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seg000:4310*      ;
seg000:4310*      ;
seg000:4310*      ; This file is generated by The Interactive Disassembler (IDA)
seg000:4310*      ;           Licensed to: Unknown User (-)
seg000:4310*      ;           Copyright (c) 1999 by DataRescue sa/nv, <ida@datarescue.com>
seg000:4310*      ;
seg000:4310*      ;
seg000:4310*      ; File Name      : tandu.bin
seg000:4310*      ; Format       : Binary File
seg000:4310*      ; Base Address: 0000h Range: 4310h - 5000h Loaded length: 0CF0h
seg000:4310*      ;
seg000:4310*      ; Processor:      z80
seg000:4310*      ; Target assembler: Table Driven Assembler (TASM) by Speech Technology Inc.
seg000:4310*      ;
seg000:4310*      ; Segment type: Pure code
seg000:4310*      ; segment 'seg000'
seg000:4310*      .org 4310h
seg000:4310*00    byte_0_4310:.db 0 ; DATA XREF: sub_0_46E5+F|r
seg000:4310*      ; sub_0_471C+C6|w ...
seg000:4311*00    byte_0_4311:.db 0 ; DATA XREF: sub_0_46E5|r
seg000:4311*      ; sub_0_46E5+1F|w ...
seg000:4312*C9    byte_0_4312:.db 0C9h ; DATA XREF: seg000:49C9|w
seg000:4312*      ; seg000:4AC1|w ...
seg000:4313*B0 45 word_0_4313:.dw 45B0h ; DATA XREF: sub_0_46E5+23|r
seg000:4313*      ; sub_0_4888+17|r ...
seg000:4315*01    byte_0_4315:.db 1 ; DATA XREF: seg000:49C6|w
seg000:4316 40      .db 40h ; @
seg000:4317 3C      .db 3Ch ; <
seg000:4318 C0      .db 0C0h ; L
seg000:4319 3C      .db 3Ch ; <
seg000:431A 40      .db 40h ; @
seg000:431B 3D      .db 3Dh ; =
seg000:431C C0      .db 0C0h ; L
seg000:431D 3D      .db 3Dh ; =
seg000:431E*53 3E word_0_431E:.dw 3E53h ; DATA XREF: sub_0_46E5+2A|w
seg000:431E*      ; sub_0_471C+1|r ...
seg000:4320*60    byte_0_4320:.db 60h ; DATA XREF: seg000:4F02|w
seg000:4320*      ; seg000:4F26|r ...
seg000:4321*2B    byte_0_4321:.db 2Bh ; DATA XREF: seg000:4A98|w
seg000:4321*      ; seg000:4F6C|r ...
seg000:4322*00    byte_0_4322:.db 0 ; DATA XREF: seg000:49D8|w
seg000:4322*      ; seg000:4F17|r ...
seg000:4323 A0 B6 BF B9+invader_30pt:.db 0A0h, 0B6h, 0BFh, 0B9h, 90h, 1Ah, 1, 20h, 86h, 20h, 89h, 20h
seg000:4323 90 1A 01 20+ ; DATA XREF: seg000:4570|o
seg000:4323 86 20 89 20+ ; seg000:4A72|o
seg000:4323 00      .db 0
seg000:4330 9C B7 BF BB+invader_20pt:.db 9Ch, 0B7h, 0BFh, 0BBh, 0ACh, 1Ah, 1, 8Ch, 83h, 20h, 83h, 8Ch
seg000:4330 AC 1A 01 8C+ ; DATA XREF: seg000:457C|o
seg000:4330 83 20 83 8C+ ; seg000:4A7B|o
seg000:4330 00      .db 0
seg000:433D BE BB BF B7+invader_10pt:.db 0BEh, 0BBh, 0BFh, 0B7h, 0BDh, 1Ah, 1, 8Ch, 83h, 20h, 83h, 8Ch
seg000:433D BD 1A 01 8C+ ; DATA XREF: seg000:4588|o
seg000:433D 83 20 83 8C+ ; seg000:4A84|o
seg000:433D 00      .db 0
seg000:434A 8C B7 B7 B7+ufo: .db 8Ch, 0B7h, 0B7h, 0B7h, 0B7h, 8Ch, 0
seg000:434A B7 8C 00 ; DATA XREF: seg000:4594|o
seg000:434A      ; sub_0_48BF+2A|o
seg000:4351 B8 BF BF BF+shield: .db 0B8h, 0BFh, 0BFh, 0BFh, 0BFh, 0BFh, 0B4h, 1Ah, 8, 8, 1, 8Fh
seg000:4351 BF BF B4 1A+ ; DATA XREF: seg000:4A4B|o
seg000:4351 08 08 01 8F+ .db 8Fh, 83h, 83h, 83h, 8Fh, 8Fh, 0
seg000:4364 B8 BC BF BC+player: .db 0B8h, 0BCh, 0BFh, 0BCh, 0B4h, 0
seg000:4364 B4 00 ; DATA XREF: seg000:4AA1|o
seg000:436A 82 84 20 88+explosion:.db 82h, 84h, 20h, 88h, 81h, 1Ah, 1, 88h, 81h, 20h, 82h, 84h, 0
seg000:436A 81 1A 01 88+ ; DATA XREF: sub_0_471C+53|o
seg000:4377 00      .db 0 ;
seg000:4378 00      .db 0 ;
seg000:4379 1B 01 20 20+blank_space:.db 1Bh, 1, 20h, 20h, 20h, 20h, 20h, 1Ah, 1, 20h, 20h, 20h, 20h
seg000:4379 20 20 20 1A+ ; DATA XREF: sub_0_471C+5C|o
seg000:4379 01 20 20 20+ .db 20h, 0
seg000:4388 50 4C 41 59 aPlay: .text "PLAY" ; DATA XREF: seg000:4564|o
seg000:438C 09 D6 3C      .db 9, 0D6h, 3Ch
seg000:438F 54 41 4E 44+aTandyInvaders:.text "TANDY INVADERS"
seg000:43A3 09 54 3D      .db 9, 54h, 3Dh
seg000:43A6 2A 20 53 43+aScoreAdvanceTa:.text "** SCORE ADVANCE TABLE **"
seg000:43A6 4F 52 45 20+ .db 0
seg000:43BE 2A 20 54 41+aTandyElectroni:.text "** TANDY ELECTRONICS **"
