

TU16

DATA TAPE CREATE
MD-11-DZTUF-A

EP DZTUF A DL A

OCT 1976

COPYRIGHT ©1976

digital

FICHE 1 OF 1

Made in U.S.A.

(PAGE 2)

5. OPERATION:

WHEN THE ASTERISCK IS PRINTED AFTER THE START AT 200 OR 204, START INPUTTING CHARACTERS. EACH GROUP OF THREE (3) DIGITS (0-7) EQUALS ONE (1) CHARACTER ON TAPE. ENTER AS MANY 3 DIGIT GROUPS PER THE NUMBER OF CHARACTERS DESIRED IN THE PATTERN. THE PROGRAM WILL ACCEPT UP TO 256 CHARACTERS (377 OCTAL). IF LESS THAN 256 ARE DESIRED, TERMINATE INPUT BY TYPING A CONTROL C. A CARRIAGE RETURN (CR) MAY BE TYPED ANY TIME AND WILL ECHO A CR-LF BUT WILL NOT BE PLACED IN THE DATA PATTERN NOR COUNTED AS AN INPUT CHARACTER. ANY INPUT OTHER THAN AN OCTAL DIGIT (0-7), A CARRIAGE RETURN (CR), OR A CONTROL C WILL BE CONSIDERED ILLEGAL AND BE FLAGGED BY A QUESTION MARK (?). THE ILLEGAL ENTRY IS NEITHER PLACED IN THE DATA PATTERN NOR COUNTED AS A CHARACTER. WHEN INPUT IS COMPLETED (CONTROL C OR 256 CHARACTERS), THE PROGRAM TYPES END OF INPUT AND REQUESTS SELECTION OF HIGH SPEED OR LOW SPEED PUNCH FOR OUTPUT. A RESPONSE OF L TO THIS REQUEST WILL CAUSE OUTPUT ON THE TTY PUNCH. A RESPONSE OF H TO THIS REQUEST WILL OUTPUT ON THE HIGH SPEED PUNCH. WHEN OUTPUT IS COMPLETE, THE PROGRAM WILL AGAIN REQUEST AN OUTPUT RESPONSE. IF EITHER H OR L IS TYPED, THE SAME DATA PATTERN IS AGAIN OUTPUT. THIS CAN BE REPEATED AS MANY TIMES AS DESIRED. IF NO MORE OUTPUT IS NEEDED, BUT A DIFFERENT PATTERN IS DESIRED, TYPE A CR TO RETURN TO START OF INPUT WHICH WILL BE INDICATED BY AN ASTERISCK (*). THE FIRST CHARACTER PUNCHED ON THE TAPE IS THE NUMBER OF CHARACTERS ON THAT TAPE AND IS NOT USED AS PART OF THE PATTERN BY THE EXERCISERS. THE DATA ON THE TAPE WILL APPEAR AS BYTES IN CORE WHEN USED BY THE EXERCISERS.

110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149

150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187

(PAGE 3)

6. EXAMPLES

THE FOLLOWING EXAMPLES SHOW THE TAPE LAYOUT RESULTING FROM ITS INPUT AND THE RESULTANT CORE MAP IN THE EXERCISER. (READ THE EXERCISER DOCUMENT TO SEE HOW TO USE THESE PATTERN TAPES)

EXAMPLE 1: LOAD AND START AT 204 (8)

*0001112223334449?377/6 (CONTROL C)

END OF INPUT
ASSURE PUNCH IS ON
AND TYPE L FOR LOW SPEED
OR H FOR HIGH SPEED
OR CR FOR RESTART WITH NO PUNCH

L (OUTPUT IS NOW MADE ON TTY PUNCH)

OUTPUT TAPE BIT LAYOUT:

00000.110 (NUMBER OF CHARACTERS IN PATTERN IS 6)
00000.000
01001.001
10010.010 (THE DOT . REPRESENTS THE SPROCKET HOLE)
11011.011
00100.100
11111.110

EXERCISER CORE MAP:

WRITE BUFFER: 0100100100000000
+2: 1101101110010010 (6 CHARACTER = 3 WORDS)
+4: 111111011011011

188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220

(PAGE 4)

