

TITLE RANDOM NUMBER PUNCH TEST FOR SYSTEM EXERCISER
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/DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS,
/EARL L. BOUSE
/REV DATE 3/1771

EBREL

700202 A PCF=700202
700204 A PSA=700204
700244 A PSB=700244
700201 A PSF=700201

00000 R 400000 A UODSW 400000 /I/O DEVICE, NO API
00001 R 000000 A 0 /
00002 R 000000 A 0 /
00003 R 000000 A 0 /
00004 R 000064 R ,DSA PSERV
00005 R 000032 R ,DSA PINIT
00006 R 202516 A ,SIXBT !PUNTST!
00007 R 242324 A
00010 R 000010 A 10 /MASK FOR CHAIN MODE

00011 R A ,BLOCK 7
00020 R 000000 A SYSERR 0 /ERROR INDICATOR
00021 R 000000 A 0 /WORD COUNT FOR DATA WORDS
00022 R 000000 A ERCODE 0 /ERROR CODE
00023 R 000000 A 0 /THE SEVEN LOCATIONS
00024 R 000000 A 0 /FOLLOWING THE ERROR CODE
00025 R 000000 A 0 /ARE FOR DATA
00026 R 000000 A 0
00027 R 000000 A 0
00030 R 000000 A 0
00031 R 000000 A 0

/AC SWITCH 14 INHIBITS THE PUNCH TEST

/THE PUNCH TEST WILL PUNCH RANDOM NUMBERS COMPLIMENTING THE
/PUNCH MODE (PSA,PSB) FOR EVERY OTHER RANDOM NUMBER, AFTER PUNCHING
/A SPECIFIED NUMBER OF COLUMNS, BLANK LEADER WILL BE PUNCHED AND
/THE TEST WILL START OVER, THE PUNCHED TAPE MAY BE TORN OFF
/ANY PLACE IN THE BLANK LEADER TO BE USED AS A TEST TAPE
/FOR THE RANDOM NUMBER READER TEST,
/TWO (2) POSSIBLE PUNCH ERRORS MAY OCCUR;
/ERROR CODE!