seg000:43BE 4E 44 59 20+ ; DATA XREF: seg000:4558|o
seg000:43BE 45 4C 45 43+ .db 0
seg000:43D4 3C 2D 2D 2D+a30Points:.text "<---- 30 POINTS" ; DATA XREF: seg000:45A0|o
seg000:43E6 09 1E 3E      .db 9, 1Eh, 3Eh
seg000:43E9 3C 2D 2D 2D+a20Points:.text "<---- 20 POINTS"
seg000:43FB 09 9E 3E      .db 9, 9Eh, 3Eh
seg000:43FE 3C 2D 2D 2D+a10Points:.text "<---- 10 POINTS"
seg000:4410 09 1E 3F      .db 9, 1Eh, 3Fh
seg000:4413 3C 2D 2D 2D+a_Mystery:.text "<---- ? MYSTERY"
seg000:4413 2D 20 20 20+ .db 0
seg000:4427 50 52 45 53+aPressZKeyToMov:.text "PRESS "
seg000:4427 53 20 22 5A+ .db 22h
seg000:4427 22 20 4B 45+ .text "Z"
seg000:4427 59 20 54 4F+ .db 22h
seg000:4427 20 4D 4F 56+ .text " KEY TO MOVE LEFT"
seg000:4441 09 13 3D      .db 9, 13h, 3Dh
seg000:4444 50 52 45 53+aPressXKeyToMov:.text "PRESS "
seg000:4444 53 20 22 58+ .db 22h
seg000:4444 22 20 4B 45+ .text "X"
seg000:4444 59 20 54 4F+ .db 22h
seg000:4444 20 4D 4F 56+ .text " KEY TO MOVE RIGHT"
seg000:445F 09 93 3D      .db 9, 93h, 3Dh
seg000:4462 50 52 45 53+aPressKeyToFire:.text "PRESS "
seg000:4462 53 20 22 20+ .db 22h
seg000:4462 22 20 4B 45+ .text " "
seg000:4462 59 20 54 4F+ .db 22h
seg000:4462 20 46 49 52+ .text " KEY TO FIRE !"
seg000:4479 09 13 3E      .db 9, 13h, 3Eh
seg000:447C 50 52 45 53+aPressRKeyToSta:.text "PRESS "
seg000:447C 53 20 22 52+ .db 22h
seg000:447C 22 20 4B 45+ .text "R"
seg000:447C 59 20 54 4F+ .db 22h
seg000:447C 20 53 54 41+ .text " KEY TO START"
seg000:447C 52 54 00      .db 0
seg000:4493 47 20 41 20+aGAMEOVER:.text "G A M E - O V E R" ; DATA XREF: seg000:494B|o
seg000:4493 4D 20 45 20+ .db 0

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seg000:44A5 20 20 53 43+aScore00000High:.text " SCORE 00000 HIGH-SCORE"
seg000:44A5 4F 52 45 20+ ; DATA XREF: seg000:4544|o
seg000:44A5 20 30 30 30+ .text " 00000"
seg000:44A5 30 30 20 20+ .db 0
seg000:44E5
seg000:44E5 ; SUBROUTINE
seg000:44E5
seg000:44E5
seg000:44E5 display_message: ; CODE XREF: seg000:4547|p
seg000:44E5 C5 ; seg000:455B|p ...
seg000:44E5 push bc
seg000:44E6
seg000:44E6 loc_0_44E6: ; CODE XREF: display_message+15|j
seg000:44E6 7E ld a, (hl) ; get character
seg000:44E7 B7 or a ; finished?
seg000:44E8 28 19 jr z, loc_0_4503 ; yes, exit
seg000:44EA FE 01 cp 1
seg000:44EC 20 0E jr nz, loc_0_44FC
seg000:44EE 06 05 ld b, 5 ; 5 characters to print
seg000:44F0 3E 08 ld a, 8 ; backspace
seg000:44F2
seg000:44F2 loc_0_44F2: ; CODE XREF: display_message+12|j
seg000:44F2 D5 push de
seg000:44F3 CD 33 00 call 33h ; display character
seg000:44F6 D1 pop de
seg000:44F7 10 F9 djnz loc_0_44F2 ; loop
seg000:44F9
seg000:44F9 loc_0_44F9: ; CODE XREF: display_message+1C|j
seg000:44F9 23 inc hl ; next character
seg000:44FA 18 EA jr loc_0_44E6 ; loop
seg000:44FC
seg000:44FC loc_0_44FC: ; CODE XREF: display_message+7|j
seg000:44FC D5 push de
seg000:44FD CD 33 00 call 33h ; display character
seg000:4500 D1 pop de
seg000:4501 18 F6 jr loc_0_44F9 ; loop
seg000:4503
seg000:4503 loc_0_4503: ; CODE XREF: display_message+3|j
seg000:4503 C1 pop bc
seg000:4504 C9 ret
seg000:4504 ; End of function display_message
seg000:4504
seg000:4505 ; SUBROUTINE
seg000:4505
seg000:4505 display_message_slowly: ; CODE XREF: display_message_slowly+11|j
seg000:4505 7E ld a, (hl) ; seg000:494E|p
seg000:4505 or a ; get character
seg000:4506 B7 ret z ; done?
seg000:4507 C8 push de ; yes, exit
seg000:4508 D5 push bc
seg000:4509 C5 call 33h ; display character
seg000:450A CD 33 00 ld bc, 2300h ; ~130ms
seg000:450D 01 00 23 call 60h ; delay
seg000:4510 CD 60 00 pop bc
seg000:4513 C1 pop de
seg000:4514 D1 inc hl ; next character
seg000:4515 23 jr display_message_slowly ; loop through message
seg000:4516 18 ED ; End of function display_message_slowly
seg000:4516
seg000:4516 ; SUBROUTINE
seg000:4516
seg000:4516 wipe_screen_left_to_right_slow: ; CODE XREF: seg000:454F|p
seg000:4516 D9 ; seg000:45AF|p ...
