018418176  
 BIT84 = 0036836352  
 BIT85 = 0073672704  
 BIT86 = 0014706944  
 BIT87 = 0029413888  
 BIT88 = 0058827776  
 BIT89 = 001171456  
 BIT90 = 002342912  
 BIT91 = 004685824  
 BIT92 = 009371648  
 BIT93 = 001874304  
 BIT94 = 003748608  
 BIT95 = 007497216  
 BIT96 = 00149456  
 BIT97 = 00298912  
 BIT98 = 00597824  
 BIT99 = 001197136  
 BIT00 = 002394272  
 BIT01 = 004788544  
 BIT02 = 009577088  
 BIT03 = 001946304  
 BIT04 = 003892608  
 BIT05 = 007785216  
 BIT06 = 001573184  
 BIT07 = 003146368  
 BIT08 = 006292736  
 BIT09 = 0012582912  
 BIT10 = 0025165824  
 BIT11 = 0050331648  
 BIT12 = 00100663008  
 BIT13 = 00201326016  
 BIT14 = 00402652032  
 BIT15 = 00805304064  
 BIT16 = 001610608128  
 BIT17 = 003221216256  
 BIT18 = 006442432512  
 BIT19 = 001288486624  
 BIT20 = 002576973248  
 BIT21 = 005153946496  
 BIT22 = 0010307890912  
 BIT23 = 0020615781824  
 BIT24 = 0041231563648  
 BIT25 = 0082463127296  
 BIT26 = 0016482624576  
 BIT27 = 0032965249152  
 BIT28 = 0065930498304  
 BIT29 = 00131860996608  
 BIT30 = 00263721993216  
 BIT31 = 00527443986432  
 BIT32 = 00105488792864  
 BIT33 = 00210977585728  
 BIT34 = 00421955171456  
 BIT35 = 00843910342912  
 BIT36 = 0017283283660544  
 BIT37 = 0034566567321088  
 BIT38 = 0069133134642176  
 BIT39 = 0013826626928352  
 BIT40 = 0027653253856704  
 BIT41 = 0055306507713408  
 BIT42 = 001104101456  
 BIT43 = 002208202912  
 BIT44 = 004416405824  
 BIT45 = 008832811648  
 BIT46 = 0017665622976  
 BIT47 = 0035331255952  
 BIT48 = 0070662511904  
 BIT49 = 001413067776  
 BIT50 = 002826135552  
 BIT51 = 005652271104  
 BIT52 = 00112451776  
 BIT53 = 002249035536  
 BIT54 = 004498071072  
 BIT55 = 0089961424448  
 BIT56 = 0017992288896  
 BIT57 = 0035984577792  
 BIT58 = 0071969155584  
 BIT59 = 0014387239296  
 BIT60 = 0028774478592  
 BIT61 = 0057548957184  
 BIT62 = 0011511696  
 BIT63 = 0023023392  
 BIT64 = 0046046784  
 BIT65 = 0092093568  
 BIT66 = 0018418176  
 BIT67 = 0036836352  
 BIT68 = 0073672704  
 BIT69 = 0014706944  
 BIT70 = 0029413888  
 BIT71 = 0058827776  
 BIT72 = 001171456  
 BIT73 = 002342912  
 BIT74 = 004685824  
 BIT75 = 009371648  
 BIT76 = 001874304  
 BIT77 = 003748608  
 BIT78 = 007497216  
 BIT79 = 00149456  
 BIT80 = 00298912  
 BIT81 = 00597824  
 BIT82 = 001197136  
 BIT83 = 002394272  
 BIT84 = 004788544  
 BIT85 = 009577088  
 BIT86 = 001946304  
 BIT87 = 003892608  
 BIT88 = 007785216  
 BIT89 = 001573184  
 BIT90 = 003146368  
 BIT91 = 006292736  
 BIT92 = 0012582912  
 BIT93 = 0025165824  
 BIT94 = 0050331648  
 BIT95 = 00100663008  
 BIT96 = 00201326016  
 BIT97 = 00402652032  
 BIT98 = 00805304064  
 BIT99 = 001610608128  
 BIT00 = 003221216256  
 BIT01 = 006442432512  
 BIT02 = 001288486624  
 BIT03 = 002576973248  
 BIT04 = 005153946496  
 BIT05 = 0010307890912  
 BIT06 = 0020615781824  
 BIT07 = 0041231563648  
 BIT08 = 0082463127296  
 BIT09 = 0016482624576  
 BIT10 = 0032965249152  
 BIT11 = 0065930498304  
 BIT12 = 00131860996608  
 BIT13 = 00263721993216  
 BIT14 = 00527443986432  
 BIT15 = 00105488792864  
 BIT16 = 00210977585728  
 BIT17 = 00421955171456  
 BIT18 = 00843910342912  
 BIT19 = 0017283283660544  
 BIT20 = 0034566567321088  