EXAMPLE 2: LOAD AND START 204 (8)

*377(CR)
500(CR)
8'G'3(CR)
334266(CONTROL C)

END OF INPUT
ASSURE PUNCH IS ON
AND TYPE L FOR LOW SPEED
OR H FOR HIGH SPEED
OR CR FOR RESTART WITH NO PUNCH

H(OUTPUT IS NOW MADE OF HIGH SPEED PUNCH)

OUTPUT TAPE BIT LAYOUT:

00000.101 (NUMBER OF CHARACTERS IS 5)
11111.111
01000.000
11011.011 (THE DOT REPRESENTS THE SPROCKET HOLE)
00010.110
10000.000

EXERCISER CORE MAP:

WRITE BUFFER: 0100000011111111
+2: 0001011011011011 (5 CHARACTER = 2 WORDS + 1 BYTE)
+4: 0000000010000000

(PAGE 5)

7. EXCEPTION

NOTE THAT THE FIRST DIGIT OF THE 3 DIGITS PER CHARACTER IS LEFT JUSTIFIED. BECAUSE THE TAPE IS ONLY EIGHT (8) BITS WIDE, THE MOST SIGNIFICANT BIT OF THE FIRST DIGIT INPUT FOR EACH CHARACTER IS LOST. SEE EXAMPLE ONE (1). THE FIFTH (5) CHARACTER INPUT IS 444, BUT THE TAPE OUTPUT SHOWS 00100100 BECAUSE THE MOST SIGNIFICANT BIT IS LOST. EXAMPLE 2, THE SECOND (2) CHARACTER INPUT, ALSO SHOWS THIS. REMEMBER, THE FIRST DIGIT INPUT FOR EACH CHARACTER WILL ONLY SHOW THE TWO (2) LEAST SIGNIFICANT BITS OF THAT DIGIT. THE OTHER EXCEPTION TO KEEP IN MIND, IS THAT IF INPUT IS TERMINATED AT SOME NUMBER OF DIGITS NOT DIVISABLE BY THREE (3), THE PARTIAL CHARACTER AT THE END OF THE FIELD WILL BE FILLED TO THE RIGHT WITH ZEROS (0). EXAMPLE 2, THE FIFTH (5) CHARACTER, HAS NOT BEEN COMPLETED BY INPUT BEFORE TERMINATION. SEE THE TAPE LAYOUT, CHARACTER 5 WHICH SHOWS THAT THE TWO (2) LEAST SIGNIFICANT DIGIT POSITIONS ARE FILLED WITH ZEROES (0) TO COMPLETE THE CHARACTER FOR OUTPUT.

8. EXERCISER USAGE

THE EXERCISERS WILL READ THE TAPE CREATED BY DTC AND FILL THEIR ENTIRE WRITE BUFFER WITH REPITIONS OF THE DATA TAPE SO THAT ANY SIZE RECORD CAN BE WRITTEN.

9. LISTING

%

.TITLE DATA TAPE CREATE
;MAINDEC-11-DZTUF-A-D
;R. BARNES
;19 SEPT 1974
;ABS

000000
000001
000002
000003
000004
000005
000006
000007

R0=%0
R1=%1
R2=%2
R3=%3
R4=%4
R5=%5
SP=%6
PC=%7

000L00

.=0
;REPT 200
.+2
HALT
;ENDR

221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276


```

277
278
279 000200 000200 000774      JMP      .=200      ;STARTING ADDRESS=200(8) FOR HELP
280
281 000204 000204 001012      JMP      .=204      ;STARTING ADDRESS FOR NO HELP
282
283
284      001000      .=1000
285
286      ;CONSTANTS*****
287 001000 177560      TKS:    177560      ;LOW SPEED PUNCH
288 001002 177562      TKB:    177562
289 001004 177564      TPS:    177564
290 001006 177566      TPB:    177566
291 001010 177554      PPS:    177554      ;HIGH SPEED PUNCH
292 001012 177556      PPB:    177556
293 001014 177776      PSW:    177776      ;PROGRAM STATUS WORD
294
295      ;BUFFERS*****
296
297 001016 000000      TIB:    0           ;INPUT BUFFER
298 001020 000000      TOB:    0           ;OUTPUT BUFFER
299