seg000:4516 exx
seg000:4519 21 FF 3B ld hl, 3BFFh ; start of video (-1)
seg000:451C 06 40 ld b, 40h ; '@' ; characters/line
seg000:451E
seg000:451E loc_0_451E: ; CODE XREF: wipe_screen_left_to_right_slow+19|j
seg000:451E C5 push bc
seg000:451F 23 inc hl ; next column
seg000:4520 E5 push hl
seg000:4521 06 0F ld b, 0Fh ; 15 lines
seg000:4523 3E 20 ld a, 20h ; ' ' ; space
seg000:4525 11 40 00 ld de, 40h ; '@' ; next line address
seg000:4528
seg000:4528 loc_0_4528: ; CODE XREF: wipe_screen_left_to_right_slow+12|j
seg000:4528 77 ld (hl), a ; display character
seg000:4529 19 add hl, de ; next line
seg000:452A 10 FC djnz loc_0_4528 ; loop all lines
seg000:452C CD 60 4E call delay_1_5ms
seg000:452F E1 pop hl
seg000:4530 C1 pop bc
seg000:4531 10 EB djnz loc_0_451E ; loop all columns
seg000:4533 D9 exx
seg000:4534 C9 ret
seg000:4534 ; End of function wipe_screen_left_to_right_slow
seg000:4534
seg000:4535 ;
seg000:4535
seg000:4535 START:
seg000:4535 F3 di
seg000:4536 3E 0F ld a, 0Fh
seg000:4538 CD 33 00 call 33h ; display character
seg000:453B 31 8A 42 ld sp, 428Ah
seg000:453E 21 C0 3F ld hl, 3FC0h ; cursor position
seg000:4541 22 20 40 ld (4020h), hl
seg000:4544 21 A5 44 ld hl, aScore00000High ; " SCORE 00000 "...
seg000:4547 CD E5 44 call display_message
seg000:454A 3E 20 ld a, 20h ; ' '
seg000:454C 32 FF 3F ld (3FFFh), a
seg000:454F
seg000:454F attract_loop: ; CODE XREF: seg000:45D6|j
seg000:454F CD 18 45 ; seg000:4960|j
seg000:454F call wipe_screen_left_to_right_slow
seg000:4552 21 94 3F ld hl, 3F94h ; cursor position
seg000:4555 22 20 40 ld (4020h), hl
seg000:4558 21 BE 43 ld hl, aTandyElectroni ; "** TANDY ELECTRONICS **"
seg000:455B CD E5 44 call display_message
seg000:455E 21 9E 3C ld hl, 3C9Eh ; cursor position

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seg000:4561 22 20 40      ld      (4020h), hl
seg000:4564 21 88 43      ld      hl, aPlay          ; "PLAY"
seg000:4567 CD 66 4E      call     print_slow_and_check_for_R_key
seg000:456A 21 92 3D      ld      hl, 3D92h          ; cursor position
seg000:456D 22 20 40      ld      (4020h), hl
seg000:4570 21 23 43      ld      hl, invader_30pt
seg000:4573 CD E5 44      call     display_message
seg000:4576 21 12 3E      ld      hl, 3E12h          ; cursor position
seg000:4579 22 20 40      ld      (4020h), hl
seg000:457C 21 30 43      ld      hl, invader_20pt
seg000:457F CD E5 44      call     display_message
seg000:4582 21 92 3E      ld      hl, 3E92h          ; cursor position
seg000:4585 22 20 40      ld      (4020h), hl
seg000:4588 21 3D 43      ld      hl, invader_10pt
seg000:458B CD E5 44      call     display_message
seg000:458E 21 12 3F      ld      hl, 3F12h          ; cursor position
seg000:4591 22 20 40      ld      (4020h), hl
seg000:4594 21 4A 43      ld      hl, ufo
seg000:4597 CD E5 44      call     display_message
seg000:459A 21 9E 3D      ld      hl, 3D9Eh          ; cursor position
seg000:459D 22 20 40      ld      (4020h), hl
seg000:45A0 21 D4 43      ld      hl, a30Points      ; "<---- 30 POINTS"
seg000:45A3 CD 66 4E      call     print_slow_and_check_for_R_key
seg000:45A6 01 FF FF      ld      bc, 0FFFFh        ; ~1s
seg000:45A9 CD 60 00      call     60h              ; delay
seg000:45AC CD 60 00      call     60h              ; delay
seg000:45AF CD 18 45      call     wipe_screen_left_to_right_slow
seg000:45B2 CD D9 45      call     check_for_R_key
seg000:45B5 21 94 3F      ld      hl, 3F94h
seg000:45B8 22 20 40      ld      (4020h), hl
seg000:45BB 21 BE 43      ld      hl, 43BEh
seg000:45BE CD E5 44      call     display_message
seg000:45C1 21 93 3C      ld      hl, 3C93h
seg000:45C4 22 20 40      ld      (4020h), hl
seg000:45C7 21 27 44      ld      hl, 4427h
seg000:45CA CD 66 4E      call     print_slow_and_check_for_R_key
seg000:45CD 01 FF FF      ld      bc, 0FFFFh        ; ~1s
seg000:45D0 CD 60 00      call     60h              ; delay
seg000:45D3 CD 60 00      call     60h              ; delay
seg000:45D6 C3 4F 45      jp      attract_loop
seg000:45D9
seg000:45D9 ; ██████████ S U B R O U T I N E ██████████
seg000:45D9
seg000:45D9 check_for_R_key:          ; CODE XREF: seg000:45B2|p
seg000:45D9 3A 04 38          ; print_slow_and_check_for_R_key+23|p
seg000:45D9          ld      a, (3804h)
seg000:45DC FE 04          cp      4
seg000:45DE CA C2 49      jp      z, start_game      ; read keyboard
seg000:45E1 C9          ret              ; "R"?
seg000:45E1          ; End of function check_for_R_key
seg000:45E1
seg000:45E2 ; ██████████ S U B R O U T I N E ██████████
seg000:45E2
seg000:45E2 sub_0_45E2:              ; CODE XREF: sub_0_471C+26|p
seg000:45E2          ; sub_0_471C+36|p ...