 BIT21 = 0069133134642176  
 BIT22 = 0013826626928352  
 BIT23 = 0027653253856704  
 BIT24 = 0055306507713408  
 BIT25 = 001104101456  
 BIT26 = 002208202912  
 BIT27 = 004416405824  
 BIT28 = 008832811648  
 BIT29 = 0017665622976  
 BIT30 = 0035331255952  
 BIT31 = 0070662511904  
 BIT32 = 001413067776  
 BIT33 = 002826135552  
 BIT34 = 005652271104  
 BIT35 = 00112451776  
 BIT36 = 002249035536  
 BIT37 = 004498071072  
 BIT38 = 0089961424448  
 BIT39 = 0017992288896  
 BIT40 = 0035984577792  
 BIT41 = 0071969155584  
 BIT42 = 0014387239296  
 BIT43 = 0028774478592  
 BIT44 = 0057548957184  
 BIT45 = 0011511696  
 BIT46 = 0023023392  
 BIT47 = 0046046784  
 BIT48 = 0092093568  
 BIT49 = 0018418176  
 BIT50 = 0036836352  
 BIT51 = 0073672704  
 BIT52 = 0014706944  
 BIT53 = 0029413888  
 BIT54 = 0058827776  
 BIT55 = 001171456  
 BIT56 = 002342912  
 BIT57 = 004685824  
 BIT58 = 009371648  
 BIT59 = 001874304  
 BIT60 = 003748608  
 BIT61 = 007497216  
 BIT62 = 00149456  
 BIT63 = 00298912  
 BIT64 = 00597824  
 BIT65 = 001197136  
 BIT66 = 002394272  
 BIT67 = 004788544  
 BIT68 = 009577088  
 BIT69 = 001946304  
 BIT70 = 003892608  
 BIT71 = 007785216  
 BIT72 = 001573184  
 BIT73 = 003146368  
 BIT74 = 006292736  
 BIT75 = 0012582912  
 BIT76 = 0025165824  
 BIT77 = 0050331648  
 BIT78 = 00100663008  
 BIT79 = 00201326016  
 BIT80 = 00402652032  
 BIT81 = 00805304064  
 BIT82 = 001610608128  
 BIT83 = 003221216256  
 BIT84 = 006442432512  
 BIT85 = 001288486624  
 BIT86 = 002576973248  
 BIT87 = 005153946496  
 BIT88 = 0010307890912  
 BIT89 = 0020615781824  
 BIT90 = 0041231563648  
 BIT91 = 0082463127296  
 BIT92 = 0016482624576  
 BIT93 = 0032965249152  
 BIT94 = 0065930498304  
 BIT95 = 00131860996608  
 BIT96 = 00263721993216  
 BIT97 = 00527443986432  
 BIT98 = 00105488792864  
 BIT99 = 00210977585728  
 BIT00 = 00421955171456  
 BIT01 = 00843910342912  
 BIT02 = 0017283283660544  
 BIT03 = 0034566567321088  
 BIT04 = 0069133134642176  
 BIT05 = 0013826626928352  
 BIT06 = 0027653253856704  
 BIT07 = 0055306507713408  
 BIT08 = 001104101456  
 BIT09 = 002208202912  
 BIT10 = 004416405824  
 BIT11 = 008832811648  
 BIT12 = 0017665622976  
 BIT13 = 0035331255952  
 BIT14 = 0070662511904  
 BIT15 = 001413067776  
 BIT16 = 002826135552  
 BIT17 = 005652271104  
 BIT18 = 00112451776  
 BIT19 = 002249035536  
 BIT20 = 004498071072  
 BIT21 = 0089961424448  
 BIT22 = 0017992288896  
 BIT23 = 0035984577792  
 BIT24 = 0071969155584  
 BIT25 = 0014387239296  
 BIT26 = 0028774478592  
 BIT27 = 0057548957184  
 BIT28 = 0011511696  
 BIT29 = 0023023392  
 BIT30 = 0046046784  
 BIT31 = 0092093568  
 BIT32 = 0018418176  
 BIT33 = 0036836352  
 BIT34 = 0073672704  
 BIT35 = 0014706944  
 BIT36 = 0029413888  
 BIT37 = 0058827776  
 BIT38 = 001171456  
 BIT39 = 002342912  
 BIT40 = 004685824  
 BIT41 = 009371648  
 BIT42 = 001874304  
 BIT43 = 003748608  
 BIT44 = 007497216  
 BIT45 = 00149456  
 BIT46 = 00298912  
 BIT47 = 00597824  
 BIT48 = 001197136  
 BIT49 = 002394272  
 BIT50 = 004788544  
 BIT51 = 009577088  
 BIT52 = 001946304  
 BIT53 = 003892608  
 BIT54 = 007785216  
 BIT55 = 001573184  
 BIT56 = 003146368  
 BIT57 = 006292736  
 BIT58 = 0012582912  