```

```

300          001200          .=1200
301                                     ;PROGRAM START AND HOUSEKEEPING*****
302
303 001200 012777 000340 177606 START: MOV #340,@PSW ;SET TO PRIORITY LEVEL 7
304 001206 012706 000500          MOV #500,SP ;SET STACK TO 500
305 001212 012704 002176          MOV #MSG1,R4
306 001216 004767 000532          JSR PC,TTOUT ;TYPE HELP MESSAGE
307 001222 012777 000340 177564 ST1: MOV #340,@PSW
308 001230 012706 000500          MOV #500,SP
309 001234 005067 177560          CLR TOB
310 001240 005067 177552          CLR TIB ;CLEAR BUFFERS
311 001244 012700 000250          MOV #250,R0 ;SET SIZE IF DATA AREA
312 001250 012702 002754          MOV #DAM40,R2 ;SET START OF AREA TO CLEAR
313 001254 005022          ST2: CLR (R2)+ ;CLEAR DATA AREA
314 001256 005300          DEC R0 ;CLEAR R0 FOR USE AS CHARACTER COUNTER
315 001260 001375          BNE ST2 ;BR IF NOT DONE
316 001262 005001          CLR R1 ;CLEAR R1 FOR USE AS DIGIT POSITION POINTER
317 001264 012702 003017          MOV #DA+1,R2 ;SET START OF DATA AREA
318 001270 004767 000642          ST3: JSR PC,CRLF ;TYPE CR,LF AND *
319

```

K01

DATA TAPE CREATE
DZTUFA.P11

MACY11 27(732) 03-SEP-76 18:00 PAGE 10

```
320                                     ;DATA READ FROM TTY*****
321
322 001274 004767 000552          READ: JSR   PC,TTIN          ;GO INPUT DATA
323 001300 122767 000215 177510      CMPB  #215,TIB
324 001306 001007                BNE   RD1              ;BR IF NOT CR
325 001310 012767 000212 177502      MOV   #212,TOB
326 001316 004767 000512          JSR   PC,T0G          ;DO LF
327 001322 000167 177746          JMP   READ            ;GET NEXT DATA
328 001326 122767 000203 177462      RD1:  CMPB  #203,TIB
329 001334 001004                BNE   RD2              ;BR IF NOT CONTROL C
330 001336 005700                TST   RO
331 001340 001753                BEQ   ST3              ;BR IF FIRST INPUT
332 001342 000167 000234          JMP   PUNCH            ;GO TO PUNCH ROUTINE
333 001346 122767 000257 177442      RD2:  CMPB  #257,TIB
334 001354 001002                BNE   RD2A             ;SEE IF RUBOUT
335 001356 000167 000042          JMP   RUBOUT           ;IF NOT: BR
336 001362 122767 000260 177426      RD2A: CMPB  #260,TIB
337 001370 101407                BLOS  RD3              ;ELSE RUBOUT LAST ENTRY
338 001372 012767 000277 177420      RD2B: MOV   #277,TOB
339 001400 004767 000430          JSR   PC,T0G          ;TYPE?
340 001404 000167 177664          JMP   READ
341 001410 122767 000267 177400      RD3:  CMPB  #267,TIB
342 001416 103031                BHIS  RD4              ;BR IF NOT TOO HIGH
343 001420 000167 177746          JMP   RD2B
344
```

```

345                                     ;LAST ENTRY RUBOUT ROUTINE*****
346
347 001424 000240 RUBOUT: NOP
348 001426 022701 000001 CMP #1,R1 ;SEE WHERE LAST ENTRY WAS
349 001432 101006 BHI RBO ;IF POSITION 0: BR
350 001434 103414 BLO RB1 ;IF POSITION 1: BR
351 001436 142712 000300 BICB #300,(R2)
352 001442 005001 CLR R1 ;RESET POSITION POINTER
353 001444 000167 177624 JMP READ ;REENTER
354 001450 142742 000007 RBO: BICB #7,-(R2)
355 001454 005300 DEC R0 ;RESET CHAR POINTER
356 001456 012701 000002 MOV #2,R1 ;RESET POSITION POINTER
357 001462 000167 177606 JMP READ ;REENTER
358 001466 142712 000070 RB1: BICB #70,(R2)
359 001472 012701 000001 MOV #1,R1 ;RESET POSITION POINTER
360 001476 000167 177572 JMP READ ;REENTER
361
362                                     ;POSITION DIGITS TO FORM CHARACTER AND LOAD DATA AREA*****
363
364 001502 016703 177310 RD4: MOV TIB,R3
365 001506 142703 000370 BICB #370,R3 ;R3=STRIPPED DIGIT(0-7)
366 001512 022701 000001 CMP #1,R1 ;TEST POSITION POINTER
367 001516 101016 BHI RD6 ;DJ POSITION 2
368 001520 103410 BLO RD5 ;DO POSITION 0
369 001522 000241 CLC
370 001524 106103 ROLB R3
371 001526 106103 ROLB R3 ;POSITION DIGIT 1
372 001530 106103 ROLB R3
373 001532 150312 BISB R3,(R2) ;LOAD DIGIT 1
374 001534 005201 INC R1 ;BUMP POINTER
375 001536 000167 000026 JMP RDEX ;CHECK FOR END
376 001542 150322 RD5: BISB R3,(R2)+ ;LOAD DIGIT 0
377 001544 005001 CLR R1 ;CLEAR POSITION POINTER
378 001546 005200 INC R0 ;BUMP CHARACTER COUNTER
379 001550 000167 000014 JMP RDEX ;LOAD DIGIT
380 001554 000303 RD6: SWAB R3
381 001556 000241 CLC
382 001560 006003 ROR R3 ;POSITION DIGIT 2
383 001562 006003 ROR R3
384 001564 150312 BISB R3,(R2) ;LOAD DIGIT 2 AND BUMP CHARACTER ADDRESS
385 001566 005201 INC R1 ;BUMP POINTER
386 001570 022700 000370 RDEX: CMP #377,R0
387 001574 001402 BEQ PUNCH ;BR IF FILLED DATA AREA
388 001576 000167 177 72 JMP READ
389

