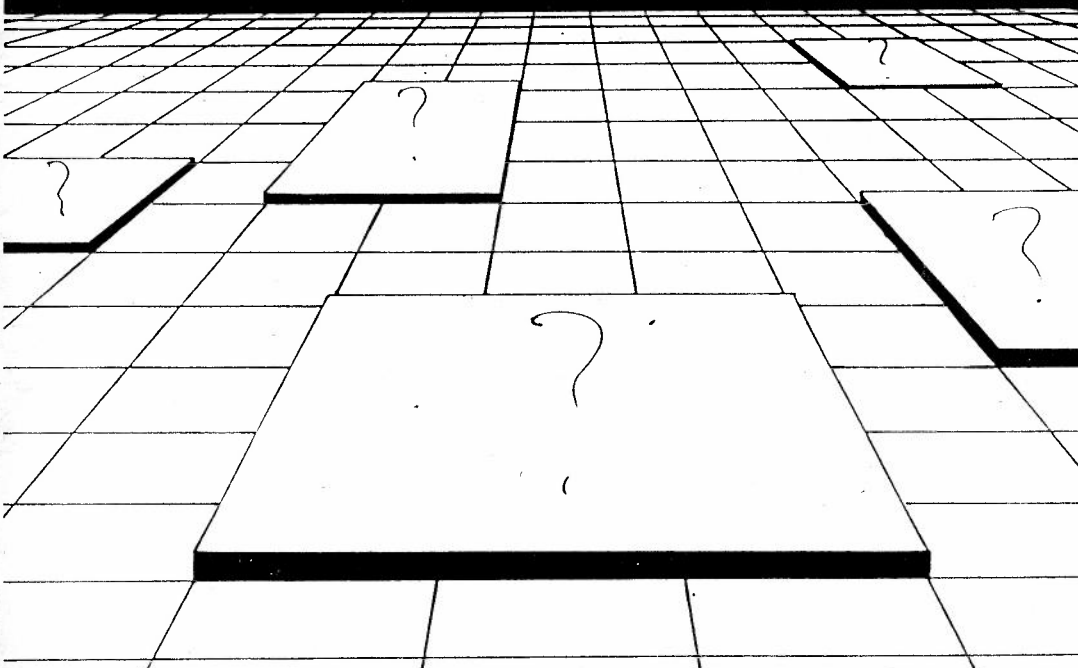


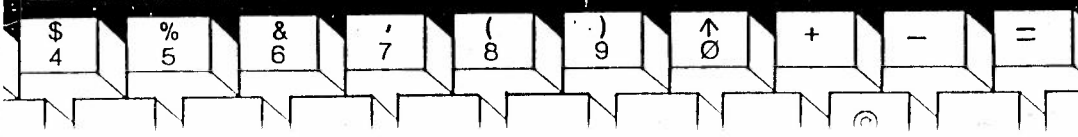
PLUS/PLUS/PLUS/4

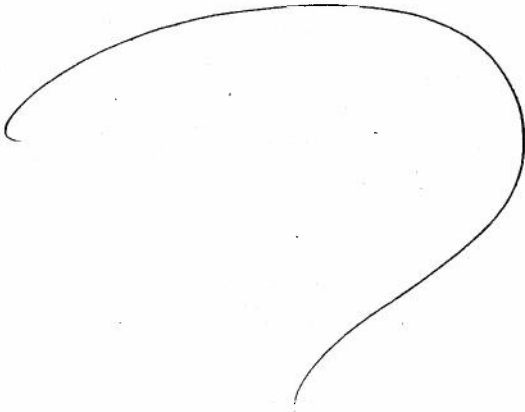
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|||||PLUS/4