seg000:45E2          push     hl
seg000:45E3          push     de
seg000:45E4 7C          ld      a, h
seg000:45E5 BA          cp      d
seg000:45E6 28 06      jr      z, loc_0_45EE
seg000:45E8 30 0A      jr      nc, loc_0_45F4
seg000:45EA          loc_0_45EA:          ; CODE XREF: sub_0_45E2+10|j
seg000:45EA AF          xor      a
seg000:45EB          loc_0_45EB:          ; CODE XREF: sub_0_45E2+14|j
seg000:45EB          ; sub_0_45E2+18|j
seg000:45EB          pop      de
seg000:45EC          pop      hl
seg000:45ED C9          ret
seg000:45EE
seg000:45EE ; -----
seg000:45EE          loc_0_45EE:          ; CODE XREF: sub_0_45E2+4|j
seg000:45EE          ld      a, 1
seg000:45EF BB          cp      e
seg000:45F0 28 06      jr      z, loc_0_45F8
seg000:45F2 38 F6      jr      c, loc_0_45EA
seg000:45F4          loc_0_45F4:          ; CODE XREF: sub_0_45E2+6|j
seg000:45F4          ld      a, 0FFh
seg000:45F6 18 F3      jr      loc_0_45EB
seg000:45F8
seg000:45F8          loc_0_45F8:          ; CODE XREF: sub_0_45E2+E|j
seg000:45F8          ld      a, 20h ; ' '
seg000:45FA 18 EF      jr      loc_0_45EB
seg000:45FA          ; End of function sub_0_45E2
seg000:45FA
seg000:45FA ; ██████████ S U B R O U T I N E ██████████
seg000:45FA
seg000:45FA sub_0_45FC:              ; CODE XREF: sub_0_4B48+2B|p
seg000:45FA          ; seg000:4B91|p
seg000:45FA          push     hl
seg000:45FB          push     bc
seg000:45FD          ld      hl, (4302h)
seg000:45FE 2A 02 43      ld      b, 3Fh ; '?'
seg000:4601 06 3F
seg000:4603          loc_0_4603:          ; CODE XREF: sub_0_45FC+10|j
seg000:4603          ld      a, (hl)
seg000:4604 CB 7F      bit     7, a
seg000:4606 28 03      jr      z, loc_0_460B
seg000:4608 EE 0F      xor     0Fh
seg000:460A 77          ld      (hl), a
seg000:460B          loc_0_460B:          ; CODE XREF: sub_0_45FC+A|j
seg000:460B          inc     hl
seg000:460C 10 F5      djnz    loc_0_4603
seg000:460E          push     de
seg000:460F          ld      hl, (4304h)
seg000:4612 CD 25 46      call    sub_0_4625
seg000:4615 2A 06 43      ld      hl, (4306h)

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seg000:4618 CD 25 46      call    sub_0_4625
seg000:461B 2A 08 43      ld      hl, (4308h)
seg000:461E CD 25 46      call    sub_0_4625
seg000:4621 D1          pop     de
seg000:4622 C1          pop     bc
seg000:4623 E1          pop     hl
seg000:4624 C9          ret
seg000:4624          ; End of function sub_0_45FC
seg000:4624
seg000:4625
seg000:4625          ; ██████████ S U B R O U T I N E ██████████
seg000:4625
seg000:4625          sub_0_4625:          ; CODE XREF: sub_0_45FC+16↑p
seg000:4625 E5          ; sub_0_45FC+1C↑p ...
seg000:4625          push    hl
seg000:4626 06 40      ld      b, 40h ; '@'
seg000:4628
seg000:4628          loc_0_4628:          ; CODE XREF: sub_0_4625+15↑j
seg000:4628 7E          ld      a, (hl)
seg000:4629 FE 8C      cp      8Ch ; 'i'
seg000:462B 28 09      jr      z, loc_0_4636
seg000:462D FE 83      cp      83h ; 'à'
seg000:462F 20 08      jr      nz, loc_0_4639
seg000:4631 3E 8C      ld      a, 8Ch ; 'i'
seg000:4633 77          ld      (hl), a
seg000:4634 18 03      jr      loc_0_4639
seg000:4636
seg000:4636
seg000:4636          loc_0_4636:          ; CODE XREF: sub_0_4625+6↑j
seg000:4636 3E 83      ld      a, 83h ; 'à'
seg000:4638 77          ld      (hl), a
seg000:4639
seg000:4639          loc_0_4639:          ; CODE XREF: sub_0_4625+A↑j
seg000:4639 23          ; sub_0_4625+F↑j
seg000:4639          inc     hl
seg000:463A 10 EC      djnz   loc_0_4628
seg000:463C E1          pop     hl
seg000:463D C9          ret
seg000:463D          ; End of function sub_0_4625
seg000:463D
seg000:463E
seg000:463E          ; ██████████ S U B R O U T I N E ██████████
seg000:463E
seg000:463E          sub_0_463E:          ; CODE XREF: sub_0_4888+14↑p
seg000:463E E5          ; sub_0_48F6+2A↑p ...
seg000:463E          push    hl
seg000:463F 11 3E 00      ld      de, 3Eh ; '>'
seg000:4642 19          add     hl, de
seg000:4643 E5          push    hl
seg000:4644 D1          pop     de
seg000:4645 13          inc     de
seg000:4646 06 3F      ld      b, 3Fh ; '?'
seg000:4648 1A          ld      a, (de)
seg000:4649 CB 7F      bit     7, a
seg000:464B 28 03      jr      z, loc_0_4650
seg000:464D 3E 20      ld      a, 20h ; ' '
seg000:464F 12          ld      (de), a
seg000:4650
seg000:4650          loc_0_4650:          ; CODE XREF: sub_0_463E+D↑j
seg000:4650 CB 7E          ; sub_0_463E+1C↑j
seg000:4650          bit     7, (hl)
seg000:4652          jr      z, loc_0_4658
seg000:4654 7E          ld      a, (hl)
seg000:4655 12          ld      (de), a
seg000:4656 36 20      ld      (hl), 20h ; ' '
seg000:4658
seg000:4658          loc_0_4658:          ; CODE XREF: sub_0_463E+14↑j
seg000:4658 2B          dec     hl
seg000:4659 1B          dec     de
seg000:465A 10 F4      djnz   loc_0_4650
seg000:465C E1          pop     hl
seg000:465D 36 20      ld      (hl), 20h ; ' '
seg000:465F C9          ret
seg000:465F          ; End of function sub_0_463E
seg000:465F
seg000:4660
seg000:4660          ; ██████████ S U B R O U T I N E ██████████
seg000:4660
seg000:4660          sub_0_4660:          ; CODE XREF: sub_0_4888+2B↑p
seg000:4660 E5          ; sub_0_48F6+32↑p ...