```

MO1

DATA TAPE CREATE
DZTUFA.P11

MACY11 27(732) 03-SEP-76 18:00 PAGE 12

```

390                                     ; TAPE PUNCH ROUTINE*****
391
392 001602 110067 001210      PUNCH:  MOVB   RO,DA           ;LOAD DATA AREA SIZE
393 001606 062700 000100      ADD     #100,RO        ;EXPAND FOR LEADER/TRAILER
394 001612 012701 002754      MOV     #DAM40,R1     ;LOAD PUNCH START ADDRESS
395 001616 012704 002574      PG:    MOV     #MSG2,R4
396 001622 004767 000126      JSR    PC,TTOUT       ;TYPE PUNCH REQUEST(H OR L)
397 001626 004767 000220      PO:    JSR    PC,TTIN  ;GET RESPONSE
398 001632 122767 000314 177156 CMPB   #314,TIB
399 001640 001421             BEQ    P1             ;BR IF LS PUNCH
400 001642 122767 000310 177146 CMPB   #310,TIB
401 001650 001427             BEQ    P2             ;BR IF HS PUNCH
402 001652 122767 000215 177136 CMPB   #215,TIB
403 001660 001002             BNE   PE             ;SEE IF CR
404 001662 000167 177334      JMP    ST1            ;IF NOT: BR
405 001666 012767 000277 177124 PE:    MOV     #277,TOB    ;ELSE RESTART
406 001674 004767 000134      JSR    PC,TOG         ;TYPE?
407 001700 000167 177722      JMP    PO
408
409                                     ;PUNCH TAPE ON LOW SPEED*****
410
411 001704 112167 177110      P1:    MOVB   (R1)+,TOB
412 001710 004767 000120      JSR    PC,TOG         ;PUNCH CHARACTER
413 001714 005300             DEC    RO
414 001716 001372             BNE   P1             ;BR IF NOT DONE
415 001720 116700 001072      MOVB   DA,RO
416 001724 000167 177652      JMP    PUNCH         ;RESTART
417
418                                     ;PUNCH TAPE ON HIGH SPEED*****
419
420 001730 112167 177064      P2:    MOVB   (R1)+,TOB
421 001734 004767 000160      JSR    PC,THG        ;PUNCH CHARACTER
422 001740 005300             DEC    RO
423 001742 001372             BNE   P2             ;BR IF NOT DONE
424 001744 116700 001046      MOVB   DA,RO
425 001750 000167 177626      JMP    PUNCH
426