no end

But

~~Handwritten scribble~~

LUNAR LANDER

part 4

by PETER CRACK

♦ Howdy, Club Members,
 ♦ In this part we are going to deal with middle size sprite and the second
 ♦ serie of screens, these three screens each have three possible landing
 ♦ places which in turn lea to nine final screens. So as before load the
 ♦ programme into your computer and then type in M07F8 move the cursor to
 ♦ byte number 07F8 and change the value to #180, next type in FD000 DDF 00
 ♦ and press return this will clear all those locations, now type in the code
 ♦ as follows, here is the explanation.
 5168-516B Store 'X' reg (screen just left number) in \$4EB7 and clear screen
 516E-5180 Get last screen number, clear under sprite data areas, get new
 ♦ screen pointers and print new screen base line.
 5183-51C1 Get old sprite angle and set to new sprite data area, calculate
 ♦ position of spritz in new screen, \$4609,A,B hold old position
 ♦ \$60,1,2, hold new position.
 51C3-51DD Get new sprite pointers and store them in working area, set new
 ♦ sprite page number in working area (\$460D), and print sprite.
 51E0-5259 Loop 2, this checks position, jumps to correct routines if the
 ♦ sprite moves off the screen or over a landing position and clears
 ♦ the sound registers then loops back to \$51E0.
 5300-5357 These are the positions of the plot points across the screen high
 ♦ bytes and are used in every screen.
 5358-53AF These are the positions of the plot points across the screen low
 ♦ bytes and are used in screen one only.
 53B0-53DF These are the status message and values bytes.
 5400-5457 These are the positions of the plot points down the screen and are
 ♦ used in screen one only, the screen is one line drawn from left
 ♦ to right using the above co-ordinates.
 5458-5462 Check if out of fuel jump to free fall if yes else.....
 5463-5491 Get joystick return, check value of \$E8 if zero jump to free fall
 5492-54CF Check to see if joystick is pushed forward (power on), if yes
 ♦ gosub get and compress fuel pointers into \$5C and \$5D, check if
 ♦ both these pointers are zero if yes jump to free fall else switch
 ♦ on sound decrease fuel by one put gosub unpack pointers and put
 ♦ them back into status list, get sprite angle \$53E7, remove the
 ♦ four high bits leaving just the sprite angle shift it left and
 ♦ store it in \$54D0 thus giving an address for the indirect jump
 ♦ command in \$54CF.
 54D2-5527 This is a group of routines which alter certain delay pointers, to
 ♦ explain, the amount of vertical or horizontal thrust produced by
 ♦ the rocket motor is dependent on the angle of the rocket so 'X'
 ♦ and 'Y' registers are set accordingly these are then set into
 ♦ \$53EA and \$53EB for later use.
 522B-55A0 This routine updates the vertical speed, this is done every time
 ♦ the delay counter falls to minus, first get delay and reduce it by
 ♦ one, if still plus branch to \$559D and do not change the status
 ♦ message, else reload delay with value in 'X' register (after
 ♦ clearing the four high bits), if this value is #305 then the
 ♦ rocket is horizontal and the motor will exert no vertical force
 ♦ so jump past the next part of the routine, again transfer the 'X'
 ♦ to 'A' registers shift it left and if the carry flag is now set
 ♦ then the force exerted is downwards so branch to \$556A, at this
 ♦ point that the rocket motor is on and that the rocket is pointed
 ♦ upwards, now we must find out if the rocket is moving up or down
 ♦ or is doing neither, remember this routine is only checking
 ♦ vertical movement, within the status message just after the vert.
 ♦ speed indicator are two characters 'UP', 'D' or '++' for up
 ♦ down or hover, this last will not be on screen for long as rockets
 ♦ do not hover very well, these characters are at \$53D2 and \$53D3
 ♦ these pointers are now checked and the appropriate action taken if
 ♦ this results in the speed reaching zero subroutine \$5660 sets
 ♦ '++' into the pointers.....CONTINUED.....

```

*****
55A0-55FF This routine is the same as above but for the horizontal direction
5600-561C Get and compress fuel or speed pointers, the pointers are decimal
* numbers (0-9), and are stored in ASCII format so by stripping off
* the four high bits which must always be 3 or 2 if char is a space
* we can take four numbers and compress them into two bytes 'Y' reg
* holds the offset for getting the pointers and 'X' reg for putting
* them into $5C and $5D
5622-562F Increase pointers by one.
5630-564C Unpack pointers and return them to the status message.
5652-565F Decrease the pointers by one.
5660-566F Check if pointers have reached zero and put '++' into status
* message if yes, this is for vertical speed.
*
5670-567F Do the same for the horizontal speed.
5680-5683 Much used combo???.
5700-571F Address table for indirect jump at $54CF.
5720-5733 Print 'RI' in message table for horizontal speed, gosub equal
* check and put a space character in the thousand column of the
* number.
5735-573B As above but print 'LE'.
5745-574D Check if joystick pushed left or right and move to correct routine
* if neither then jump to $5873.
5752-5774 This routine reduces the rotation speed by one until it reaches
* zero then it prints '++' in the rotate speed indicator.
5775-579D Joystick is pushed left, check if rocket is rotating right if
* yes branch to $5752 and reduce speed, else increase rotation speed
* next gosub check if speed now zero finally check if characters
* after speed => if yes print 'LE'.
57A0-57C9 Joystick is pushed right, carry out the same as above but for
* right rotation.
*
57D0-5827 This routine is for free fall ie. no fuel left and emulates the
* pull of gravity if the rocket is going up then the speed is
* gradually reduced until it is stopped then it is increased until it
* hits the ground.
5830-5872 This routine gradually reduces horizontal movement to zero.
5873-588E This is the start point of the above routine
5890-58AF When the joystick is moved left or right small thrusters on the
* side of the rocket are fired (these are too small to see on screen
* handy eh!!), and the fuel they use is deducted from that available
* using this routine, $53EF is the delay counter, $30C is the delay
* reload and by modifying the routine at $5499 we can use it to
* decrease the fuel pointers by one.
58B0-58BC I cannot remember what this does.
5A00-5BAF Two more sets of coordinates for plotting the base lines of screens
* in both pages 00 to 57 are the positions down the screen and 58 to
* AF are the positions across the screen, remember that the high
* bytes of the positions across the screen are always taken from
* $5400 to $5457.....
DD00-DDFF These are the data areas (one page each 255 bytes), for the
* largest rocket sprite (you can ignore the last eight bytes these
* are for the sprite creator programme and have no use in this one).
* And once again that is it for this month to save the programme so far
* first check that location $07F8 is set to $80 and then type in.....
* S'progname',8,4000,5B80 and press return then S'progname',8,9000,DDFF and
* press return, change 8 to 1 in each case for a tape save if you wish to
* verify each save then type in V'progname',8 and press return after each
* save has been made, do not run the programme between save and verify
* because unlike a BASIC programme parts of the coding will be changed as it
* runs in BASIC this is done using variables which are cleared before a save
* or verify is carried out leaving the BASIC listing as before, there are no
* such variables in assembly code.
* if you have any queries or suggestions please write in to the magazine or
* phone me on 081-367-3152 (but in any case write in to the magazine as RDY
* needs your letters). PETER CRACK.....

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4

?

. 5168 8E B7 4E STX \$4EB7
 . 516B 20 67 C5 JSR \$C567
 . 516E AE B7 4E LDX \$4EB7
 . 5171 20 A0 4D JSR \$4DA0
 . 5174 BD B0 4E LDA \$4EB0,X
 . 5177 8D 19 4D STA \$4D19
 . 517A 8D 25 4D STA \$4D25
 . 517D BD B3 4E LDA \$4EB3,X
 . 5180 20 05 4D JSR \$4D05
 . 5183 AD E7 53 LDA \$53E7
 . 5186 09 B0 DRA #3B0
 . 5188 48 PHA
 . 5189 AE B7 4E LDX \$4EB7
 . 518C AD 0A 46 LDA \$460A
 . 518F 38 SEC
 . 5190 FD D8 4E SEC \$4ED8,X
 . 5193 8D 0A 46 STA \$460A
 . 5196 B0 03 ECS \$519B
 . 5198 CE 09 46 DEC \$4609
 . 519E A9 00 LDA #500
 . 519D 85 61 STA \$61
 . 519F 85 60 STA \$60
 . 51A1 A2 02 LDX #502
 . 51A3 A5 61 LDA \$61
 . 51A5 18 CLC
 . 51A6 6D 0A 46 ADC \$460A
 . 51A9 85 61 STA \$61
 . 51AB 90 02 ECC \$51AF
 . 51AD E6 60 INC \$60
 . 51AF CA DEK
 . 51B0 10 F1 BPL \$51A3
 . 51B2 AD 0B 46 LDA \$460B
 . 51B5 38 SEC
 . 51B6 E9 1C SBC #51C
 . 51B8 AE 0D 46 LDX \$460D
 . 51BB E0 A0 CPX #5A0
 . 51BD B0 02 BCS \$51C1
 . 51BF A9 08 LDA #508
 . 51C1 85 62 STA \$62
 . 51C3 A2 EF LDX #5EF
 . 51C5 A0 1F LDY #51F
 . 51C7 20 00 4A JSR \$4A00
 . 51CA A2 47 LDX #547
 . 51CC A0 0F LDY #50F
 . 51CE 68 PLA
 . 51CF 8D 0D 46 STA \$460D
 . 51D2 20 0B 4A JSR \$4A0B
 . 51D5 A9 4E LDA #54E
 . 51D7 8D 0F 41 STA \$410F
 . 51DA 8D 30 41 STA \$4130
 . 51DD 20 65 42 JSR \$4265
 . 51E0 20 00 40 JSR \$4000
 . 51E3 20 00 4F JSR \$4F00
 . 51E6 AE B7 4E LDX \$4EB7
 . 51E9 AD 0B 46 LDA \$460B
 . 51EC C9 38 CMP #528
 . 51EE B0 02 BCS \$51F2
 . 51F0 90 54 ECC \$5246
 . 51F2 AD 04 46 LDA \$4604
 . 51F5 F0 03 BEQ \$51FA
 . 51F7 4C B0 5B JMP \$5BB0
 . 51FA AD 09 46 LDA \$4609
 . 51FD F0 17 BEQ \$5216
 . 51FF AD 0A 46 LDA \$460A
 . 5202 DD B8 4E CMP \$4EB8,X
 . 5205 B0 08 ECS \$520F

. 5207 AD 0B 46 LDA \$460B
 . 520A DD BB 4E CMP \$4EBB,X
 . 520D B0 02 BCS \$5211
 . 520F 90 35 BCC \$5246
 . 5211 A2 02 LDX #502
 . 5213 4C 60 4A JMP \$4A60
 . 5216 AD 0A 46 LDA \$460A
 . 5219 DD C0 4E CMP \$4EC0,X
 . 521C B0 0F BCS \$522D
 . 521E AD 0B 46 LDA \$460B
 . 5221 DD C3 4E CMP \$4EC3,X
 . 5224 B0 02 BCS \$5228
 . 5226 90 1E BCC \$5246
 . 5228 A2 00 LDX #500
 . 522A 4C 60 4A JMP \$4A60
 . 522D DD C8 4E CMP \$4EC8,X
 . 5230 B0 02 BCS \$5234
 . 5232 90 12 BCC \$5246
 . 5234 DD D0 4E CMP \$4ED0,X
 . 5237 B0 0D BCS \$5246
 . 5239 AD 0B 46 LDA \$460B
 . 523C DD C8 4E CMP \$4EC8,X
 . 523F 90 05 BCC \$5246
 . 5241 A2 01 LDX #501
 . 5243 4C 60 4A JMP \$4A60
 . 5246 20 58 54 JSR \$5458
 . 5249 20 A0 42 JSR \$42A0
 . 524C AD 11 FF LDA \$FF11
 . 524F 29 F0 AND #5F0
 . 5251 09 04 DRA #504
 . 5253 8D 11 FF STA \$FF11
 . 5256 38 SEC
 . 5257 B0 87 BCS \$51E0
 . 5259 00 BRK
 . 525A 00 BRK

>5300 00 00 00 00 00 00 00 00 :.....
 >5308 00 00 00 00 00 00 00 00 :.....
 >5310 00 00 00 00 00 00 00 00 :.....
 >5318 00 00 00 00 00 00 00 00 :.....
 >5320 00 00 00 00 00 00 00 00 :.....
 >5328 00 00 00 00 00 00 00 00 :.....
 >5330 00 00 00 00 00 00 00 00 :.....
 >5338 00 00 00 00 00 00 00 00 :.....
 >5340 00 00 00 00 00 00 00 00 :.....
 >5348 01 01 01 01 01 01 01 01 :.....
 >5350 01 01 01 01 01 01 01 01 :.....
 >5358 03 06 09 0C 10 18 1C 20 :.....
 >5360 23 26 29 2C 30 33 38 40 :#&),03E
 >5368 43 46 49 4C 50 58 5C 60 :CFILPX
 >5370 63 66 69 6C 70 72 7A 7C :cfilpr
 >5378 80 83 86 89 8C 90 93 96 :.....
 >5380 98 A0 A3 A6 A9 AC :.#&\$&
 >5388 B0 B3 B6 BD C0 C3 C6 C9 :036=ECF
 >5390 CC D0 D3 D6 D9 DC E0 E3 :LPSVY\
 >5398 EA EC F0 F3 F6 F9 FC FF :jlpsov
 >53A0 00 08 0C 10 13 16 19 1C :.....
 >53A8 20 23 26 29 2C 30 38 3F :#&),0E
 >53B0 52 4F 54 41 54 45 20 20 :ROTATE
 >53B8 30 30 2A 2A 46 55 45 4C :00+*FUE
 >53C0 20 20 30 35 31 30 20 20 :0510
 >53C8 56 45 52 54 20 20 30 30 :VERT 0
 >53D0 32 20 44 4F 48 4F 52 49 :2 DQHQR
 >53D8 20 20 30 30 20 2A 2A :000+
 >53E0 10 55 00 56 00 57 00 00 :.U.V.W.
 >53E8 00 02 01 05 00 02 02 01 :.....

>53F0	00	00	01	00	21	00	D0	00	:.....!..P.	54C7	29	0F	AND	#\$0F
>53F8	00	00	00	00	00	00	00	00	:.....	54C9	0A		ASL	
>5400	B8	C4	BF	C3	C0	C0	C2	BC	:8D?C00B<	54CA	EA		NOP	
>5408	C4	C2	B8	C4	C2	C4	BF	BF	:DB8DBD??	54CB	EA		NOP	
>5410	BA	B8	B4	B1	B0	B0	B2	B6	::8410026	54CC	8D	D0	54	STA \$54D0
>5418	B4	B1	AF	A8	A6	A4	A4	A2	:41<(\$3"	54CF	6C	00	57	JMP (\$5700)
>5420	A0	9E	98	94	91	8F	8E	8D	:.....	54D2	A2	01		LDX #\$01
>5428	8B	8B	88	80	7C	78	76	70	:.....!xup	54D4	A0	05		LDY #\$05
>5430	6C	6A	69	69	66	60	5A	58	:1jiif`ZX	54D6	D0	4C		BNE \$5524
>5438	3A	42	34	40	37	3D	42	44	::B407=BD	54D8	A2	02		LDX #\$02