- /
- / 1) NO TAPE IN PUNCH
- / 2) PSF SKIPPED WITH IORS STATUS BIT CLEAR
- /

EJECT

/INITIALIZE THE PUNCH TEST

```

00032 R 000000 A   PINIT  0
00033 R 200032 R   LAC     PINIT
00034 R 040064 R   DAC     PSERV
00035 R 200364 R   LAC     (776000 /COLUMNS OF LEADER TO BE PUNCHED
00036 R 040345 R   DAC     LEDCTR
00037 R 040354 R   DAC     RANSTL /1ST RANDOM STALL COUNT
00040 R 140346 R   DZM     PMODE  /SET PUNCH MODE APHA
00041 R 200365 R   LAC     (747001
00042 R 040347 R   DAC     PCNTR  /COLUMN COUNTER
00043 R 200366 R   LAC     (770000
00044 R 040357 R   DAC     COLCNT /FULL SPEED COUNTER
00045 R 200367 R   LAC     (731420 /INITIALIZE RANDOM NUMBER A
00046 R 040350 R   DAC     RANA
00047 R 040352 R   DAC     RANX
00050 R 200370 R   LAC     (015610 /INITIALIZE RANDOM NUMBER B
00051 R 040351 R   DAC     RANB
00052 R 040353 R   DAC     RANY
00053 R 200371 R   LAC     (PSERA
00054 R 040071 R   DAC     DSTSW1 /DESTINATION SWITCH
00055 R 140020 R   DZM     SYSERR  /ERROR INDICATOR
00056 R 140022 R   DZM     ERCODE
00057 R 140021 R   DZM     ERCODE-1 /WORD COUNT
00060 R 140356 R   DZM     FLGDRV
00061 R 140360 R   DZM     BINCNT
00062 R 100107 R   JMS     PUNTST
00063 R 620032 R   JMP*    PINIT

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/SERVICE ENTRANCE FOR THE PUNCH TEST

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00064 R 000000 A   PSERV  0
00065 R 200356 R   LAC     FLGDRV
00066 R 740200 A   SZA
00067 R 100305 R   JMS     FLAGUP /WERE WE PUNCHING?
00070 R 620071 R   JMP*    DSTSW1 /YES, CHECK IF FINISHED
00071 R 000000 A   DSTSW1 0
00072 R 700201 A   PSERA   PSF
00073 R 600303 R   JMP     NOFLAG /=TO STALL OR NORMAL PUNCH
00074 R 700314 A   IORS   /ENTERED BY MONITOR BECAUSE OF
00075 R 040023 R   DAC     ERCODE+1 /PROGRAM INTERRUPT, IF PUNCH
00076 R 500372 R   AND     (100000 /FLAG IS NOT UP, RETURN TO
00077 R 741200 A   SNA     /MONITOR WITH AC=-1
00100 R 600335 R   JMP     /IF FLAG IS UP, DO NEXT OPERATION
00101 R 200360 R   PSERV,1 LAC     ERROR2 /THEN EXIT WITH AC=0
00102 R 740200 A   SZA     /PSF SKIPPED BUT STATUS BIT CLEAR
00103 R 620174 R   JMP*    TPSB  /DID WE PUNCH FULL BINARY NUMBER
00104 R 100107 R   JMS     PUNTST
00105 R 750000 A   CLA
00106 R 620064 R   JMP*    PSERV
          .EJECT

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00107 R 000000 A   PUNTSI 0
00110 R 440345 R   ISZ     LEDCTR
00111 R 600260 R   JMP     LEADER     /PUNCH OUT LEADER
00112 R 777777 A   LAW     =1
00113 R 040345 R   DAC     LEDCTR
00114 R 440347 R   ISZ     PCNTR     /DONE PUNCHING?
00115 R 600123 R   JMP     PUNCH     /NO, PUNCH NEXT NUMBER
00116 R 777774 A   LAW     =4         /TEST DONE, EXIT
00117 R 040020 R   DAC     SYSERR
00120 R 140021 R   DZM     SYSERR+1
00121 R 700212 A   PCF+10
00122 R 620064 R   JMP*    PSERV     /CLEAR PUNCH FLAG, CLEAR AC
/
/PUNCH SUBROUTINE
/
00123 R 100246 R   PUNCH  JMS     RANDOM /GET THE NUMBER TO BE PUNCHED
00124 R 040361 R   DAC     DATA
00125 R 200346 R   LAC     PMODE     /DETERMINE PUNCH MODE
00126 R 741200 A   SNA
00127 R 600204 R   JMP     TPSA     /APHA PUNCH MODE
00130 R 777775 A   LAW     =3         /SET =3 IN BINARY COUNTER
00131 R 040360 R   DAC     BINCNT
00132 R 200361 R   LAC     DATA
00133 R 742020 A   RTR
00134 R 742020 A   RTR     /SET UP TO PUNCH 1ST COLUMN
00135 R 742020 A   RTR     /BIT 0=5
00136 R 742020 A   RTR
00137 R 742020 A   RTR
00140 R 742020 A   RTR
00141 R 040362 R   DAC     BINNUM
00142 R 100174 R   JMS     TPSB     /PUNCH 1ST BINARY COLUMN
00143 R 200361 R   LAC     DATA
00144 R 742020 A   RTR
00145 R 742020 A   RTR     /SET UP TO PUNCH 2ND COLUMN
00146 R 742020 A   RTR     /BITS 6=12
00147 R 040362 R   DAC     BINNUM
00150 R 100174 R   JMS     TPSB     /PUNCH 2ND BINARY COLUMN
00151 R 200361 R   LAC     DATA
00152 R 040362 R   DAC     BINNUM
00153 R 100174 R   JMS     TPSB     /PUNCH 3RD BINARY COLUMN
/
.EJECT

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00154 R 200346 R PRET LAC PMODE /CHANGE THE PUNCH MODE
00155 R 740001 A CMA
00156 R 040346 R DAC PMODE
00157 R 777777 A LAW =1
00160 R 040356 R DAC FLGDRV /INDICATES FLAG DRIVEN
00161 R 200001 R LAC UODSW+1
00162 R 740020 A RAR
00163 R 741400 A SZL
00164 R 620107 R JMP* PUNTST
00165 R 440357 R ISZ COLCNT /COUNTER FOR FULL SPEED PUNCH
00166 R 620107 R JMP* PUNTST
00167 R 200373 R LAC (STALL /INITIALIZE THE STALL ROUTINE
00170 R 040071 R DAC DSTSW1
00171 R 200354 R LAC RANSTL /INITIALIZE A NO STALL COUNT
00172 R 040363 R DAC NOSTAL
00173 R 620107 R JMP* PUNTST
/
/BINARY PUNCH ROUTINE
/
00174 R 000000 A TPSB 0
00175 R 100311 R JMS HOLD /EXAMINE FOR HOLD SWITCH
00176 R 100266 R JMS TNOTAP /TEST FOR NO TAPE
00177 R 200362 R LAC BINNUM /GET NUMBER TO BE PUNCHED
00200 R 700244 A PSB
00201 R 440360 R ISZ BINCNT /= TO 0 WHEN A FULL BINARY NO, HAS BEEN PUNCHED
00202 R 740000 A NOP
00203 R 600154 R JMP PRET
/
/ALPHA PUNCH ROUTINE
/
00204 R 100311 R TPSA JMS HOLD /EXAMINE FOR HOLD SWITCH
00205 R 100266 R JMS TNOTAP /TEST FOR NO TAPE
00206 R 200361 R LAC DATA /GET NUMBER TO BE PUNCHED
00207 R 700204 A PSA
00210 R 600154 R JMP PRET
,EJECT

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/RANDOM STALL ROUTINE
/
00211 R 200356 R STALL LAC FLGDRV
00212 R 740200 A SZA /FLAG DRIVEN?
00213 R 700202 A PCF /YES, CLEAR THE PUNCH FLAG
00214 R 140356 R DZM FLGDRV /NO, ENTERED SYSERR=5
00215 R 440354 R ISZ RANSTL /COUNTER STALL NO.
00216 R 600227 R JMP STLEXT /CONTINUE STALL
00217 R 100233 R JMS GENRAN /SET UP FOR NEXT STALL TIME
00220 R 040354 R DAC RANSTL
00221 R 440363 R ISZ NOSTAL
00222 R 600101 R JMP PSERV,1 /PUNCH THE NEXT FRAME
00223 R 040357 R DAC COLCNT /SET UP NO STALL COUNT
00224 R 200371 R LAC (PSERA
00225 R 040071 R DAC DSTSW1 /CLEAR THE STALL SWITCH
00226 R 600101 R JMP PSERV,1
/
00227 R 777773 A STLEXT LAW =5 /CONTINUE STALL
00230 R 040020 R DAC SYSERR
00231 R 750000 A CLA
00232 R 620064 R JMP* PSERV /RETURN TO MONITOR
/
/GENERATE RANDOM STALL NO., EXIT WITH NO. IN THE AC
/
00233 R 000000 A GENRAN 0
00234 R 340352 R TAD RANX
00235 R 340353 R TAD RANY
00236 R 040352 R DAC RANX
00237 R 750010 A GLK
00240 R 340352 R TAD RANX
00241 R 340353 R TAD RANY
00242 R 040353 R DAC RANY
00243 R 500374 R AND (377
00244 R 740001 A CMA
00245 R 620233 R JMP* GENRAN
/
/RANDOM NUMBER SUBROUTINE, EXIT WITH NUMBER IN THE AC
/
00246 R 000000 A RANDOM 0
00247 R 754000 A CLL!CLA
00250 R 340350 R TAD RANA
00251 R 340351 R TAD RANB
00252 R 040350 R DAC RANA
00253 R 750010 A GLK
00254 R 340350 R TAD RANA
00255 R 340351 R TAD RANB
00256 R 040351 R DAC RANB
00257 R 620246 R JMP* RANDOM
.EJECT

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/PUNCH LEADER BEFORE STARTING TEST