```

```

427                                     ;RTY OUTPUT SUBROUTINE*****
428
429 001754 112467 177040 TTOUT:  MOVB  (R4)+,TOB
430 001760 122767 000043 177032  CMPB  #43,TOB
431 001766 001430          BEQ   TEX
432 001770 122767 000045 177022  CMPB  #45,TOB
433 001776 001403          BEQ   TCRLF
434 002030 004767 000030          JSR   PC,TOG
435 002004 000763          BR    TTOUT
436 002006 112767 000015 177004  TCRLF:  MOVB  #15,TOB
437 002014 004767 000014          JSR   PC,TOG
438 002020 112767 000012 176772  MOVB  #12,TOB
439 002026 004767 000002          JSR   PC,TOG
440 002032 000750          BR    TTOUT
441 002034 105777 176744          TOG:   TSTB  @TPS
442 002040 100375          BPL   TOG
443 002042 116777 176752 176736  MOVB  TOB,@TPB
444 002050 000207          TEX:   RTS   PC
445
446                                     ;TTY READ SUBROUTINE*****
447
448 002052 005077 176722          TTIN:  CLR   @TKS
449 002056 005077 176720          CLR   @TKB
450 002062 005067 176730          CLR   TIB
451 002066 105777 176706          TTIN1: TSTB  @TKS
452 002072 100375          BPL   TTIN1
453 002074 017767 176702 176714  MOV   @TKB,TIB
454 002102 105777 176676          TTIN2: TSTB  @TPS
455 002106 100375          BPL   TTIN2
456 002110 116777 176702 176670  MOVB  TIB,@TPB
457 002116 000207          RTS   PC
458
459                                     ;HIGH SPEED PUNCH SUBROUTINE*****
460
461 002120 105777 176664          THG:   TSTB  @PPS
462 002124 100375          BPL   THG
463 002126 116777 176666 176656  MOVB  TOB,@PPB
464 002134 000207          RTS   PC
465
466                                     ;CR, LF, * TYPE SUBROUTINE*****
467
468 002136 012767 000215 176654  CRLF:  MOV   #215,TOB
469 002144 004767 177664          JSR   PC,TOG
470 002150 012767 000212 176642  MOV   #212,TOB
471 002156 004767 177652          JSR   PC,TOG
472 002162 012767 000252 176630  MOV   #252,TOB
473 002170 004767 177640          JSR   PC,TOG
474 002174 000207          RTS   PC
475

```

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

002176	022445	054105	042524
002204	047122	046101	042040
002212	052101	020101	040524
002220	042520	041440	042522
002226	052101	020105	051120
002234	043517	040522	022515
002242	040515	044530	052515
002250	020115	043117	031440
002256	033467	047440	052103
002264	046101	041440	040510
002272	040522	052103	051105
002300	022523		
002302	047105	042524	020122
002310	020063	044504	044507
002316	051524	030050	033455
002324	043051	051117	042440
002332	041501	020110	044103
002340	051101	041501	042524
002346	022522		
002350	051103	053440	046111
002356	020114	041505	047510
002364	041440	026522	043114
002372	045		
002373	103	047117	051124
002400	046117	041440	042440
002406	042116	020123	047111
002414	052520	020124	052101
002422	046040	051505	020123
002430	044124	047101	031440
002436	033467	022456	
002442	020101	044523	043516
002450	042514	041440	040510
002456	040522	052103	051105
002464	041440	051117	042522
002472	052103	047511	020116
002500	040515	020131	042502
002506	042040	047117	022505
002514	054502	052040	050131
002522	047111	020107	020101
002530	046123	051501	020110
002536	047101	020104	042522
002544	054524	044520	043516
002552	052040	042510	041440
002560	040510	040522	052103
002566	051105	022456	043
	002574		
002574	022445	047105	020104
002602	043117	044440	050116
002610	052125	045	
002613	101	051523	051125
002620	020105	052520	041516
002626	020110	051511	047440