>5440	44	46	48	58	5C	64	72	78	:DFHX\drx	54DA	A0	84		LDY #\$84
>5448	80	80	83	88	92	9C	A7	AC	:.....'	54DC	D0	46		BNE \$5524
>5450	AE	AB	AF	B3	B5	B7	B7	90	::+3577.	54DE	A2	03		LDX #\$03
										54E0	A0	83		LDY #\$83
										54E2	D0	40		BNE \$5524
										54E4	A2	04		LDX #\$04
										54E6	A0	82		LDY #\$82
										54E8	D0	3A		BNE \$5524
										54EA	A2	05		LDX #\$05
										54EC	A0	81		LDY #\$81
										54EE	D0	34		BNE \$5524
										54F0	A2	82		LDX #\$82
										54F2	A0	82		LDY #\$82
										54F4	D0	2E		BNE \$5524
										54F6	A2	81		LDX #\$81
										54F8	A0	83		LDY #\$83
										54FA	D0	28		BNE \$5524
										54FC	A2	80		LDX #\$80
										54FE	A0	05		LDY #\$05
										5500	D0	22		BNE \$5524
										5502	A2	81		LDX #\$81
										5504	A0	03		LDY #\$03
										5506	D0	1C		BNE \$5524
										5508	A2	82		LDX #\$82
										550A	A0	02		LDY #\$02
										550C	D0	16		BNE \$5524
										550E	A0	00		LDY #\$00
										5510	A2	05		LDX #\$05
										5512	D0	10		BNE \$5524
										5514	A2	04		LDX #\$04
										5516	A0	01		LDY #\$01
										5518	D0	0A		BNE \$5524
										551A	A2	03		LDX #\$03
										551C	A0	02		LDY #\$02
										551E	D0	04		BNE \$5524
										5520	A2	02		LDX #\$02
										5522	A0	03		LDY #\$03
										5524	8E	EA	53	STX \$53EA
										5527	8C	EB	53	STY \$53EB
										552A	EA			NOP
										552B	AC	E8	53	LDY \$53E8
										552E	88			DEY
										552F	10	6C		BPL \$559D
										5531	8A			TXA
										5532	29	0F		AND #\$0F
										5534	8D	E8	53	STA \$53E8
										5537	C9	05		CMP #\$05
										5539	F0	65		BEQ \$55A0
										553B	8A			TXA
										553C	0A			ASL
										553D	B0	2B		BCS \$556A
										553F	AD	D2	53	LDA \$53D2
										5542	C9	44		CMP #\$44
										5544	F0	2B		BEQ \$5571
										5546	A0	1A		LDY #\$1A
										5548	20	00	56	JSR \$5600

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. 554B	20	20	56	JSR	\$5620				
. 554E	A0	1A		LDY	#\$1A				
. 5550	20	30	56	JSR	\$5630				
. 5553	AD	D2	53	LDA	\$53D2				
. 5556	C9	2A		CMP	#\$2A				
. 5558	D0	0A		BNE	\$5564				
. 555A	A9	55		LDA	#\$55				
. 555C	8D	D2	53	STA	\$53D2				
. 555F	A9	50		LDA	#\$50				
. 5561	8D	D3	53	STA	\$53D3				
. 5564	20	60	56	JSR	\$5660				
. 5567	38			SEC					
. 5568	B0	28		BCS	\$5592				
. 556A	AD	D2	53	LDA	\$53D2				
. 556D	C9	55		CMP	#\$55				
. 556F	D0	D5		BNE	\$5546				
. 5571	A0	1A		LDY	#\$1A				
. 5573	20	00	56	JSR	\$5600				
. 5576	20	50	56	JSR	\$5650				
. 5579	A0	1A		LDY	#\$1A				
. 557B	20	30	56	JSR	\$5630				
. 557E	AD	D2	53	LDA	\$53D2				
. 5581	C9	2A		CMP	#\$2A				
. 5583	D0	0A		BNE	\$558F				
. 5585	A9	44		LDA	#\$44				
. 5587	8D	D2	53	STA	\$53D2				
. 558A	A9	4F		LDA	#\$4F				
. 558C	8D	D3	53	STA	\$53D3				
. 558F	20	60	56	JSR	\$5660				
. 5592	A9	20		LDA	#\$20				
. 5594	8D	CD	53	STA	\$53CD				
. 5597	38			SEC					
. 5598	B0	06		BCS	\$55A0				
. 559A	EA			NOP					
. 559B	EA			NOP					
. 559C	EA			NOP					
. 559D	8C	E8	53	STY	\$53E8				
. 55A0	AE	EB	53	LDX	\$53EB				
. 55A3	AC	E9	53	LDY	\$53E9				
. 55A6	88			DEY					
. 55A7	10	50		BPL	\$55F9				
. 55A9	8A			TXA					
. 55AA	29	0F		AND	#\$0F				
. 55AC	8D	E9	53	STA	\$53E9				
. 55AF	C9	05		CMP	#\$05				
. 55B1	F0	49		BEQ	\$55FC				
. 55B3	8A			TXA					
. 55B4	0A			ASL					
. 55B5	B0	17		BCS	\$55CE				
. 55B7	AD	DE	53	LDA	\$53DE				
. 55BA	C9	4C		CMP	#\$4C				
. 55BC	F0	17		BEQ	\$55D5				
. 55BE	A0	26		LDY	#\$26				
. 55C0	20	00	56	JSR	\$5600				
. 55C3	20	20	56	JSR	\$5620				
. 55C6	A0	26		LDY	#\$26				
. 55C8	20	30	56	JSR	\$5630				
. 55CB	4C	E0	55	JMP	\$55E0				
. 55CE	AD	DE	53	LDA	\$53DE				
. 55D1	C9	52		CMP	#\$52				
. 55D3	D0	E9		BNE	\$55BE				
. 55D5	A0	26		LDY	#\$26				
. 55D7	20	00	56	JSR	\$5600				
. 55DA	20	80	56	JSR	\$5680				
. 55DD	38			SEC					
. 55DE	B0	E6		BCS	\$55C6				
. 55E0	AD	DE	53	LDA	\$53DE				
. 55E3	C9	2A		CMP	#\$2A				
. 55E5	D0	0F		BNE	\$55F6				
. 55E7	AD	EB	53	LDA	\$53EB				
. 55EA	0A			ASL					
. 55EB	B0	06		BCS	\$55F3				
. 55ED	EA			NOP					
. 55EE	EA			NOP					
. 55EF	EA			NOP					
. 55F0	4C	20	57	JMP	\$5720				
. 55F3	4C	35	57	JMP	\$5735				
. 55F6	4C	2A	57	JMP	\$572A				
. 55F9	4C	3F	57	JMP	\$573F				
. 55FC	4C	42	57	JMP	\$5742				
. 55FF	EA			NOP					
. 5600	A2	01		LDX	#\$01				
. 5602	B9	B6	53	LDA	\$53B6,Y				
. 5605	29	0F		AND	#\$0F				
. 5607	95	5C		STA	\$5C,X				
. 5609	88			DEY					
. 560A	B9	B6	53	LDA	\$53B6,Y				
. 560D	29	0F		AND	#\$0F				
. 560F	0A			ASL					
. 5610	0A			ASL					
. 5611	0A			ASL					
. 5612	0A			ASL					
. 5613	15	5C		ORA	\$5C,X				
. 5615	95	5C		STA	\$5C,X				
. 5617	88			DEY					
. 5618	CA			DEX					
. 5619	10	E7		BPL	\$5602				
. 561B	60			RTS					
. 561C	EA			NOP					
. 561D	EA			NOP					
. 561E	EA			NOP					
. 561F	EA			NOP					
. 5620	F8			SED					
. 5621	18			CLC					
. 5622	A5	5D		LDA	\$5D				
. 5624	69	01		ADC	#\$01				
. 5626	85	5D		STA	\$5D				
. 5628	A5	5C		LDA	\$5C				
. 562A	69	00		ADC	#\$00				
. 562C	85	5C		STA	\$5C				
. 562E	D8			CLD					
. 562F	60			RTS					
. 5630	A2	01		LDX	#\$01				
. 5632	B5	5C		LDA	\$5C,X				
. 5634	48			PHA					
. 5635	29	0F		AND	#\$0F				
. 5637	09	30		ORA	#\$30				
. 5639	99	R6	53	STA	\$53B6,Y				
. 563C	88			DEY					
. 563D	68			PLA					
. 563E	4A			LSR					
. 563F	4A			LSR					
. 5640	4A			LSR					
. 5641	4A			LSR					
. 5642	09	30		ORA	#\$30				
. 5644	99	R6	53	STA	\$53B6,Y				
. 5647	88			DEY					
. 5648	CA			DEX					
. 5649	10	E7		BPL	\$5632				
. 564B	60			RTS					
. 564C	EA			NOP					
. 564D	EA			NOP					

. 564E EA NDP
 . 564F EA NDP
 . 5650 F8 SED
 . 5651 38 SEC
 . 5652 A5 5D LDA \$5D
 . 5654 E9 01 SBC #\$01
 . 5656 85 5D STA \$5D
 . 5658 A5 5C LDA \$5C
 . 565A E9 00 SBC #\$00
 . 565C 85 5C STA \$5C
 . 565E D8 CLD
 . 565F 60 RTS
 . 5660 18 CLC
 . 5661 A5 5D LDA \$5D
 . 5663 65 5C ADC \$5C
 . 5665 D0 08 BNE \$566F
 . 5667 A9 2A LDA #\$2A
 . 5669 8D D2 53 STA \$53D2
 . 566C 8D D3 53 STA \$53D3
 . 566F 60 RTS
 . 5670 18 CLC
 . 5671 A5 5D LDA \$5D
 . 5673 65 5C ADC \$5C
 . 5675 D0 08 BNE \$567F
 . 5677 A9 2A LDA #\$2A
 . 5679 8D DE 53 STA \$53DE
 . 567C 8D DF 53 STA \$53DF
 . 567F 60 RTS
 . 5680 20 50 56 JSR \$5650
 . 5683 20 70 56 JSR \$5670
 . 5686 60 RTS
 . 5687 EF ???

>5700 D2 54 D8 54 DE 54 E4 54 :RTXT^TdT
 >5708 EA 54 F0 54 F6 54 FC 54 :jTpTvTtT
 >5710 02 55 08 55 0E 55 14 55 :.U.U.U.U
 >5718 1A 55 20 55 00 00 00 00 :.U U....

. 5720 A2 52 LDX #\$52
 . 5722 A0 49 LDY #\$49
 . 5724 8E DE 53 STX \$53DE
 . 5727 8C DF 53 STY \$53DF
 . 572A A9 20 LDA #\$20
 . 572C 8D D9 53 STA \$53D9
 . 572F 20 70 56 JSR \$5670
 . 5732 38 SEC
 . 5733 B0 0D BCS \$5742
 . 5735 A2 4C LDX #\$4C
 . 5737 A0 45 LDY #\$45
 . 5739 D0 E9 BNE \$5724
 . 573B EA NDP
 . 573C EA NDP
 . 573D EA NDP
 . 573E EA NDP
 . 573F 8C E9 53 STY \$53E9
 . 5742 4C 90 58 JMP \$5890
 . 5745 A5 E8 LDA \$E8
 . 5747 C9 07 CMP #\$07
 . 5749 F0 2A BEQ \$5775
 . 574B C9 03 CMP #\$03
 . 574D F0 51 BEQ \$57A0
 . 574F 4C 73 58 JMP \$5873
 . 5752 A0 03 LDY #\$03
 . 5754 20 00 56 JSR \$5600
 . 5757 A5 5D LDA \$5D
 . 5759 F0 11 BEQ \$576C

. 575E A0 03 LDY #\$03
 . 5760 20 30 56 JSR \$5630
 . 5763 A9 20 LDA #\$20
 . 5765 8D B6 53 STA \$53B6
 . 5768 8D B7 53 STA \$53B7
 . 576B 60 RTS
 . 576C A9 2A LDA #\$2A
 . 576E 8D BA 53 STA \$53BA
 . 5771 8D BB 53 STA \$53BB
 . 5774 60 RTS
 . 5775 AD BA 53 LDA \$53BA
 . 5778 C9 52 CMP #\$52
 . 577A F0 D6 BEQ \$5752
 . 577C A0 03 LDY #\$03
 . 577E 20 00 56 JSR \$5600
 . 5781 20 20 56 JSR \$5620
 . 5784 A0 03 LDY #\$03
 . 5786 20 30 56 JSR \$5630
 . 5789 20 63 57 JSR \$5763
 . 578C AD BA 53 LDA \$53BA
 . 578F C9 2A CMP #\$2A
 . 5791 D0 0A BNE \$579D
 . 5793 A9 4C LDA #\$4C
 . 5795 8D BA 53 STA \$53BA
 . 5798 A9 45 LDA #\$45
 . 579A 8D BB 53 STA \$53BB
 . 579D 60 RTS
 . 579E EA NDP
 . 579F EA NDP
 . 57A0 AD BA 53 LDA \$53BA
 . 57A3 C9 4C CMP #\$4C
 . 57A5 F0 AB BEQ \$5752
 . 57A7 A0 03 LDY #\$03
 . 57A9 20 00 56 JSR \$5600
 . 57AC 20 20 56 JSR \$5620
 . 57AF A0 03 LDY #\$03
 . 57B1 20 30 56 JSR \$5630
 . 57B4 20 63 57 JSR \$5763
 . 57B7 AD BA 53 LDA \$53BA
 . 57BA C9 2A CMP #\$2A
 . 57BC D0 0A BNE \$57C8
 . 57BE A9 52 LDA #\$52
 . 57C0 8D BA 53 STA \$53BA
 . 57C3 A9 49 LDA #\$49
 . 57C5 8D BB 53 STA \$53BB
 . 57C8 60 RTS
 . 57C9 EA NDP
 . 57CA EA NDP
 . 57CB EA NDP
 . 57CC EA NDP
 . 57CD EA NDP
 . 57CE EA NDP
 . 57CF EA NDP
 . 57D0 AC EC 53 LDY \$53EC
 . 57D3 88 DEY
 . 57D4 10 4E BPL \$5924
 . 57D6 A0 04 LDY #\$04
 . 57D8 8C EC 53 STY \$53EC
 . 57DB AD D2 53 LDA \$53D2
 . 57DE C9 55 CMP #\$55
 . 57E0 F0 24 BEQ \$5806
 . 57E2 A0 1A LDY #\$1A
 . 57E4 20 00 56 JSR \$5600
 . 57E7 20 20 56 JSR \$5620
 . 57EA A0 1A LDY #\$1A

2

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. 57EC 20 30 56 JSR \$5630
 . 57EF AD D2 53 LDA \$53D2
 . 57F2 C9 2A CMP #\$2A
 . 57F4 D0 0A BNE \$5800
 . 57F6 A9 44 LDA #\$44
 . 57F8 8D D2 53 STA \$53D2
 . 57FB A9 4F LDA #\$4F
 . 57FD 8D D3 53 STA \$53D3
 . 5800 20 60 56 JSR \$5660
 . 5803 38 SEC
 . 5804 00 17 BCS \$581D
 . 5806 A0 1A LDY #\$1A
 . 5808 20 00 56 JSR \$5600
 . 580B 20 50 56 JSR \$5650
 . 580E A0 1A LDY #\$1A
 . 5810 20 30 56 JSR \$5630
 . 5813 AD D2 53 LDA \$53D2
 . 5816 C9 2A CMP #\$2A
 . 5818 F0 DC BEQ \$57F6
 . 581A 20 60 56 JSR \$5660
 . 581D A9 20 LDA #\$20
 . 581F 8D CD 53 STA \$53CD
 . 5822 D0 0C BNE \$5830
 . 5824 8C EC 53 STY \$53EC
 . 5827 EA NOP
 . 5828 EA NOP
 . 5829 EA NOP
 . 582A EA NOP
 . 582B EA NOP
 . 582C EA NOP
 . 582D EA NOP
 . 582E EA NOP
 . 582F EA NOP
 . 5830 AC ED 53 LDY \$53ED
 . 5833 88 DEY
 . 5834 10 24 BFL \$585A
 . 5836 A0 07 LDY #\$07
 . 5838 8C ED 53 STY \$53ED
 . 583B A0 26 LDY #\$26
 . 583D 20 00 56 JSR \$5600
 . 5840 20 70 56 JSR \$5670
 . 5843 AD DE 53 LDA \$53DE
 . 5846 C9 2A CMP #\$2A
 . 5848 F0 16 BEQ \$5860
 . 584A 20 80 56 JSR \$5680
 . 584D A0 26 LDY #\$26
 . 584F 20 30 56 JSR \$5630
 . 5852 A9 20 LDA #\$20
 . 5854 8D D9 53 STA \$53D9
 . 5857 38 SEC
 . 5858 B0 06 BCS \$5860
 . 585A 8C ED 53 STY \$53ED
 . 585D EA NOP
 . 585E EA NOP
 . 585F EA NOP
 . 5860 AC EE 53 LDY \$53EE
 . 5863 88 DEY
 . 5864 10 09 BFL \$586F
 . 5866 A0 02 LDY #\$02
 . 5868 8C EE 53 STY \$53EE
 . 586B 20 52 57 JSR \$5752
 . 586E 60 RTS
 . 586F 8C EE 53 STY \$53EE
 . 5872 60 RTS
 . 5873 20 60 58 JSR \$5860
 . 587A AD FA 53 LDA \$53FA

. 5879 29 0F AND #\$0F
 . 587B C9 05 CMP #\$05
 . 587D D0 03 BNE \$5882
 . 587F 4C D0 57 JMP \$57D0
 . 5882 AD EB 53 LDA \$53EB
 . 5885 29 0F AND #\$0F
 . 5887 C9 05 CMP #\$05
 . 5889 D0 03 BNE \$588E
 . 588B 4C 30 58 JMP \$5830
 . 588E 60 RTS
 . 588F EA NOP
 . 5890 AC EF 53 LDY \$53EF
 . 5893 88 DEY
 . 5894 10 15 BFL \$589B
 . 5896 A0 0C LDY #\$0C
 . 5898 8C EF 53 STY \$53EF
 . 589B A9 60 LDA #\$60
 . 589D 8D CA 54 STA \$54CA
 . 58A0 20 99 54 JSR \$5499
 . 58A3 A9 EA LDA #\$EA
 . 58A5 8D CA 54 STA \$54CA
 . 58A8 38 SEC
 . 58A9 B0 05 BCS \$58B0
 . 58AB 8C EF 53 STY \$53EF
 . 58AE EA NOP
 . 58AF EA NOP
 . 58B0 A5 E8 LDA \$E8
 . 58B2 C9 01 CMP #\$01
 . 58B4 F0 03 BEQ \$58B9
 . 58B6 20 D0 57 JSR \$57D0
 . 58B9 4C 45 57 JMP \$5745
 . 58BC EA NOP
 . 58BD EA NOP

>5A00 90 9E AD 9F 98 A7 A6 9F :...-...&
 >5A08 77 93 85 76 80 92 AF B3 :w.../

 >5A10 B0 B0 AF AE AD A9 AA AC :00/-)->

 >5A18 AB A9 A7 A4 A6 A2 A1 9E :+)'\$"!

 >5A20 98 97 A1 98 96 94 93 92 :...!...

 >5A28 90 90 8F 8A 8E 89 87 84 :...!...

 >5A30 82 7E 78 76 72 70 69 70 :...xurpi

 >5A38 74 76 78 73 75 77 74 72 :toxswt

 >5A40 60 6E 67 66 65 64 63 62 :ngfedc

 >5A48 60 60 5E 5D 55 63 65 60 :...JUce

 >5A50 6D 67 56 59 50 58 54 40 :mgVYPXT

 >5A58 04 08 0C 0F 13 18 1C 20 :...!...

 >5A60 24 25 27 2A 30 32 36 3C :\$%'*026

 >5A68 40 58 5A 5C 60 63 66 68 :@XZ\'cf

 >5A70 6A 6B 70 75 77 7A 7B 7D :jkpuwz(

 >5A78 80 82 85 87 89 8A 8D 90 :...!...

 >5A80 94 AC AD AE AF B0 B3 B5 :...-/03

 >5A88 B7 B9 BA BD C0 C4 C6 C7 :79:=@DF

 >5A90 D0 D4 D8 DC E0 E2 E4 E6 :PTX\'bd

 >5A98 EA EC F0 F3 F6 F8 FA FF :jlpvuxz

 >5AA0 00 18 19 1A 1C 20 24 28 :... \$

 >5AA8 2A 2F 31 34 35 36 37 3F :+/14567

 >5AB0 00 00 00 00 00 00 00 00 :...!...

 >5AB8 00 00 00 00 00 00 00 00 :...!...

 >5AC0 00 00 00 00 00 00 00 00 :...!...

 >5AC8 00 00 00 00 00 00 00 00 :...!...

 >5AD0 00 00 00 00 00 00 00 00 :...!...

 >5AD8 00 00 00 00 00 00 00 00 :...!...

 >5AE0 00 00 00 00 00 00 00 00 :...!...

 >5AE8 00 00 00 00 00 00 00 00 :...!...

 >5AF0 00 00 00 00 00 00 00 00 :...!...

 >5AF8 00 00 00 00 00 00 00 00 :...!...