```

00260 R 100311 R LEADER JMS HOLD /EXAMINE HOLD SWITCH
00261 R 100266 R JMS TNOTAP /TEST FOR NO TAPE FLAG
00262 R 700214 A PSA+10 /PUNCH ALPHA NUMERIC
00263 R 777777 A LAW =1
00264 R 040356 R DAC FLGDRV /INDICATES FLAG DRIVEN
00265 R 620107 R JMP* PUNTST

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/TEST FOR NO TAPE CONDITION

```

00266 R 000000 A TNOTAP 0
00267 R 700314 A IORS
00270 R 500375 R AND (400 /NO TAPE FLAG
00271 R 741200 A SNA
00272 R 620266 R JMP* TNOTAP /TAPE OK
/
00273 R 777777 A LAW =1 /NO TAPE, SET UP ERROR
00274 R 040020 R DAC SYSERR
00275 R 200376 R LAC (1 /ERROR CODE 01; NO TAPE
00276 R 040022 R DAC ERCODE
00277 R 777777 A LAW =1 /ONE DATA WORDS TO BE PRINTED
00300 R 040021 R DAC ERCODE=1
00301 R 700212 A PCF+10 /CLEAR PUNCH FLAG, CLEAR AC
00302 R 620107 R JMP* PUNTST

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/NO FLAG FROM PUNCH, RETURN WITH AC=-1

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00303 R 777777 A NOFLAG LAW =1
00304 R 620064 R JMP* PSERV

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/TEST THAT THE PUNCH HAS FINISHED BEFORE CONTINUING,

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00305 R 000000 A FLAGUP 0
00306 R 700201 A PSF /TEST FOR PUNCH FLAG
00307 R 600303 R JMP NOFLAG /PUNCH HAS NOT FINISHED
00310 R 620305 R JMP* FLAGUP /FLAG UP CONTINUE
/
.EJECT

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/TEST AC SWITCH 14 WHICH DISABLES THE PUNCH TEST

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00311 R 000000 A HOLD 0
00312 R 750004 A LAS
00313 R 500377 R AND (10 /AC SW 14
00314 R 741200 A SNA /IS SWITCH UP?
00315 R 620311 R JMP* HOLD /NO, CONTINUE
00316 R 200071 R LAC DSTSW1 /YES, SAVE RETURN ADDRESS
00317 R 040355 R DAC SAVDST
00320 R 200400 R LAC (HOLD,2
00321 R 040071 R DAC DSTSW1
00322 R 200356 R LAC FLGDRV
00323 R 741200 A SNA
00324 R 600227 R JMP STLEXT
00325 R 700201 A PSF
00326 R 600227 R JMP STLEXT
00327 R 700202 A PCF /CLEAR PUNCH FLAG
00330 R 140356 R DZM FLGDRV
00331 R 600227 R JMP STLEXT /EXIT VIA =5
00332 R 200355 R HOLD,2 LAC SAVDST /RESTORE RETURN ADDRESS
00333 R 040071 R DAC DSTSW1
00334 R 600312 R JMP HOLD+1 /RETEST SWITCH

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/ERROR 2 IS WHEN PSF SKIPPED BUT STATUS BIT CLEAR