seg000:4660          push    hl
seg000:4661 E5          push    hl
seg000:4662 D1          pop     de
seg000:4663 23          inc     hl
seg000:4664 06 3F      ld      b, 3Fh ; '?'
seg000:4666 1A          ld      a, (de)
seg000:4667 CB 7F      bit     7, a
seg000:4669 28 03      jr      z, loc_0_466E
seg000:466B 3E 20      ld      a, 20h ; ' '
seg000:466D 12          ld      (de), a
seg000:466E
seg000:466E          loc_0_466E:          ; CODE XREF: sub_0_4660+9↑j
seg000:466E CB 7E          ; sub_0_4660+18↑j
seg000:466E          bit     7, (hl)
seg000:4670          jr      z, loc_0_4676
seg000:4672 7E          ld      a, (hl)
seg000:4673 12          ld      (de), a
seg000:4674 36 20      ld      (hl), 20h ; ' '
seg000:4676
seg000:4676          loc_0_4676:          ; CODE XREF: sub_0_4660+10↑j
seg000:4676 23          inc     hl
seg000:4677 13          inc     de
seg000:4678 10 F4      djnz   loc_0_466E
seg000:467A E1          pop     hl
seg000:467B 11 3F 00      ld      de, 3Fh ; '?'
seg000:467E 19          add     hl, de
seg000:467F 36 20      ld      (hl), 20h ; ' '
seg000:4681 C9          ret
seg000:4681          ; End of function sub_0_4660
seg000:4681
seg000:4682
seg000:4682          ; ██████████ S U B R O U T I N E ██████████
seg000:4682

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seg000:4682
seg000:4682      sub_0_4682:                ; CODE XREF: sub_0_46BB|p
seg000:4682 E5      push    hl
seg000:4683 C5      push    bc
seg000:4684 21 CC 3F      ld      hl, 3FCCh
seg000:4687 CD A4 46      call   sub_0_46A4
seg000:468A 20 15      jr      nz, loc_0_46A1
seg000:468C 2B          dec     hl
seg000:468D CD A4 46      call   sub_0_46A4
seg000:4690 20 0F      jr      nz, loc_0_46A1
seg000:4692 2B          dec     hl
seg000:4693 CD A4 46      call   sub_0_46A4
seg000:4696 20 09      jr      nz, loc_0_46A1
seg000:4698 2B          dec     hl
seg000:4699 CD A4 46      call   sub_0_46A4
seg000:469C 20 03      jr      nz, loc_0_46A1
seg000:469E CD B0 46      call   sub_0_46B0
seg000:46A1
seg000:46A1      loc_0_46A1:                ; CODE XREF: sub_0_4682+8|j
seg000:46A1 C1          ; sub_0_4682+E|j ...
seg000:46A1      pop     bc
seg000:46A2 E1      pop     hl
seg000:46A3 C9          ret
seg000:46A3      ; End of function sub_0_4682
seg000:46A3
seg000:46A4
seg000:46A4      ; SUBROUTINE
seg000:46A4
seg000:46A4      sub_0_46A4:                ; CODE XREF: sub_0_4682+5|p
seg000:46A4 7E          ; sub_0_4682+B|p ...
seg000:46A4      ld      a, (hl)
seg000:46A5 FE 39      cp      39h ; '9'
seg000:46A7 28 03      jr      z, loc_0_46AC
seg000:46A9 3C          inc     a
seg000:46AA 77          ld      (hl), a
seg000:46AB C9          ret
seg000:46AC
seg000:46AC      loc_0_46AC:                ; CODE XREF: sub_0_46A4+3|j
seg000:46AC 36 30      ld      (hl), 30h ; '0'
seg000:46AE AF          xor     a
seg000:46AF C9          ret
seg000:46AF      ; End of function sub_0_46A4
seg000:46AF
seg000:46B0
seg000:46B0      ; SUBROUTINE
seg000:46B0
seg000:46B0      sub_0_46B0:                ; CODE XREF: sub_0_4682+1C|p
seg000:46B0 21 C9 3F      ; seg000:49EF|p
seg000:46B0      ld      hl, 3FC9h
seg000:46B3 06 05      ld      b, 5
seg000:46B5
seg000:46B5      loc_0_46B5:                ; CODE XREF: sub_0_46B0+8|j
seg000:46B5 36 30      ld      (hl), 30h ; '0'
seg000:46B7 23          inc     hl
seg000:46B8 10 FB      djnz   loc_0_46B5
seg000:46BA C9          ret
seg000:46BA      ; End of function sub_0_46B0
seg000:46BA
seg000:46BA      ; SUBROUTINE
seg000:46BA
seg000:46BB
seg000:46BB      sub_0_46BB:                ; CODE XREF: sub_0_46BB+27|j
seg000:46BB CD 82 46      ; sub_0_471C+50|p ...
seg000:46BB      call   sub_0_4682
seg000:46BE 21 CC 3F      ld      hl, 3FCCh
seg000:46C1 7E          ld      a, (hl)
seg000:46C2 FE 30      cp      30h ; '0'
seg000:46C4 20 1C      jr      nz, loc_0_46E2
seg000:46C6 2B          dec     hl
seg000:46C7 7E          ld      a, (hl)
seg000:46C8 FE 35      cp      35h ; '5'
seg000:46CA 20 16      jr      nz, loc_0_46E2
seg000:46CC 2B          dec     hl
seg000:46CD 7E          ld      a, (hl)
seg000:46CE FE 31      cp      31h ; '1'
seg000:46D0 20 10      jr      nz, loc_0_46E2
seg000:46D2 2B          dec     hl
seg000:46D3 7E          ld      a, (hl)
seg000:46D4 FE 30      cp      30h ; '0'
seg000:46D6 20 0A      jr      nz, loc_0_46E2
seg000:46D8 3A 0F 43      ld      a, (430Fh)
seg000:46DB 3C          inc     a
seg000:46DC 32 0F 43      ld      (430Fh), a
seg000:46DF CD 90 4E      call   sub_0_4E90
seg000:46E2
seg000:46E2      loc_0_46E2:                ; CODE XREF: sub_0_46BB+9|j
seg000:46E2 10 D7          ; sub_0_46BB+F|j ...