```

>5B00 40 58 45 4F 47 49 4A 50 :@XEDGIJY >D150 D0 02 00 00 00 00 C8 02 :P...H.
>5B08 52 53 54 56 57 58 59 5A :RSTVWXYZ >D158 00 00 00 00 F4 01 00 00 :...t...
>5B10 60 60 61 62 64 66 68 70 :`abdfhp >D160 00 00 69 00 80 00 00 :...h...
>5B18 74 78 80 88 90 92 94 :tx..... >D168 64 00 40 00 00 70 00 :d.e...p.
>5B20 96 98 9A A0 A2 A3 A4 A6 :(";%!&' >D170 40 00 00 00 24 00 20 00 :e...$.
>5B28 A8 A8 AC A5 A9 A1 A6 A7 :((,%)!&' >D178 00 00 28 00 60 00 00 :...(.
>5B30 AE A9 AB AC AD AE AF :()+,-./ >D180 10 00 50 00 00 10 00 :...P...
>5B38 A8 AA A9 A7 A6 A4 A0 A2 :.+)*&$ % >D188 4C 00 00 00 08 00 22 00 :L...
>5B40 A0 A4 A3 A0 A9 AA AF A0 :.$%>/ >D190 00 00 08 00 21 00 00 :...!...
>5B48 B3 B3 A9 A7 A6 A4 A0 AE :33)*&$ % >D198 04 00 20 C0 00 00 05 80 :...e...
>5B50 A7 A3 A5 A6 A4 A0 9F 98 :'%%&$ % >D1A0 18 30 00 00 02 40 14 10 :.0...e...
>5B58 01 03 05 07 0A 0B 0E 09 :..... >D1A8 00 00 02 20 13 20 00 :...
>5B60 12 13 14 15 17 19 1A 1E :..... >D1B0 03 10 10 C0 00 00 03 08 :...e...
>5B68 28 40 41 42 43 44 45 46 :@ABCDEF >D1B8 10 00 00 00 01 B0 20 00 :...0...
>5B70 47 48 49 4A 4B 4C 4D 4E :GHIJKLMN >D1C0 00 00 01 2C C0 00 00 :...e...
>5B78 4F 50 51 52 53 54 55 56 :OPQRSTUW >D1C8 01 A3 00 00 00 01 A0 :...#...
>5B80 58 70 79 7B 7D 80 82 84 :XpyC)... >D1D0 00 00 00 00 01 20 00 00 :...
>5B88 88 8C 90 94 95 98 9A 9D :... >D1D8 00 00 01 A0 00 00 00 00 :...
>5B90 A6 AD AE B0 BA BF C4 CE :&.-.0: ?DN >D1E0 03 A0 00 00 00 03 C0 :...@...
>5B98 E5 EA F4 F6 F8 FA FD FF :ejtvxz} >D1E8 00 00 00 00 01 00 00 00 :...
>5BA0 00 18 20 24 26 28 2A 2E :.. $(&+ >D1F0 00 00 00 00 00 00 00 :...
>5BAB 31 33 34 35 36 37 38 39 :13456789 >D1F8 25 0F 02 04 05 05 B1 :%...1
>5BB0 78 8D 3F FF A9 60 8D 32 :x.?)`.2 >D200 00 00 00 00 00 00 3E :...>
>D000 00 00 00 1C 00 00 00 00 :..... >D208 00 00 00 00 00 7F C0 00 :...e.
>D008 00 3E 00 00 00 00 00 73 :.>.....s >D210 00 00 00 7F F0 00 00 00 :...p...
>D010 00 00 00 00 00 71 00 00 :.....q.. >D218 00 79 48 00 00 00 64 :.yh....d
>D018 00 00 00 F1 80 00 00 00 :.....q... >D220 BE 00 00 00 68 01 00 :>...h..
>D020 00 E8 80 00 00 00 01 E0 :.h..... >D228 00 00 20 00 80 00 00 :...
>D028 C0 00 00 00 01 E0 40 00 :e.....e. >D230 00 20 00 40 00 00 20 :...e...
>D030 00 00 01 D0 40 00 00 00 :...Pe... >D238 00 20 00 00 10 00 10 :.
>D038 01 E0 40 00 00 01 C0 :`e.....e >D240 00 00 10 00 08 00 00 :...
>D040 40 00 00 00 03 C0 60 00 :e.....e\ >D248 00 08 00 07 00 00 04 :...
>D048 00 00 03 A0 20 00 00 00 :... >D250 00 01 80 00 04 00 00 :...
>D050 03 C0 20 00 00 03 A0 :.e..... >D258 E0 00 00 02 00 80 00 :...0...
>D058 20 00 00 00 03 C0 20 00 :...e. >D260 00 01 00 00 B8 00 00 :...B...
>D060 00 00 03 80 20 00 00 00 :... >D268 80 00 5F C0 00 40 00 :...e.e.
>D068 03 80 20 00 00 03 40 :...e >D270 29 C0 00 20 00 18 80 :>e...
>D070 20 00 00 00 03 A0 20 00 :... >D278 00 10 00 27 00 00 00 :...
>D078 00 00 03 00 20 00 00 00 :... >D280 08 00 20 00 00 08 00 :...
>D080 03 40 20 00 00 03 80 :.e..... >D288 20 00 00 08 00 30 00 :...0...
>D088 20 00 00 02 00 20 00 :... >D290 00 00 05 80 20 00 00 :...
>D090 00 00 06 00 30 00 00 00 :...0... >D298 02 40 40 00 00 02 F0 :@e.../
>D098 06 00 30 00 00 06 00 :...0... >D2A0 80 00 00 01 11 00 00 :...
>D0A0 30 00 00 0E 00 38 00 :0...8... >D2A8 00 00 90 00 00 00 00 :...
>D0A8 00 00 0F 00 78 00 00 00 :...x... >D2B0 00 48 00 00 00 48 :.H...H
>D0B0 0D 00 48 00 00 0D 00 :.H... >D2B8 00 00 00 00 48 00 00 :...H...
>D0B8 48 00 00 0D 00 48 00 :H...H... >D2C0 00 00 50 00 00 00 00 :...P...
>D0C0 00 00 80 C8 00 00 00 :...H... >D2C8 00 60 00 00 00 00 00 :...
>D0C8 1A 80 AC 00 00 3A 41 :...:..:A >D2D0 00 00 00 00 00 00 00 :...
>D0D0 26 00 00 74 7F 11 00 :&...t... >D2D8 00 00 00 00 00 00 00 :...
>D0D8 00 00 7C 00 1F 00 00 00 :...i... >D2E0 00 00 00 00 00 00 00 :...
>D0E0 00 00 00 00 00 00 00 :... >D2E8 00 00 00 00 00 00 00 :...
>D0E8 00 00 00 00 00 00 00 :... >D2F0 00 00 00 00 00 00 00 :...
>D0F0 00 00 00 00 00 00 00 :... >D2F8 25 0F 07 02 04 05 E2 :%...2
>D0F8 25 0F 07 02 04 05 B0 :%...0 >D300 00 00 00 00 00 00 00 :...
>D100 00 00 00 00 00 00 00 :... >D308 00 00 00 00 00 00 00 :...
>D108 00 00 00 00 00 7C 00 :...i... >D310 00 00 00 00 00 00 00 :...
>D110 00 00 00 FF 00 00 00 :... >D318 00 00 00 00 00 00 00 :...
>D118 00 01 A8 80 00 00 01 :.(..... >D320 00 00 00 00 00 00 00 :...
>D120 94 40 00 00 03 C8 20 :.e...H >D328 00 00 00 00 00 00 00 :...
>D128 00 00 03 90 20 00 00 :... >D330 00 07 F0 00 00 00 1F :...p...
>D130 00 03 C8 10 00 00 03 :.H... >D338 FC 00 00 00 3F FF 00 :...?..
>D138 90 08 00 00 01 A8 08 :...(<... >D340 00 00 42 AF E0 00 00 :...B^...
>D140 00 00 01 90 04 00 00 :... >D348 00 41 49 F8 00 00 40 :...Aix...e
>D148 00 01 E8 04 00 00 00 :.h... >D350 02 BE 00 00 20 01 4F :>...D
>D158 00 02 00 00 00 00 00 :... >D358 FF F0 00 20 00 13 FF F0 :...p