 BIT59 = 0025165824  
 BIT60 = 0050331648  
 BIT61 = 00100663008  
 BIT62 = 00201326016  
 BIT63 = 00402652032  
 BIT64 = 00805304064  
 BIT65 = 001610608128  
 BIT66 = 003221216256  
 BIT67 = 006442432512  
 BIT68 = 001288486624  
 BIT69 = 002576973248  
 BIT70 = 005153946496  
 BIT71 = 0010307890912  
 BIT72 = 0020615781824  
 BIT73 = 0041231563648  
 BIT74 = 0082463127296  
 BIT75 = 0016482624576  
 BIT76 = 0032965249152  
 BIT77 = 0065930498304  
 BIT78 = 00131860996608  
 BIT79 = 00263721993216  
 BIT80 = 00527443986432  
 BIT81 = 00105488792864  
 BIT82 = 00210977585728  
 BIT83 = 00421955171456  
 BIT84 = 00843910342912  
 BIT85 = 0017283283660544  
 BIT86 = 0034566567321088  
 BIT87 = 0069133134642176  
 BIT88 = 0013826626928352  
 BIT89 = 0027653253856704  
 BIT90 = 0055306507713408  
 BIT91 = 001104101456  
 BIT92 = 002208202912  
 BIT93 = 004416405824  
 BIT94 = 008832811648  
 BIT95 = 0017665622976  
 BIT96 = 0035331255952  
 BIT97 = 0070662511904  
 BIT98 = 001413067776  
 BIT99 = 002826135552  
 BIT00 = 005652271104  
 BIT01 = 00112451776  
 BIT02 = 002249035536  
 BIT03 = 004498071072  
 BIT04 = 0089961424448  
 BIT05 = 0017992288896  
 BIT06 = 0035984577792  
 BIT07 = 0071969155584  
 BIT08 = 0014387239296  
 BIT09 = 0028774478592  
 BIT10 = 0057548957184  
 BIT11 = 0011511696  
 BIT12 = 0023023392  
 BIT13 = 0046046784  
 BIT14 = 0092093568  
 BIT15 = 0018418176  
 BIT16 = 0036836352  
 BIT17 = 0073672704  
 BIT18 = 0014706944  
 BIT19 = 0029413888  
 BIT20 = 0058827776  
 BIT21 = 001171456  
 BIT22 = 002342912  
 BIT23 = 004685824  
 BIT24 = 009371648  
 BIT25 = 001874304  
 BIT26 = 003748608  
 BIT27 = 007497216  
 BIT28 = 00149456  
 BIT29 = 00298912  
 BIT30 = 00597824  
 BIT31 = 001197136  
 BIT32 = 002394272  
 BIT33 = 004788544  
 BIT34 = 009577088  
 BIT35 = 001946304  
 BIT36 = 003892608  
 BIT37 = 007785216  
 BIT38 = 001573184  
 BIT39 = 003146368  
 BIT40 = 006292736  
 BIT41 = 0012582912  
 BIT42 = 0025165824  
 BIT43 = 0050331648  
 BIT44 = 00100663008  
 BIT45 = 00201326016  
 BIT46 = 00402652032  
 BIT47 = 00805304064  
 BIT48 = 001610608128  
 BIT49 = 003221216256  
 BIT50 = 006442432512  
 BIT51 = 001288486624  
 BIT52 = 002576973248  
 BIT53 = 005153946496  
 BIT54 = 0010307890912  
 BIT55 = 0020615781824  
 BIT56 = 0041231563648  
 BIT57 = 0082463127296  
 BIT58 = 0016482624576  
 BIT59 = 0032965249152  
 BIT60 = 0065930498304  
 BIT61 = 00131860996608  
 BIT62 = 00263721993216  
 BIT63 = 00527443986432  
 BIT64 = 00105488792864  
 BIT65 = 00210977585728  
 BIT66 = 00421955171456  
 BIT67 = 00843910342912  
 BIT68 = 0017283283660544  
 BIT69 = 0034566567321088  
 BIT70 = 0069133134642176  
 BIT71 = 0013826626928352  
 BIT72 = 0027653253856704  
 BIT73 = 0055306507713408  
 BIT74 = 001104101456  
 BIT75 = 002208202912  
 BIT76 = 004416405824  
 BIT77 = 008832811648  
 BIT78 = 0017665622976  
 BIT79 = 0035331255952  
 BIT80 = 0070662511904  
 BIT81 = 001413067776  
 BIT82 = 002826135552  
 BIT83 = 005652271104  
 BIT84 = 00112451776  
 BIT85 = 002249035536  
 BIT86 = 004498071072  
 BIT87 = 0089961424448  
 BIT88 = 0017992288896  
 BIT89 = 0035984577792  
 BIT90 = 0071969155584  
 BIT91 = 0014387239296  
 BIT92 = 0028774478592