seg000:46E2      djnz   sub_0_46BB
seg000:46E4 C9          ret
seg000:46E4      ; End of function sub_0_46BB
seg000:46E4
seg000:46E5
seg000:46E5      ; SUBROUTINE
seg000:46E5
seg000:46E5      sub_0_46E5:                ; CODE XREF: seg000:4F23|p
seg000:46E5      ld      a, (byte_0_4311)
seg000:46E8 B7          or      a
seg000:46E9 C0          ret     nz
seg000:46EA 3A 00 43      ld      a, (4300h)
seg000:46ED B7          or      a
seg000:46EE C0          ret     nz
seg000:46EF 3E 14      ld      a, 14h
seg000:46F1 32 00 43      ld      (4300h), a
seg000:46F4 3A 10 43      ld      a, (byte_0_4310)
seg000:46F7 B7          or      a
seg000:46F8 20 08      jr      nz, loc_0_4702
seg000:46FA 3A 0D 43      ld      a, (430Dh)
seg000:46FD EE 01      xor     l
seg000:46FF 32 0D 43      ld      (430Dh), a
seg000:4702
seg000:4702      loc_0_4702:                ; CODE XREF: sub_0_46E5+13|j

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seg000:4702 3E 01      ld      a, 1
seg000:4704 32 11 43     ld      (byte_0_4311), a
seg000:4707 D9      exx
seg000:4708 2A 13 43     ld      hl, (word_0_4313)
seg000:470B 11 C0 FF     ld      de, 0FFC0h
seg000:470E 19      add     hl, de
seg000:470F 22 1E 43     ld      (word_0_431E), hl
seg000:4712 7E      ld      a, (hl)
seg000:4713 FE 20      cp      20h ; ' '
seg000:4715 C2 07 48     jp      nz, loc_0_4807
seg000:4718 36 5B      ld      (hl), 5Bh ; '['
seg000:471A D9      exx
seg000:471B C9      ret
seg000:471B      ; End of function sub_0_46E5
seg000:471B
seg000:471C      ;
seg000:471C      ; SUBROUTINE
seg000:471C
seg000:471C      sub_0_471C:      ; CODE XREF: sub_0_471C+EC|j
seg000:471C D9      ; seg000:4F39|p
seg000:471C      exx
seg000:471D 2A 1E 43     ld      hl, (word_0_431E)
seg000:4720 7E      ld      a, (hl)
seg000:4721 FE 5B      cp      5Bh ; '['
seg000:4723 20 1A      jr      nz, loc_0_473F
seg000:4725 36 20      ld      (hl), 20h ; ' '
seg000:4727 11 C0 FF     ld      de, 0FFC0h
seg000:472A 19      add     hl, de
seg000:472B CB 54      bit     2, h
seg000:472D 28 61      jr      z, loc_0_4790
seg000:472F 7E      ld      a, (hl)
seg000:4730 FE 80      cp      80h ; 'C'
seg000:4732 28 04      jr      z, loc_0_4738
seg000:4734 FE 20      cp      20h ; ' '
seg000:4736 20 07      jr      nz, loc_0_473F
seg000:4738
loc_0_4738:      ; CODE XREF: sub_0_471C+16|j
seg000:4738 36 5B      ld      (hl), 5Bh ; '['
seg000:4738      ; sub_0_471C+E0|j
seg000:473A
loc_0_473A:      ; CODE XREF: sub_0_471C+E8|j
seg000:473A 22 1E 43     ld      (word_0_431E), hl
seg000:473D D9      exx
seg000:473E C9      ret
seg000:473F
loc_0_473F:      ; CODE XREF: sub_0_471C+7|j
seg000:473F      ; sub_0_471C+1A|j
seg000:473F      ld      de, 3C40h
seg000:4742 CD E2 45     call    sub_0_45E2
seg000:4745 B7      or      a
seg000:4746 28 54      jr      z, loc_0_479C
seg000:4748 CB 7E      bit     7, (hl)
seg000:474A CA EA 47     jp      z, loc_0_47EA
seg000:474D E5      push    hl
seg000:474E CD 4A 48     call    sub_0_484A
seg000:4751 D1      pop     de
seg000:4752 CD E2 45     call    sub_0_45E2
seg000:4755 B7      or      a
seg000:4756 D5      push    de
seg000:4757 E1      pop     hl
seg000:4758 CA 0B 48     jp      z, loc_0_480B
seg000:475B CD 28 4D     call    sub_0_4D28
seg000:475E 22 20 40     ld      (4020h), hl
seg000:4761 7E      ld      a, (hl)
seg000:4762 06 03      ld      b, 3
seg000:4764 FE A0      cp      0A0h ; 'á'
seg000:4766 28 04      jr      z, loc_0_476C
seg000:4768 38 01      jr      c, loc_0_476B
seg000:476A 05      dec     b
seg000:476B
loc_0_476B:      ; CODE XREF: sub_0_471C+4C|j
seg000:476B 05      dec     b
seg000:476C
loc_0_476C:      ; CODE XREF: sub_0_471C+4A|j
seg000:476C      call    sub_0_46BB
seg000:476F 21 6A 43     ld      hl, explosion
seg000:4772 CD E5 44     call    display_message
seg000:4775 CD 5A 4E     call    delay_15ms
seg000:4778 21 79 43     ld      hl, blank_space
seg000:477B CD E5 44     call    display_message
seg000:477E 3A 01 43     ld      a, (4301h)
seg000:4781 3D      dec     a
seg000:4782 CA 74 48     jp      z, loc_0_4874
seg000:4785 32 01 43     ld      (4301h), a
seg000:4788 11 00 00     ld      de, 0
seg000:478B CD 85 49     call    sub_0_4985
seg000:478E 18 06      jr      loc_0_4796
seg000:4790
loc_0_4790:      ; CODE XREF: sub_0_471C+11|j
seg000:4790      ld      de, 40h ; '@'
seg000:4793 19      add     hl, de
seg000:4794 36 20      ld      (hl), 20h ; ' '
seg000:4796
loc_0_4796:      ; CODE XREF: sub_0_471C+72|j
seg000:4796      ; sub_0_471C+82|j ...