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>D360	00	10	00	01	0F	E0	00	10	>D570	00	80	00	00	7D	00	00	80
>D368	00	00	C0	E0	00	08	00	00	...e\	>D578	00	00	F4	00	03	00	00	03	...t...
>D370	23	C0	00	04	00	00	14	00	...e	>D580	D0	00	05	FC	00	07	A0	00	...P...
>D378	00	02	00	00	0C	00	00	01	.....	>D588	08	02	00	0F	40	00	30	02	...e.0
>D390	80	00	02	00	00	00	60	00	.....	>D590	00	1E	80	00	21	F9	00	1D	...!y
>D388	02	00	00	00	1C	00	02	00	.....	>D598	00	00	1E	06	00	3E	00	00	...>
>D390	00	00	03	00	02	00	00	00	.....	>D5A0	60	00	00	38	00	01	80	00	...8...
>D398	00	DC	04	00	00	00	00	23	...e...	>D5A8	00	3C	00	06	00	00	00	30	...<
>D3A0	08	00	00	00	00	20	B0	00	.....0	>D5B0	00	18	00	00	00	30	00	E0	...00
>D3A8	00	00	00	10	40	00	00	00	...e...	>D5B8	00	00	00	10	07	00	00	00	...0
>D3B0	00	08	40	00	00	00	00	04	...e...	>D5C0	00	0C	38	00	00	00	00	03	...8...
>D3E8	20	00	00	00	00	02	10	00	.....	>D5C8	C0	00	00	00	00	00	00	00	...e...
>D3C0	00	00	00	01	10	00	00	00	.....	>D5D0	00	00	00	00	00	00	00	00	...00
>D3C8	00	00	90	00	00	00	00	00	.....	>D5D8	00	00	00	00	00	00	00	00	...00
>D3D0	50	00	00	00	00	00	20	00	...P...	>D5E0	00	00	00	00	00	00	00	00	...00
>D3D8	00	00	00	00	00	00	00	00	.....	>D5E8	00	00	00	00	00	00	00	00	...00
>D3E0	00	00	00	00	00	00	00	00	.....	>D5F0	00	00	00	00	00	00	00	00	...00
>D3E8	00	00	00	00	00	00	00	00	.....	>D5F8	25	0F	07	02	04	05	05	B5	...%
>D3F0	00	00	00	00	00	00	00	00	.....	>D600	00	00	00	00	00	00	00	00	...00
>D3F8	25	0F	07	02	04	05	05	B3	...%...3	>D608	00	00	00	00	00	00	00	00	...00
>D400	00	00	00	00	00	00	00	00	.....	>D610	00	00	00	00	00	00	00	00	...00
>D408	00	00	00	00	00	00	00	00	.....	>D618	00	00	00	00	00	00	00	00	...00
>D410	00	00	00	00	00	00	00	00	.....	>D620	00	00	00	00	00	00	00	60	...00
>D418	00	00	00	00	00	00	00	00	.....	>D628	00	00	00	00	00	70	00	00	...p...
>D420	00	00	00	00	00	00	00	00	.....	>D630	00	00	00	68	00	00	00	00	...h...
>D428	00	00	00	00	00	00	00	00	.....	>D638	00	68	00	00	00	00	00	68	...h...
>D430	00	00	00	00	00	18	00	00	.....	>D640	00	00	00	00	00	F0	00	00	...p...
>D438	00	00	00	38	00	00	00	00	...8...	>D648	00	00	01	D1	00	00	00	00	...Q...
>D440	00	78	00	00	00	1F	E8	00	...x...h	>D650	03	BF	80	00	00	00	03	7F	...?...
>D448	00	00	00	00	FF	D8	00	00	...x...	>D658	40	00	00	00	07	F8	20	00	...e...x
>D450	1F	FF	F8	60	00	03	FF	FF	...x\	>D660	00	00	0F	E0	10	00	00	00	...e...
>D458	FF	80	00	0F	FA	AA	00	C0	...z+...e	>D668	0F	00	20	00	00	00	0F	00	...00
>D460	00	3F	55	50	00	30	00	7D	...?UP.0..)	>D670	20	00	00	00	1C	00	27	00	...00
>D468	20	00	00	10	00	F2	80	00	.....	>D678	00	00	3A	00	18	80	00	00	...00
>D470	00	10	00	E8	00	00	00	10	...h...	>D680	74	00	20	40	00	00	E8	00	...t...e...h
>D478	00	C0	00	00	00	10	00	60	...e...	>D688	47	C0	00	01	D0	00	88	00	...G...P...
>D480	00	00	00	10	00	38	00	00	...8...	>D690	00	03	A0	00	90	00	00	07	...00
>D488	00	30	00	0E	00	00	00	C0	...0...e	>D698	40	00	60	00	00	06	80	00	...e...
>D490	00	03	F0	00	0F	80	00	00	...p...	>D6A0	80	00	00	0E	00	07	00	00	...00
>D498	1F	FF	F8	60	00	00	00	00	...x\	>D6A8	00	1D	00	08	00	00	00	1A	...00
>D4A0	F8	18	00	00	00	1F	C8	00	...x...H	>D6B0	00	10	00	00	00	38	00	20	...8...
>D4A8	00	00	00	00	00	68	00	00	...h...	>D6B8	00	00	00	34	00	40	00	00	...4...e...
>D4B0	00	00	00	28	00	00	00	00	...<...	>D6C0	00	38	00	80	00	00	00	70	...8...
>D4E8	00	18	00	00	00	00	00	00	.....	>D6C8	01	00	00	00	00	68	06	00	...h...
>D4C0	00	00	00	00	00	00	00	00	.....	>D6D0	00	00	00	50	08	00	00	00	...P...
>D4C8	00	00	00	00	00	00	00	00	.....	>D6D8	00	40	30	00	00	00	00	61	...e...0...
>D4D0	00	00	00	00	00	00	00	00	.....	>D6E0	C0	00	00	00	00	3E	00	00	...e...>
>D4D8	00	00	00	00	00	00	00	00	.....	>D6E8	00	00	00	00	00	00	00	00	...00
>D4E0	00	00	00	00	00	00	00	00	.....	>D6F0	00	00	00	00	00	00	00	00	...00
>D4E8	00	00	00	00	00	00	00	00	.....	>D6F8	25	0F	07	02	04	05	05	B6	...%
>D4F0	00	00	00	00	00	00	00	00	.....	>D700	00	00	00	00	00	00	00	00	...00
>D4F8	25	0F	07	02	04	05	05	B4	...%...4	>D708	00	00	00	00	00	00	00	00	...00
>D500	00	00	00	00	00	00	00	00	.....	>D710	00	00	00	00	00	F8	00	3E	...x...>
>D508	00	00	00	00	00	00	00	00	.....	>D718	00	00	F8	FE	22	00	00	00	...x..."
>D510	00	00	00	00	00	00	00	00	.....	>D720	7C	FA	4C	00	00	00	3D	E1	...zL...=
>D518	00	00	00	00	30	00	00	00	...0...	>D728	58	00	00	00	1B	E1	90	00	...X...a...
>D520	00	00	38	00	00	00	00	00	...8...	>D730	00	00	1B	D0	90	00	00	00	...P...
>D528	74	00	00	00	00	64	00	00	...t...d.	>D738	1B	A0	90	00	00	00	1B	80	...00
>D530	00	00	00	00	E8	00	00	00	...h...	>D740	90	00	00	00	1F	C0	F0	00	...e...p...
>D538	00	01	C8	00	00	00	03	00	...H...	>D748	00	00	1F	80	70	00	00	00	...p...
>D540	90	00	00	00	00	03	20	00	.....	>D750	0F	40	60	00	00	00	0F	80	...e...
>D548	00	00	00	07	3E	00	00	00	...>...	>D758	60	00	00	00	0F	00	60	00	...>
>D550	00	1F	F9	00	00	00	00	7F	...y...	>D760	00	00	07	80	40	00	00	00	...e...
>D558	C0	80	00	00	00	FE	00	80	...e...~..	>D768	07	00	40	00	00	00	06	80	...e...
>D560	00	00	01	F4	00	40	00	00	...t...e..	>D770	40	00	00	00	07	00	40	00	...e...e
>D568	07	D0	00	40	00	00	1F	40	...P...e...e	>D778	00	00	06	00	40	00	00	00	...e...e

>D780 07 00 40 00 00 00 06 00 :.:e..... >D990 00 02 00 04 00 04 00 :.:e.....
>D788 40 00 00 00 07 00 40 00 :.:e..... >D998 FF 80 00 04 00 00 00 60 :.:e.....
>D790 00 00 06 00 40 00 00 00 :.:e..... >D9A0 00 02 00 00 00 18 00 02 :.:e.....
>D798 07 00 40 00 00 00 06 00 :.:e..... >D9A8 00 00 00 07 00 02 00 00 :.:e.....
>D7A0 40 00 00 00 07 00 40 00 :.:e..... >D9B0 00 00 C0 04 00 00 00 :.:e.....
>D7A8 00 00 07 00 C0 00 00 00 :.:e..... >D9B8 30 18 00 00 00 00 0F E0 :.:e.....
>D7B0 03 00 80 00 00 00 03 00 :.:e..... >D9C0 00 00 00 00 00 00 00 :.:e.....
>D7B8 80 00 00 00 03 00 80 00 :.:e..... >D9C8 00 00 00 00 00 00 00 :.:e.....
>D7C0 00 00 03 00 80 00 00 00 :.:e..... >D9D0 00 00 00 00 00 00 00 :.:e.....
>D7C8 03 01 80 00 00 00 01 01 :.:e..... >D9D8 00 00 00 00 00 00 00 :.:e.....
>D7D0 00 00 00 00 01 83 00 00 :.:e..... >D9E0 00 00 00 00 00 00 00 :.:e.....
>D7D8 00 00 00 82 00 00 00 :.:e..... >D9E8 00 00 00 00 00 00 00 :.:e.....
>D7E0 00 C6 00 00 00 00 06 C :.:F.....1 >D9F0 00 00 00 00 00 00 00 :.:e.....
>D7E8 00 00 00 00 00 38 00 00 :.:e.....8.. >D9F8 25 0F 07 02 04 05 05 B9 :.:e.....9
>D7F0 00 00 00 00 00 00 00 00 :.:e..... >DA00 00 00 00 00 00 00 00 :.:e.....
>D7F8 25 0F 07 02 04 05 05 B7 :.:e.....7 >DA08 00 00 00 00 00 00 00 :.:e.....
>D800 00 00 00 00 00 00 00 00 :.:e..... >DA10 00 00 00 00 00 00 00 :.:e.....
>D808 00 00 00 00 00 00 00 00 :.:e..... >DA18 00 00 00 00 00 00 00 :.:e.....
>D810 00 00 00 00 00 00 00 :.:e..... >DA20 00 00 00 00 00 00 00 :.:e.....
>D818 00 00 00 00 00 00 00 :.:e..... >DA28 00 00 00 00 00 00 00 :.:e.....
>D820 00 00 00 00 00 00 06 :.:e..... >DA30 00 00 00 00 00 00 18 :.:e.....
>D828 00 00 00 00 0E 00 00 :.:e..... >DA38 00 00 00 00 00 1C 00 :.:e.....
>D830 00 00 00 1E 00 00 00 :.:e..... >DA40 00 00 00 16 00 00 00 :.:e.....
>D838 00 1E 00 00 00 00 1E :.:e..... >DA48 00 17 F8 00 00 00 00 19 :.:x.....
>D840 00 00 00 00 00 00 00 :.:e..... >DA50 FF 00 00 00 06 1F FF :.:e.....
>D848 00 00 00 8C 80 00 00 :.:e..... >DA58 F8 00 00 01 FF FF 8F C0 :.:x.....e
>D850 01 FC 40 00 00 03 FE :.:!e.....~ >DA60 00 03 FF EA 00 70 00 0F :.:.j.p..
>D858 40 00 00 07 E9 A0 00 :.:e.....i >DA68 FA A4 00 1C 00 0F C9 40 :.:z3.....Ie
>D860 00 00 0F A0 10 00 00 :.:e..... >DA70 00 06 00 0F 20 00 00 03 :.:e.....
>D868 07 50 10 00 00 07 A0 :.:.P..... >DA78 00 0E 80 00 00 01 00 0D :.:e.....
>D870 10 00 00 00 E6 40 08 00 :.:e.....fe.. >DA80 40 00 00 03 00 0A 80 00 :.:e.....
>D878 00 01 FE A0 04 00 02 :.:e..... >DA88 00 06 00 0D 00 00 00 1C :.:e.....
>D880 1F 00 02 00 00 03 E3 C0 :.:e.....ce >DA90 00 03 00 00 00 70 00 01 :.:e.....p..
>D888 01 00 00 00 11 80 00 80 :.:e..... >DA98 F0 00 0F C0 00 07 1F FF :.:p.....e
>D890 00 00 09 E0 00 40 00 00 :.:e..... >DAA0 F8 00 00 1E 1F 00 00 00 :.:x.....
>D898 06 D0 00 20 00 00 01 E0 :.:.P..... >DAA8 00 1B F8 00 00 00 00 1E :.:.x.....
>D8A0 00 20 00 00 00 E0 00 10 :.:e..... >DAB0 00 00 00 00 00 14 00 00 :.:e.....
>D8A8 00 00 00 10 00 08 00 00 :.:e..... >DAB8 00 00 00 18 00 00 00 :.:e.....
>D8B0 00 08 00 09 00 00 04 :.:e..... >DAC0 00 00 00 00 00 00 00 :.:e.....
>D8B8 00 04 00 00 02 00 04 :.:e..... >DAC8 00 00 00 00 00 00 00 :.:e.....
>D8C0 00 00 00 01 00 04 00 00 :.:e..... >DAD0 00 00 00 00 00 00 00 :.:e.....
>D8C8 00 00 80 02 00 00 00 :.:e..... >DAD8 00 00 00 00 00 00 00 :.:e.....
>D8D0 60 02 00 00 00 10 02 :.:e..... >DAE0 00 00 00 00 00 00 00 :.:e.....
>D8D8 00 00 00 00 0C 02 00 00 :.:e..... >DAE8 00 00 00 00 00 00 00 :.:e.....
>D8E0 00 00 03 86 00 00 00 :.:e..... >DAF0 00 00 00 00 00 00 00 :.:e.....
>D8E8 00 7C 00 00 00 00 00 :.:e..... >DAF8 25 0F 07 02 04 05 05 EA :.:e.....
>D8F0 00 00 00 00 00 00 00 :.:e..... >DB00 00 00 00 00 00 00 00 :.:e.....
>D8F8 25 0F 07 02 04 05 05 B8 :.:e.....8 >DB08 00 00 00 00 00 00 00 :.:e.....
>D900 00 00 00 00 00 00 00 :.:e..... >DB10 00 00 00 00 00 00 00 :.:e.....
>D908 00 00 00 00 00 00 00 :.:e..... >DB18 00 00 00 00 00 00 00 :.:e.....
>D910 00 00 00 00 00 00 00 :.:e..... >DB20 00 00 00 00 00 00 00 :.:e.....
>D918 00 00 04 00 00 00 00 :.:e..... >DB28 03 C0 00 00 00 00 1F F0 :.:e.....p
>D920 0E 00 00 00 00 0F 00 :.:e..... >DB30 00 00 00 00 FE 08 00 00 :.:e.....
>D928 00 00 00 00 0C 80 00 00 :.:e..... >DB38 00 07 F0 04 00 00 00 1F :.:p.....
>D930 00 00 0C 40 00 00 00 :.:e..... >DB40 80 04 00 00 00 7C 00 04 :.:e.....t..
>D938 04 20 00 00 00 02 10 :.:e..... >DB48 00 00 01 F2 00 04 00 00 :.:e.....r..
>D940 00 00 00 00 02 08 00 00 :.:e..... >DB50 07 C8 00 04 00 60 7F 20 :.:.H.....
>D948 00 00 0F 04 00 00 00 :.:e..... >DB58 00 08 00 FF EE 80 00 08 :.:e.....n..
>D950 1F C4 00 00 00 39 FF :.:.D.....9 >DB60 00 7F DD 00 00 10 00 60 :.:.l.....\n/>>D958 00 00 00 00 75 7F C0 00 :.:e.....ue. >DB68 38 00 00 20 00 3F FA 00 :.:8.....?z
>D960 00 00 68 55 F8 00 00 :.:e.....hUx... >DB70 00 C0 00 00 F4 00 01 00 :.:e.....t...
>D968 60 00 06 00 00 60 00 :.:e..... >DB78 00 01 F0 00 06 00 00 01 :.:e.....p...
>D970 01 80 00 00 30 00 40 :.:e.....0...e >DB80 E8 00 18 00 00 03 F0 00 :.:h.....p...
>D978 00 00 28 00 00 20 00 03 :.:e..... >DB88 60 00 00 03 C0 00 80 00 :.:e.....e...
>D980 E4 00 00 10 00 07 F3 00 :.:d.....s. >DB90 00 01 C0 39 00 00 00 01 :.:e.....@9
>D988 00 08 00 07 80 80 00 08 :.:e..... >DB98 81 C6 00 00 00 82 18 :.:F.....