```

00335 R 200401 R ERROR2 LAC (2
00336 R 040022 R DAC ERCODE /ERROR 2
00337 R 777777 A LAW =1
00340 R 040020 R DAC SYSERR
00341 R 777776 A LAW =2
00342 R 040021 R DAC ERCODE=1
00343 R 700212 A PCF+10 /CLEAR PUNCH FLAG, CLEAR AC
00344 R 620064 R JMP* PSERV

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00345 R 000000 A LEDCTR 0
00346 R 000000 A PMODE 0
00347 R 000000 A PCNTR 0
00350 R 000000 A RANA 0
00351 R 000000 A RANB 0
00352 R 000000 A RANX 0
00353 R 000000 A RANY 0
00354 R 000000 A RANSTL 0
00355 R 000000 A SAVDST 0
00356 R 000000 A FLGDRV 0
00357 R 000000 A COLCNT 0
00360 R 000000 A BINCNT 0
00361 R 000000 A DATA 0
00362 R 000000 A BINNUM 0
00363 R 000000 A NOSTAL 0

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.EJECT

000000 R
00364 R 776000 A #L
00365 R 747001 A #L
00366 R 770000 A #L
00367 R 731420 A #L
00370 R 015610 A #L
00371 R 000072 R #L
00372 R 100000 A #L
00373 R 000211 R #L
00374 R 000377 A #L
00375 R 000400 A #L
00376 R 000001 A #L
00377 R 000010 A #L
00400 R 000332 R #L
00401 R 000002 A #L

END UQDSW

SIZE=00403

NO ERROR LINES

BINCNT	00360	R	BINNUM	00362	R	COLCNT	00357	R	DATA	00361	R
DSTSW1	00071	R	ERCODE	00022	R	ERROR2	00335	R	FLAGUP	00305	R
FLGDRV	00356	R	GENRAN	00233	R	HOLD	00311	R	HOLD,2	00332	R
LEADER	00260	R	LEDCTR	00345	R	NOFLAG	00303	R	NOSTAL	00363	R
PCF	700202	A	PCNTR	00347	R	PINIT	00032	R	PMODE	00346	R
PRET	00154	R	PSA	700204	A	PSB	700244	A	PSERA	00072	R
PSERV	00064	R	PSERV,	00101	R	PSF	700201	A	PUNCH	00123	R
PUNTST	00107	R	RANA	00350	R	RANB	00351	R	RANDOM	00246	R
RANSTL	00354	R	RANX	00352	R	RANY	00353	R	SAVDST	00355	R
STALL	00211	R	STLXT	00227	R	SYSERR	00020	R	TNOTAP	00266	R
TPSA	00204	R	TPSB	00174	R	UODSW	00000	R			

UQDSW	00000	R	SYSERR	00020	R	ERCODE	00022	R	PINIT	00032	R
PSERV	00064	R	DSTSW1	00071	R	PSERA	00072	R	PSERV,	00101	R
PUNTST	00107	R	PUNCH	00123	R	PRET	00154	R	TPSB	00174	R
TPSA	00204	R	STALL	00211	R	STEXT	00227	R	GENRAN	00233	R
RANDOM	00246	R	LEADER	00260	R	TNOTAP	00266	R	NOFLAG	00303	R
FLAGUP	00305	R	HOLD	00311	R	HOLD,2	00332	R	ERROR2	00335	R
LEDCTR	00345	R	PMODE	00346	R	PCNTR	00347	R	RANA	00350	R
RANB	00351	R	RANX	00352	R	RANY	00353	R	RANSTL	00354	R
SAVDST	00355	R	FLGDRV	00356	R	COLCNT	00357	R	BINCNT	00360	R
DATA	00361	R	BINNUM	00362	R	NOSTAL	00363	R	PSF	700201	A
PCF	700202	A	PSA	700204	A	PSB	700244	A			