.EVEN
:MESSAGES*****

MSG1: .ASCII /%%EXTERNAL DATA TAPE CREATE PROGRAM%/

.ASCII /MAXIMUM OF 377 OCTAL CHARACTERS%/

.ASCII /ENTER 3 DIGITS(0-7)FOR EACH CHARACTER%/

.ASCII /CR WILL ECHO CR-LF%/

.ASCII /CONTROL C ENDS INPUT AT LESS THAN 377.%/

.ASCII /A SINGLE CHARACTER CORRECTION MAY BE DONE%/

.ASCII /BY TYPING A SLASH AND RETYPING THE CHARACTER.*/

MSG2: .EVEN
.ASCII /%%END OF INPUT%/

.ASCII /ASSURE PUNCH IS ON%/

DATA TAPE CREATE
DZTUFA.P11

MACY11 27(732) 03-SEP-76 18:00 PAGE 15

532	002634	022516		
533	002636	047101	020104	054524
534	002644	042520	046040	043040
535	002652	051117	046040	053517
536	002660	051440	042520	042105
537	002666	045		
538	002667	117	020122	020110
539	002674	047506	020122	044510
540	002702	044107	051440	042520
541	002710	042105	045	
542	002713	117	020122	051103
543	002720	043040	051117	051040
544	002726	051505	040524	052122
545	002734	053440	052111	020110
546	002742	047516	050040	047125
547	002750	044103	021445	

.ASCII /AND TYPE L FOR LOW SPEED%/

.ASCII /OR H FOR HIGH SPEED%/

.ASCII /OR CR FOR RESTART WITH NO PUNCH%/

.EVEN
;DATA AREA*****

548	002754	000000		
549		003016		
550	003016	000000		
551				
552				
553				
554				
555				
556				
557				
558				
559				
560				
561				
562				
563				
564				
565				
566				
567				
568				
569				
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				

DAM40: 0
DA: 0 =. +40

.END

DATA TAPE CREATE
DZTUFAP11

MACY11 27(732) 03-SEP-76 18:00 PAGE 18
CROSS REFERENCE TABLE -- USER SYMBOLS

= 003020

272*

277

278*

281*

284*

300*

525*

553*

ADD	393														
BED	331	387	399	401	431	433									
BHI	349	367													
BHIS	342														
BICB	351	354	358	365											
BISB	373	376	384												
BLO	350	368													
BLOS	337														
BNE	315	324	329	334	403	414	423								
BPL	443	452	455	462											
BR	435	440													
CLC	369	381													
CLR	309	310	313	316	352	377	448	449	450						
CMP	348	366	386												
CMPB	323	328	333	336	341	398	400	402	430	432					
DEC	314	355	413	422											
HALT	277														
INC	374	378	385												
JMP	279	292	327	332	335	340	343	353	357	360	375	379	388	404	407
	416	425													
JSR	306	318	322	326	339	396	397	406	412	421	434	437	439	469	471
	473														
MOV	303	304	305	307	308	311	312	317	325	338	356	359	364	394	395
	405	452	468	470	472										
MOV8	392	411	415	420	424	429	436	438	443	456	463				
NOP	347														
RCLB	370	371	372												
ROR	382	383													
RTS	444	457	464	474											
SWAB	380														
TST	330														
TSTB	441	451	454	461											
.ABS	261														
.ASCII	479	485	491	498	502	509	516	526	529	533	538	542			
.END	557														
.EVEN	476	525	549												
.REM	1														
.REPT	273														
.TITLE	257														

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DZTUFA.DZTUFA.SEG/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DZTUFA.P11
 RUN-TIME: 13.6 SECONDS
 RUN-TIME RATIO: 29/6=4.2
 CORE USED: 6K (12 PAGES)