1



>DBA0 00 00 00 00 7C 20 00 00 :.....! .. >DDB0 02 18 40 00 00 00 01 E4 :..@.....
>DBA8 00 00 04 40 00 00 00 :...e..... >DDB8 40 00 00 00 00 04 40 00 :@.....@
>DBB0 0E 40 00 00 00 00 1C 80 :@..... >DDC0 00 00 00 04 40 00 00 00 :.....@
>DBE8 00 00 00 00 19 00 00 00 :..... >DDC8 00 04 40 00 00 00 00 03 :@.....@
>DBC0 00 00 32 00 00 00 00 00 :..2..... >DDD0 40 00 00 00 00 00 C0 00 :@.....@
>DEC8 22 00 00 00 00 14 00 :..... >DDD8 00 00 00 00 00 00 00 :.....
>DBD0 00 00 00 00 0C 00 00 00 :..... >DDE0 00 00 00 00 00 00 00 :.....
>DBD8 00 00 00 00 00 00 00 :..... >DDE8 00 00 00 00 00 00 00 :.....
>DBE0 00 00 00 00 00 00 00 :..... >DDF0 00 00 00 00 00 00 00 :.....
>DEE8 00 00 00 00 00 00 00 :..... >DDF8 25 0F 07 02 04 05 05 BD :%.....
>DBF0 00 00 00 00 00 00 00 :..... >DE00 EF 00 10 EF 10 EF 10 EF :o.o.o.o.
>DEF8 25 0F 07 02 04 05 05 BB :%.....; >DE08 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC00 00 00 00 00 00 00 00 :..... >DE10 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC08 00 00 00 7C 00 00 00 00 :...!..... >DE18 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC10 03 F6 00 00 00 0F C2 :v.....B >DE20 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC18 00 00 00 00 1E 02 00 00 :..... >DE28 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC20 00 00 78 02 00 00 00 00 :...x..... >DE30 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC28 F0 02 00 00 00 01 C0 04 :p.....@ >DE38 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC30 00 00 00 03 A0 04 00 00 :..... >DE40 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC38 00 07 40 04 00 00 0E :..e..... >DE48 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC40 80 08 00 00 00 1D 00 08 :..... >DE50 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC48 00 00 00 FA 00 10 00 00 :...z..... >DE58 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC50 01 F8 00 20 00 00 07 F4 :.x.....t >DE60 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC58 00 20 00 0F E8 00 40 :.h.....e >DE68 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC60 00 00 1D E0 00 80 00 03 :..... >DE70 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC68 FB E8 01 00 00 03 F7 D0 :Ch.....wP >DE78 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC70 02 00 00 01 1F C0 04 00 :.....@ >DE80 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC78 00 00 E7 A0 08 00 00 00 :.g..... >DE88 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC80 07 40 10 00 00 00 07 00 :.e..... >DE90 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC88 10 00 00 00 0E 80 10 00 :..... >DE98 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC90 00 00 06 01 A0 00 00 00 :..... >DEA0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DC98 02 02 40 00 00 01 74 :..@.....t >DEA8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCA0 40 00 00 00 00 88 80 00 :@..... >DEB0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCA8 00 00 00 09 00 00 00 00 :..... >DEB8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCB0 00 12 00 00 00 00 12 :..... >DEC0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCB8 00 00 00 00 00 12 00 00 :..... >DEC8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCC0 00 00 00 0A 00 00 00 00 :..... >DED0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCC8 00 06 00 00 00 00 00 00 :..... >DED8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCD0 00 00 00 00 00 00 00 :..... >DEE0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCD8 00 00 00 00 00 00 00 :..... >DEE8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCE0 00 00 00 00 00 00 00 :..... >DEF0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DCE8 00 00 00 00 00 00 00 :..... >DEF8 10 EF 10 EF 10 EF 10 EF :m.o.o.o.
>DCF0 00 00 00 00 00 00 00 :..... >DF00 6D 00 10 EF 10 EF 10 EF :o.o.o.o.
>DCF8 25 0F 07 02 04 05 05 EC :%.....< >DF08 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD00 00 00 00 00 00 00 00 :..... >DF10 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD08 00 00 38 00 00 00 00 :..8..... >DF18 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD10 F4 00 00 00 00 03 E2 00 :t.....b. >DF20 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD18 00 00 00 07 A2 00 00 00 :..... >DF28 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD20 00 0E 81 00 00 00 1D :..... >DF30 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD28 01 00 00 00 00 3A 01 00 :.....: >DF38 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD30 00 00 00 34 01 00 00 00 :..4..... >DF40 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD38 00 70 01 00 00 00 68 :p.....h >DF48 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD40 01 00 00 00 00 E0 01 00 :..... >DF50 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD48 00 00 00 02 00 00 00 :..P..... >DF58 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD50 00 C0 02 00 00 01 E0 :@..... >DF60 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD58 04 00 00 00 01 80 04 00 :..... >DF68 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD60 00 00 03 A0 08 00 00 00 :..... >DF70 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD68 03 40 08 00 00 0F 80 :@..... >DF78 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD70 08 00 00 1F 00 10 00 :..... >DF80 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD78 00 00 38 80 10 00 00 :.s..... >DF88 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD80 73 00 20 00 00 07 80 :s.....g. >DF90 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD88 20 00 00 01 C6 01 C0 00 :...F.@ >DF98 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD90 00 03 8F 02 40 00 00 07 :.....@ >DFA0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DD98 3C 02 40 00 00 0E 4D 04 :<.e.....M. >DFA8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DDA0 40 00 00 07 8E 09 40 00 :@.....@ >DFB0 10 EF 10 EF 10 EF 10 EF :o.o.o.o.
>DDA8 00 00 04 10 40 00 00 :.....@ >DFB8 10 EF 10 EF 10 EF 10 EF :o.o.o.o.

Dear ROY (ED)

I've included a text game here and also another short game that I came across which i thought someone may like to try.
Do you know where I could get a book on 6502 Machine Language programming. I would be grateful if you could let me know.
All the very best in the new year with the C16/+4 CLUB ROY.

YOURS SINCERELY JIM NICHOL

SCREEN HARDCOPY FOR C16 & PLUS/4.
ADAPTED FROM A GERMAN MAGAZINE BY V.BERZINS

THIS HARDCOPY SUBROUTINE WILL PRINT
THE CONTENTS OF THE SCREEN ON TO THE
PAPER. THE CONTENTS WILL BE INSIDE A
FRAME. CALL THE ROUTINE FROM WITHIN
A PROGRAMME WITH 'GOSUB 1000'.

```
!1000 REM HARDCOPY ROUTINE
!1020 OPEN4,4,0
!1030 FOR X=1 TO 42:Y=X+"";NEXT X
!1040 PRINT4,Y
!1050 FOR X=0 TO 24:Y=""
!1060 FOR Y=1 TO 40:Y2=PEEK(3071+X840+Y);
!IF Y2<32THEN Y2=Y2+64
!1070 Y6=Y6+CHR6(Y2);NEXT Y
!1080 Y6=Y6+"";PRINT4,Y6;NEXT X
!1090 PRINT4,Y6:PRINT4:PRINT4:PRINT4:
!PRINT4:PRINT4
!1100 PRINT4:PRINT4:PRINT4:PRINT4:CL0:
!SE4:Y6="";Y6="";RETURN
```

Issue
A Card
11.