seg000:4796 AF      xor     a
seg000:4797 32 11 43     ld      (byte_0_4311), a
seg000:479A D9      exx
seg000:479B C9      ret
seg000:479C
loc_0_479C:      ; CODE XREF: sub_0_471C+2A|j
seg000:479C      bit     7, (hl)
seg000:479E 28 F6      jr      z, loc_0_4796
seg000:47A0 21 00 3C     ld      hl, 3C00h
seg000:47A3 06 40      ld      b, 40h ; '@'
seg000:47A5
loc_0_47A5:      ; CODE XREF: sub_0_471C+8E|j
seg000:47A5      bit     7, (hl)
seg000:47A7 20 03      jr      nz, loc_0_47AC
seg000:47A9 23      inc     hl
seg000:47AA 10 F9      djnz    loc_0_47A5
seg000:47AC

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seg000:47AC      loc_0_47AC:                ; CODE XREF: sub_0_471C+8B↑j
seg000:47AC E5      push     hl
seg000:47AD 21 00 3C    ld       hl, 3C00h
seg000:47B0 CD 7E 4C    call    clear_video_line_HL
seg000:47B3 21 06 00    ld       hl, 6
seg000:47B6 CD 1D 4D    call    sub_0_4D1D
seg000:47B9 45      ld       b, 1
seg000:47BA AF      xor      a
seg000:47BB 0E 05    ld       c, 5
seg000:47BD      loc_0_47BD:                ; CODE XREF: sub_0_471C+A2↑j
seg000:47BD 81      add      a, c
seg000:47BE 10 FD    djnz    loc_0_47BD
seg000:47C0 47      ld       b, a
seg000:47C1 F5      push     af
seg000:47C2 CD BB 46    call    sub_0_46BB
seg000:47C5 F1      pop      af
seg000:47C6 E1      pop      hl
seg000:47C7 22 20 40    ld       (4020h), hl
seg000:47CA 06 0A      ld       b, 0Ah
seg000:47CC 5F      ld       e, a
seg000:47CD 21 00 00    ld       hl, 0
seg000:47D0 55      ld       d, 1
seg000:47D1      loc_0_47D1:                ; CODE XREF: sub_0_471C+B6↑j
seg000:47D1 19      add      hl, de
seg000:47D2 10 FD    djnz    loc_0_47D1
seg000:47D4 3E 3C      ld       a, 3Ch ; '<'
seg000:47D6 CD 33 00    call    33h                ; display character
seg000:47D9 CD AF 0F      call    0FAFh
seg000:47DC 3E 3E      ld       a, 3Eh ; '>'
seg000:47DE CD 33 00    call    33h                ; display character
seg000:47E1 AF      xor      a
seg000:47E2 32 10 43    ld       (byte_0_4310), a
seg000:47E5 32 0C 43    ld       (430Ch), a
seg000:47E8 18 AC      jr      loc_0_4796
seg000:47EA      ;
seg000:47EA      loc_0_47EA:                ; CODE XREF: sub_0_471C+2E↑j
seg000:47EA E5      push     hl
seg000:47EB 21 03 00    ld       hl, 3
seg000:47EE CD 1D 4D    call    sub_0_4D1D
seg000:47F1 7D      ld       a, 1
seg000:47F2 E1      pop      hl
seg000:47F3 FE 03      cp       3
seg000:47F5 F5      push     af
seg000:47F6 C4 0A 4E      call    nz, sub_0_4E0A
seg000:47F9 F1      pop      af
seg000:47FA FE 02      cp       2
seg000:47FC DA 38 47      jp       c, loc_0_4738
seg000:47FF C2 96 47      jp       nz, loc_0_4796
seg000:4802 36 20      ld       (hl), 20h ; ''
seg000:4804 C3 3A 47      jp       loc_0_473A
seg000:4807      ;
seg000:4807      loc_0_4807:                ; CODE XREF: sub_0_46E5+30↑j
seg000:4807 D9      exx
seg000:4808 C3 1C 47      jp       sub_0_471C
seg000:480B      ;
seg000:480B      loc_0_480B:                ; CODE XREF: sub_0_471C+3C↑j
seg000:480B      call     sub_0_482E
seg000:480E 18 86      jr      loc_0_4796
seg000:480E      ; End of function sub_0_471C
seg000:4810      ;
seg000:4810      ; SUBROUTINE
seg000:4810      ;
seg000:4810      sub_0_4810:                ; CODE XREF: sub_0_4C8A+90↑j
seg000:4810 E5                ; sub_0_4D5F+96↑p
seg000:4810      push     hl
seg000:4811 C5      push     bc
seg000:4812 7E      ld       a, (hl)
seg000:4813 4F      ld       c, a
seg000:4814 3E BC      ld       a, 0BCh ; '␣'
seg000:4816 A1      and      c
seg000:4817 B9      cp       c
seg000:4818 20 08      jr      nz, loc_0_4822
seg000:481A 3E B0      ld       a, 0B0h ; '0'
seg000:481C A1      and      c
seg000:481D B9      cp       c
seg000:481E 20 02      jr      nz, loc_0_4822
seg000:4820 3E 20      ld       a, 20h ; ''
seg000:4822      loc_0_4822:                ; CODE XREF: sub_0_4810+8↑j
seg000:4822 FE 80                ; sub_0_4810+E↑j
seg000:4822      cp       80h ; 'C'
seg000:4824 20 02      jr      nz, loc_0_4828
seg000:4826 3E 20      ld       a, 20h ; ''
seg000:4828      loc_0_4828:                ; CODE XREF: sub_0_4810+14↑j
seg000:4828      ld       (hl), a
seg000:4829 C1      pop      bc
seg000:482A E1      pop      hl
seg000:482B C3 57 4D      jp       loc_0_4D57
seg000:482B      ; End of function sub_0_4810
seg000:482E      ;
seg000:482E      ; SUBROUTINE
seg000:482E      ;
seg000:482E      sub_0_482E:                ; CODE XREF: sub_0_471C+EF↑p
seg000:482E E5      push     hl
seg000:482F C5      push     bc
seg000:4830 7E      ld       a, (hl)
seg000:4831 4F      ld       c, a
seg000:4832 3E 8F      ld       a, 8Fh ; 'À'
seg000:4834 A1      and      c
seg000:4835 B9      cp       c
seg000:4836 20 08      jr      nz, loc_0_4840
seg000:4838 3E 83      ld       a, 83h ; 'ã'
seg000:483A A1      and      c
seg000:483B B9      cp       c
seg000:483C 20 02      jr      nz, loc_0_4840
seg000:483E 3E 20      ld       a, 20h ; ''