1 REM *** TEST CASE FOR THE C10777 ***
2 REM ***** CALLED QUEST *****

```
10 DATA 42,23,12,,,,,-2,101,-2,,,,33,2,1,10,106,4,3,30,2,11,2,1
20 DATA 8,15,10,8,16,16,3,2,10,2,2,-2,101,-2,,,,18,18,15,10,18,9
30 DATA -2,33,5,1,,,-2,-2,101,-2,,,,1,13,4,2,1,2,36,2,1,2,1,2
40 DATA 37,2,1,11,14,13,1,13,2,31,31,-2,101,-2,,,,5,30,2,10,1,106
50 DATA -2,101,-2,,,,,-2,101,8,,,,,224,2,2,14,1,42,226,1,2,2,25,2
60 DATA 1,226,2,2,38,25,-2,33,13,50,23,30,2,1,2,31,2,2,-2,101,13,,,
70 DATA 21,20,2,2,1,13,-2,65,-2,50,11,14,2,40,2,2,21,20,-2,60,231,50,14,19
80 DATA 2,42,2,13,1,1,34,34,2,1,4,2,14,14,23,2,1,2,-2,101,516,,,
90 DATA 2,1,2,1,116,3,1,35,2,1,30,30,2,1,2,37,34,36,35,2,1,37,34,12
100 DATA 2,1,35,2,13,2,2,21,2,116,1,2,2,40,2,32,21,26,40,40,2,2,40,41
110 DATA 40,40,2,40,39,28,28,28,28,28,28
120 PRINT "Q"
130 PRINT "YOU WERE WALKING THROUGH THE"
140 PRINT "WOODS, AND YOU CAME ACROSS THE ENTRANCE"
150 PRINT "OF A CAVE, COVERED WITH BRUSH."
160 PRINT PRINT "PEOPLE SAY THAT MANY YEARS AGO A"
170 PRINT "PIRATE HID HIS TREASURE IN THESE"
180 PRINT "WOODS, BUT NO ONE HAS EVER FOUND IT."
190 PRINT "IT MAY STILL BE THERE, FOR ALL I KNOW."
200 REM DIM T1,T2: DIM M%(42),M%(5,41)
210 FOR I=0 TO 41: FOR J=0 TO 5: READ M%(J,I): NEXT: NEXT
220 GOSUB 740
230 N=5:M0=0:M6=0:T=T1:P=0:P1=0:FOR J=1 TO M3:W%(J)=0:NEXT:PRINT:GOSUB 760
240 N0=M0+1:GOSUB 530:GOSUB 630:GOSUB 320:IFT=0 OR N<5 GOTO 240
250 GOSUB 350:PRINT:PRINT "CONGRATULATIONS! YOU GOT THE TREASURE"
260 PRINT "WANT TO HUNT AGAIN?" :A$="YN":A2=2:GOSUB 500:ON A1 GOTO 230,1670,270
270 IFT=NOT (ORD(M6+5):M0 THEN RETURN
280 PRINT "DO YOU WANT TO TAKE IT WITH YOU?"
290 A$="YN":A2=2:GOSUB 500:ON A1 GOTO 320,330
310 PRINT "WELL...." GOTO 300
320 T=-1:PRINT:PRINT "OK, LETS GET OUT OF HERE!":RETURN
330 PRINT:PRINT "WE'LL LEAVE IT HERE AND YOU CAN EXPLORE"
340 PRINT "SOME MORE." :M6=M0:RETURN
350 S=0:IFT=-1 THEN S=5
360 IFF=1 THEN S=S+10
370 FOR J=2 TO M3: S=S+W%(J):NEXT:RETURN
380 IF N=2 OR P=1 OR T1=2 OR T<0-1 THEN RETURN
390 IF N=16 THEN P=160
400 IFF=0 THEN P1=P1+1
410 IF N=3 THEN P1=P1+1
420 IFF=1 THEN RETURN
430 PRINT:PRINT "SUDDENLY THE PIRATE LEAPS OUT OF THE"
440 PRINT "GLOOM AND GRABS THE TREASURE FROM YOU!"
450 PRINT "HAHA!", HE SHOUTS, "YOU FOUND MY"
460 PRINT "TREASURE, DID YOU? WELL, I'LL HIDE"
470 PRINT "IT BETTER THIS TIME!"
480 PRINT "AND HE DISAPPEARS INTO THE DARKNESS"
490 PRINT "WITH THE TREASURE." :P=1:T=T2:RETURN
500 GOTO 1: IF I$="" GOTO 500
510 FOR A1=1 TO A2: IF I$=MID$(A1,A1,1) THEN RETURN
520 NEXT:RETURN
530 N3=N:N8=0:GOSUB 630:IF N=1 THEN N0=N:A0=A1
540 PRINT:I=M%(A1-1,N-1)
550 IF I=-2 THEN N1=N3
560 IF I>439 THEN I=I-500:FOR J=0 TO 999: NEXT:GOTO 550
570 ON I TO 0 GOTO 530,610
580 N=I:GOTO 620
590 N=I-100:IFT=-1 THEN N=N+1
600 GOTO 620
610 N=I-200:IFT=-1 THEN N=N+P
620 IF N=100 GOTO 640
630 FOR J=0 TO 5: M%(J,N-1)=2:NEXT: M%(6-A0,N-1)=N0
```

```

650 W%(N)=1:R5=R4:IFM%(0,N-1)≠1 THEN RETURN
660 I=M%(5,N-1):J=-1:IFM%(3,N-1)≧100*%RND(1) THEN I=M%(4,N-1)
670 J=-1:IFM%(1,N-1)≧100*%RND(1) THEN I=M%(2,N-1)
680 GOTO550
690 PRINT:PRINT"          WHICH WAY? ";A$="NEUDWSP":A2=7:GOSUB500
700 PRINTI$:IFA1<8GOTO720
710 PRINT"WHICH WAY DO YOU WANT TO GO?":GOSUB740:GOSUB760:GOTO690
720 IFA1<0 THEN RETURN
730 GOSUB350:PRINT"YOU HAVE 5 POINTS!":GOTO690
740 PRINT:PRINT"TYPE N,S,E,W,U OR D FOR NORTH, SOUTH,"
750 PRINT"EAST, WEST, UP OR DOWN AND P FOR SCORE.":PRINT:RETURN
760 J=N:ONJGOTO850,860,870,890,900,920,940,960,800,300,1000,850
770 ONJ-1200:1020,1050,1090,1100,1140,1160,1170,1200,1230,800,1270,1280
780 ONJ-2400:1300,1320,1360,800,1390,1420,1450,1470,1490,1500,1510,1520
790 ONJ-3600:1530,1540,1590,1610,1620,1640
800 IFI=NTHENPRINT:PRINT"THE TREASURE IS HERE!"
810 IFA1<0 THEN T1=TSORT1<0 THEN RETURN
820 PRINT:PRINT"A NOTE ON THE WALL SAYS"
830 PRINT"  (PIRATES NEVER LEAVE THEIR TREASURE"
840 PRINT"  TWICE IN THE SAME PLACE!":RETURN
850 PRINT"YOU'RE AT A DEAD END!":GOTO800
860 PRINT"YOU CAN'T GO IN THAT DIRECTION.":GOTO800
870 PRINT"A TUNNEL GOES NORTH-SOUTH."
880 PRINT"THERE IS AN OPENING TO THE WEST.":GOTO800
890 PRINT"YOU'RE ON THE BRINK OF A PIT.":GOTO800
900 PRINT"YOU'RE OUTSIDE THE CAVE."
910 PRINT"GO SOUTH TO ENTER.":GOTO800
920 PRINT"YOU'RE AT THE HOME OF THE GNOME-KING."
930 PRINT"FORTUNATELY, HE'S GONE FOR THE DAY.":GOTO800
940 PRINT"THE GNOME KING IS HERE!"
950 PRINT"YOU'D BETTER GET OUT!":PRINT:GOTO800
960 PRINT"YOU'RE LOST IN THE WOODS.":GOTO800
970 GOTO800
980 PRINT"YOU'RE NOT GOING TO GET FAR, DIGGING"
990 PRINT"THROUGH ROCK.":PRINT:GOTO800
1000 PRINT"YOU'RE AT THE BOTTOM OF A PIT. A LITTLE"
1010 PRINT"STREAM FLOWS OVER THE ROCKS HERE.":GOTO800
1020 PRINT"YOU'RE AT A WIDE SPOT. THERE IS A"
1030 PRINT"SOOTY PATCH WHERE SOMEBODY HAS RESTED"
1040 PRINT"  A TORCH AGAINST THE WALL. THERE ARE"
1050 PRINT"JAGGED ROCKS ABOVE YOU.":GOTO800
1060 PRINT"YOU'RE IN A CANYON. HIGH ON THE WALL"
1070 PRINT"ABOVE YOU IS SCRATCHED THE MESSAGE"
1080 PRINT"  (BILBO WAS HERE)":GOTO800
1090 PRINT"YOU'RE NOT A BIRD. YOU CAN'T FLY!":PRINT:GOTO800
1100 PRINT"YOU'RE IN A LOW CHAMBER. A TIGHT TUNNEL"
1110 PRINT"GOES EAST, AND YOU CAN WALK TO THE"
1120 PRINT"SOUTH OR WEST. THERE IS LIGHT"
1130 PRINT"TO THE NORTH.":GOTO800
1140 PRINT"IT'S A TIGHT SQUEEZE. YOU CAN'T"
1150 PRINT"GET PAST WITH THE TREASURE.":PRINT:GOTO800
1160 PRINT"I DON'T THINK YOU CAN FIND THE CAVE.":GOTO800
1170 PRINT"YOU'RE AT THE TOP OF A CLIMB."
1180 PRINT"BELOW YOU A MESSAGE SAYS"
1190 PRINT"  (BILBO WAS HERE)":GOTO800
1200 PRINT"YOU'RE AT THE NORTH SIDE OF A CHASM,"
1210 PRINT"GO WIDE TO JUMP. RINGS ECHOES FROM"
1220 PRINT"BELOW ARE THE ONLY INDICATION OF DEPTH.":GOTO800
1230 PRINT"YOU'RE IN ANADU. BELOW YOU"
1240 PRINT"ALPH, THE SACRED RIVER RUNS"
1250 PRINT"THROUGH CAVERNS MEASURELESS TO MAN,"
1260 PRINT"DOWN TO A SUNLESS SEA.":GOTO800
1270 PRINT"YOU'RE ON THE LEDGE ABOVE THE GUILLOTINE ROOM.":GOTO800
1280 PRINT"I HEAR THE GIANT THERE!!!"
1290 PRINT"YOU'D BETTER GO BACK!":PRINT:GOTO800
1300 PRINT"YOU'RE IN THE GIANT'S CAVERN. BETTER"
1310 PRINT"NOT BE HERE WHEN THE GIANT COMES!":GOTO800
1320 PRINT"YOU'RE IN THE QUEST RESEARCH AND"

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10 COLOR0,1,1:COLOR4,1,1:PRINT"#####"
20 PRINTTAB(8)"#####"
30 PRINTTAB(8)"#23"
34 PRINTTAB(8)"#23          FROGS C 16"
50 PRINTTAB(8)"#23"
50 PRINTTAB(8)"#####"
100 FORI=1TO63:NEXT
140 DIMA(20)
150 FORJ=1TOS
160 PRINT"#####";TAB(X)"# _____##### 121 123FROGS5"
170 X=X+3
180 PRINT"#####" (..... JUMPING GAME!)
190 FORI=1TO100:NEXTI
200 NEXTJ
210 FORI=1TOS00:NEXTI
220 N=12
225 PRINT"#####"
230 PRINT" 3 DO YOU WANT INSTRUCTIONS ? "
240 GOTO1
250 IFI$="" THEN240
270 IFA$="Y" THENGOSUB730:PRINT"]"
280 IFA$="N" THEN290
290 PRINT"]":REM SET UP BOARD
300 FORI=1TO3:R(I)=1:IFI>4THENR(I)=2
310 NEXTI
320 R(5)=0:GOSUB1570
330 T=0
340 REM DISPLAY THE LANDSCAPE
350 GOSUB1350
360 PRINT"#####":GOSUB1570
370 PRINT"WHICH FROG ? MOVING # ";T:GOSUB1630
380 DEIRA$=R=VAL(R$)
390 IFA(10R)>2THEN380
400 IFA(R)=0THEN1630
410 D=ABS(R-B)
420 IFD<=2THEN430
430 GOSUB1420:GOTO560
440 IFA(R)=0GOTO460
450 H(B)=R(R):R(R)=0:GOTO470
460 PRINT"HUH?":GOTO360
470 Z=2+D
480 N=4+R-2
490 Y=12
500 IFA<BTHEN540
510 IFA(B)=1THENGOSUB1270
520 IFA(B)=2THENGOSUB1310
530 GOTO560
540 IFA(B)=1THENGOSUB1130
550 IFA(B)=2THENGOSUB1230
560 T=T+1
570 IF(R(1)+R(2)+R(3)+R(4))=(R(5)+8)GOTO630
580 GOTO360
590 GOSUB1120
600 PRINT"]"
610 FORI=1TOS0:NPRINT"
620 PRINT"]" GOSUB1600:PRINT"#####NICE DONE!!!!":FORI=1TOS000:NEXT
630 IFT<25THENR(1)GOSUB1650:GOSUB1680:GOSUB620
640 IFT<28THEN650
650 IFT<32THENGOSUB1650:GOSUB1730:GOSUB620
660 IFT<31THEN670
670 IFT<35THENGOSUB1650:GOSUB1750

```

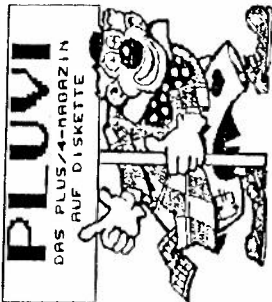
1340 PRINT"I'M SORRY, BUT VISITORS ARE NOT"
1350 PRINT"ALLOWED. YOU'LL HAVE TO LEAVE.":PRINT:GOTO800
1360 PRINT"YOU'RE IN THE CRYSTAL PALACE. THE"
1370 PRINT"WALLS RESONATE WITH"
1380 PRINT"AWESOME MUSIC.":PRINT:GOTO800
1390 PRINT"YOU'RE AT THE TOP OF A GIANT STALACTITE.;"
1400 PRINT"YOU COULD SLIDE DOWN, BUT YOU COULDN'T"
1410 PRINT"CLIMB BACK UP.":GOTO800
1420 PRINT"YOU'RE IN A LITTLE GROTTO. THERE IS A"
1430 PRINT"BOOK HERE CALLED JANE'S FIGHTING SHIPS,"
1440 PRINT"DATED 1766.":GOTO800
1450 PRINT"YOU'RE IN THE GUILLOTINE ROOM. A SHARP"
1460 PRINT"LEDGE ABOVE YOU.":GOTO800
1470 PRINT"YOU'RE IN A CHUTE, SCRAMBLING DOWN THE"
1480 PRINT"ROCKS! NO WAY TO STOP! HANG ON!":PRINT:GOTO800
1490 PRINT"THE TIGHT TUNNEL TURNS A CORNER.":GOTO800
1500 PRINT"YOU'RE IN A LITTLE TWISTY MAZE.":GOTO800
1510 PRINT"YOU'RE IN A LITTLE TWISTING MAZE.":GOTO800
1520 PRINT"YOU'RE IN A TWISTING LITTLE MAZE.":GOTO800
1530 PRINT"YOU'RE IN A TWISTY LITTLE MAZE.":GOTO800
1540 PRINT"YOU'RE IN A PREHISTORIC DWELLING. ON"
1550 PRINT"THE WALL ARE DRAWINGS OF BISON DONE IN"
1560 PRINT"RED CLAY. THE FLOOR IS STREWN WITH"
1570 PRINT"BONES, THE REMAINS OF ANCIENT RITUALS."
1580 PRINT"A SMALL TUNNEL GOES THROUGH THE FLOOR.":GOTO800
1590 PRINT"YOU'RE IN A BLACK HOLE. THE"
1600 PRINT"FORCE OF GRAVITY IS OVERWHELMING.":GOTO800
1610 PRINT"YOU'RE IN THE LABYRINTH.":GOTO800
1620 PRINT"YOU'RE IN THE LABYRINTH."
1630 PRINT"IT'S VERY DARK IN HERE.":GOTO800
1640 PRINT"YOU'RE IN THE ASTRUM. INCENSE IS HEAVY"
1650 PRINT"IN THE AIR, AND ALL DIRECTIONS"
1660 PRINT"SEEM THE SAME.":GOTO800
1670 END

```

700 GOSUB710
710 FORI=1TO3
720 IF(A(I)=2)THENPRINT"000000(0000)0000P 4";PRINT"00")
730 PRINT"0 WE BEGIN WITH 3 FROGS, " "0:PRINT"00"
740 GOSUB1170:PRINT:PRINT
750 PRINT" FOUR OF THEM LOOK LIKE THIS:"
760 PRINT:PRINT" 00000000000HIT ANY KEY"
770 GETA$:IF A$="" THEN770
780 PRINT"0 THE REST LOOK LIKE THIS:"
790 GOSUB1180:PRINT
800 PRINT:PRINT
810 PRINT"0:THE IDEA IS TO MOVE THE FROGS FROM 1-4"
820 PRINT"0TO 6-3 IN THE LEAST POSSIBLE MOVES."
830 PRINT:PRINT:GOSUB1120:PRINT"0"
1100 RETURN
1110 FORK=1TO3:K=K-1:Y=Y-1:GOSUB1170
1120 PRINT" 00:PRESS ANY KEY TO CONTINUE!"
1130 GETA$:IF A$="" THEN1130
1140 RETURN
1150 PRINT"5";FORI=1TOX:PRINT"0";NEXT
1160 FORJ=1TOY:PRINT"0";NEXT:RETURN
1170 GOTO1150:PRINT"00000000 00000000P 0";RETURN
1180 GOSUB1150:PRINT"00000000(0000)0000P 0";RETURN
1190 FORK=1TO2:K=K+1:Y=Y-1:GOSUB1170
1200 PRINT"0000 00 ";NEXT
1210 FORK=1TO2:K=K+1:Y=Y+1:GOSUB1170
1220 PRINT"00000 00 ";NEXT:RETURN
1230 FORK=1TO2:K=K+1:Y=Y-1:GOSUB1180
1240 PRINT"0000 00 ";NEXT
1250 FORK=1TO2:K=K+1:Y=Y+1:GOSUB1180
1260 PRINT"00000 00 ";NEXT:RETURN
1270 FORK=1TO2:K=K-1:Y=Y-1:GOSUB1170
1280 PRINT" 00000 ";NEXT
1290 FORK=1TO2:K=K-1:Y=Y+1:GOSUB1170
1300 PRINT"00000 00 ";NEXT:RETURN
1310 FORK=1TO2:K=K-1:Y=Y-1:GOSUB1180
1320 PRINT" 00000 ";NEXT
1330 FORK=1TO2:K=K-1:Y=Y+1:GOSUB1180
1340 PRINT"00000 00 ";NEXT:RETURN
1350 PRINT"5";Y=Y-1:Y=22:GOSUB1150
1360 PRINT"0.00000000000000000000000"
1370 PRINT"0001100110011140115.116.117.118.119."
1380 FORI=1 TO 19:PRINT"0";NEXT
1390 Y=19:FORK=2TO14:STEP4:GOSUB1170:NEXT
1400 FORK=2TO6:STEP4:GOSUB1180:NEXT
1410 RETURN
1420 IF(A)=2)THEN1500
1430 K=4+K-2:Y=19
1440 FORK=1TO3:Y=Y-1:GOSUB1170
1450 PRINT"00000 0 ";
1460 NEXTK
1470 FORK=1TO3:Y=Y+1:GOSUB1170
1480 PRINT"00000 0 0 ";
1490 NEXTK:RETURN
1500 K=4+K-2:Y=19
1510 FORK=1TO3:Y=Y-1:GOSUB1180
1520 PRINT"00000 0 ";
1530 NEXTK
1540 FORK=1TO3:Y=Y+1:GOSUB1180
1550 PRINT"00000 0 0 ";
1560 NEXTK:RETURN
1570 FORK=1TO3
1580 IF(A)=0)THENRETURN
1590 NEXT
1600 PRINT"0:000000000000000000000000"
1610 PRINT"0 5":RETURN
1620 GOSUB1600 GOTO560

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```
1640 +C10
1650 PRINT"()";PRINT:PRINT:PRINT:PRINT" YOU MADE IT!!!!!!"
1660 PRINT"MOVEMENTS."
1670 RETURN
1680 PRINT:PRINT:PRINT:PRINT:PRINT"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
1690 PRINT"!!!!!!!!!!!!!!THAT'S FINE!!!!!!!!!!!!!!"
1700 PRINT"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
1710 PRINT:PRINT:PRINT:PRINT
1720 GOTO1730
1730 PRINT:PRINT:PRINT:PRINT:PRINT" BETTER!"
1740 PRINT:PRINT:PRINT:PRINT:PRINT:GOTO1730
1750 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT" PRACTICE SOME MORE!!"
1760 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:FORI=1TO10000:NEXT:GOTO1730
1770 PRINT:PRINT:PRINT:PRINT:PRINT" YOU NEVER LEARN!!"
1780 PRINT
1790 PRINT"DO YOU WANT TO PLAY AGAIN? (Y/N)"
1791 GET:IFR=""THEN1731
1792 IFR="Y"THENRUN
1800 END
```



Für jeden Plus/4-Benutzer stellt sich die Frage, wo man Informationen über und zu diesem Computersystem bekommen kann. Die meisten Zeilungen berichten gar nicht mehr über den Plus/4, andere nur über dessen Möglichkeiten.

Um diese Informationsdefizite abzudecken gibt es seit dem 1. November 1988 ein neues Informationsorgan für alle Plus/4-Nutzer:

PLUVI - das Plus/4-Magazin auf Diskette

Auf jeder (zweiseitigen!) Diskette gibt es Informationen, Erläuterungen, Tipps & Tricks, Tests, kommerziell vertriebener Hard- und Software und natürlich auch einige gute Programme. Diese befinden sich sofort auf Diskette, ganz ohne das bei Zeitschriften übliche Abkloppen!

Bei den Programmen handelt es sich um ausgesuchte Public Domain-Software aus Ungarn, USA und Deutschland. Eigenentwicklungen und Konvertierungen vom C64. Für jeden ist etwas dabei: Spiele, Anwendungsprogramme, Utilities, ... Alle Programme sind natürlich ausführlich dokumentiert.

Und das alles gibt es sehr preiswert:

PLUVI kostet nur 10,- DM !!!

Im Abo gibt es PLUVI noch billiger: 24,- DM, 6 Ausgaben gibt es schon für 45,- DM und 12 Ausgaben für 84,- DM, pro Ausgabe also für 7,- DM !!!

Aus Kosten- und Zeitgründen ist nur Vorkasse möglich: bar, Verrechnungsscheck, Überweisung

Volker Huppert
Ferlingsweg 15
4150 Krefeld 1
 Kto. Nr.: 1587 58-435, BLZ 360 100 43, Postgiroamt Essen

Spelling Checker

An ingenious program to help you provide yourself with a personalised dictionary to avoid those embarrassing mistakes.

By W.I. Sellers

- (1) Spelling check
- (2) Options
- (3) Load Dictionary
- (4) Save Dictionary
- (5) Delete Word
- (6) Directory

Proof reading a word-processed document is probably not most people's idea of an enjoyable way of spending an hour or so. Thus, any device that can make this job even a little easier is to be welcomed.

A spelling checker helps by comparing every word in the document with a list of common words, and indicating which are not in that list. This is obviously not infallible, but the mistyping of a word can produce another word that will be recognized by the spelling checker and so the mistake will not be spotted. Also, it is not possible for the machine to know every word, therefore uncommon words will always be indicated as misspelled. Finally, this is not the sort of program that can be typed into a living in a magazine since the on-line dictionary will contain several thousand words. However, this program is self-teaching and can quickly obtain words for its list from documents it is used to check. This is achieved by allowing the user to ask the computer to remember correctly spelled words which it may not yet know. In this way, the user need only type in any extra words at all.

In Use

The program shown is for use with a disk drive and running it causes a machine code-programmed SPELL-CHECK to be created. This is the "CHECK" file. The "LOAD SPELL-CHECK" file and then RUN it. The following menu will appear:

check the dictionary empty and so to the next step. To go to the OPTIONS menu, typing the letter 'O' will toggle the parameter; thus pressing 'C' will switch the program to add word mode. Then type 'D' to exit back to the main menu and then press '1' to initiate the spelling checker. This prompts for the name of the file to be checked.

If there's a word not found, you are asked if or not it is to be added to the dictionary. If you type 'C' for longly files, getting the words to its add any not too esoteric words to its dictionary will rapidly generate a sizeable list of words that can now be saved as a dictionary file. This can be checked each time a file is spelling corrected until the limit set by the memory size of the Plus/4 - about 38K. The LOAD and SAVE DICTIONARY options are for believing it or not. SPELL-CHECK WORD allows the user to delete words from the dictionary - a misspelling that has occurred by mistake perhaps. Directory prints out the disk directory.

On first running the spelling checker fails to recognize will indeed be errors.