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seg000:4840
seg000:4840      loc_0_4840:                ; CODE XREF: sub_0_482E+8↑j
seg000:4840 FE 80      cp                ; sub_0_482E+E↑j
seg000:4840      cp                80h ; 'Ç'
seg000:4842 20 02      jr                nz, loc_0_4846
seg000:4844 3E 20      ld                a, 20h ; ' '
seg000:4846
seg000:4846      loc_0_4846:                ; CODE XREF: sub_0_482E+14↑j
seg000:4846 77      ld                (hl), a
seg000:4847 C1      pop                bc
seg000:4848 E1      pop                hl
seg000:4849 C9      ret
seg000:4849      ; End of function sub_0_482E
seg000:4849
seg000:484A
seg000:484A      ; ██████████ S U B R O U T I N E ██████████
seg000:484A
seg000:484A      sub_0_484A:                ; CODE XREF: sub_0_471C+32↑p
seg000:484A 2A 08 43      ; sub_0_4D5F+7D↑p
seg000:484A      ld                hl, (4308h)
seg000:484D 7C      ld                a, h
seg000:484E B7      or                a
seg000:484F 20 11      jr                nz, loc_0_4862
seg000:4851 2A 06 43      ld                hl, (4306h)
seg000:4854 7C      ld                a, h
seg000:4855 B7      or                a
seg000:4856 20 0A      jr                nz, loc_0_4862
seg000:4858 2A 04 43      ld                hl, (4304h)
seg000:485B 7C      ld                a, h
seg000:485C B7      or                a
seg000:485D 20 03      jr                nz, loc_0_4862
seg000:485F 2A 02 43      ld                hl, (4302h)
seg000:4862
seg000:4862      loc_0_4862:                ; CODE XREF: sub_0_484A+5↑j
seg000:4862 D5      ; sub_0_484A+C↑j ...
seg000:4862      push                de
seg000:4863 C5      push                bc
seg000:4864 11 3F 00      ld                de, 3Fh ; '?'
seg000:4867 19      add                hl, de
seg000:4868 06 3F      ld                b, 3Fh ; '?'
seg000:486A
seg000:486A      loc_0_486A:                ; CODE XREF: sub_0_484A+25↑j
seg000:486A CB 7E      bit                7, (hl)
seg000:486C 20 03      jr                nz, loc_0_4871
seg000:486E 2B      dec                hl
seg000:486F 10 F9      djnz               loc_0_486A
seg000:4871
seg000:4871      loc_0_4871:                ; CODE XREF: sub_0_484A+22↑j
seg000:4871 C1      pop                bc
seg000:4872 D1      pop                de
seg000:4873 C9      ret
seg000:4873      ; End of function sub_0_484A
seg000:4873
seg000:4874
seg000:4874      ;
seg000:4874
seg000:4874      loc_0_4874:                ; CODE XREF: sub_0_471C+66↑j
seg000:4874 C3 F5 49      jp                loc_0_49F5
seg000:4877
seg000:4877      ; ██████████ S U B R O U T I N E ██████████
seg000:4877
seg000:4877      sub_0_4877:                ; CODE XREF: sub_0_4B48+C↑p
seg000:4877      ; seg000:4B8B↑p
seg000:4877      ld                de, 40h ; '@'
seg000:487A 06 0D      ld                b, 0Dh
seg000:487C
seg000:487C      loc_0_487C:                ; CODE XREF: sub_0_4877+A↑j
seg000:487C CB 7E      bit                7, (hl)
seg000:487E 20 06      jr                nz, loc_0_4886
seg000:4880 19      add                hl, de
seg000:4881 10 F9      djnz               loc_0_487C
seg000:4883 3E 20      ld                a, 20h ; ' '
seg000:4885 C9      ret
seg000:4886
seg000:4886      ;
seg000:4886
seg000:4886      loc_0_4886:                ; CODE XREF: sub_0_4877+7↑j
seg000:4886 AF      xor                a
seg000:4887 C9      ret
seg000:4887      ; End of function sub_0_4877
seg000:4887
seg000:4888
seg000:4888      ; ██████████ S U B R O U T I N E ██████████
seg000:4888
seg000:4888      sub_0_4888:                ; CODE XREF: seg000:4F2B↑p
seg000:4888      ld                a, (3808h) ; keyboard
seg000:488B E6 05      and                5 ; "X" or "Z" pressed?
seg000:488D C8      ret                z ; no return
seg000:488E FE 04      cp                4 ; "Z"?
seg000:4890 30 16      jr                nc, loc_0_48A8 ; yes, skip
seg000:4892 3A BB 3F      ld                a, (3FBBh)
seg000:4895 CB 7F      bit                7, a
seg000:4897 C0      ret                nz
seg000:4898 D9      exx
seg000:4899 21 80 3F      ld                hl, 3F80h
seg000:489C CD 3E 46      call               sub_0_463E
seg000:489F 2A 13 43      ld                hl, (word_0_4313)
seg000:48A2 23      inc                hl
seg000:48A3 22 13 43      ld                (word_0_4313), hl
seg000:48A6
seg000:48A6      loc_0_48A6:                ; CODE XREF: sub_0_4888+35↑j
seg000:48A6 D9      exx
seg000:48A7 C9      ret
seg000:48A8
seg000:48A8      ;
seg000:48A8
seg000:48A8      loc_0_48A8:                ; CODE XREF: sub_0_4888+8↑j
seg000:48A8 C0      ret                nz
seg000:48A9 3A 84 3F      ld                a, (3F84h)
seg000:48AC CB 7F      bit                7, a
seg000:48AE C0      ret                nz
seg000:48AF D9      exx
seg000:48B0 21 80 3F      ld                hl, 3F80h
seg000:48B3 CD 60 46      call               sub_0_4660
seg000:48B6 2A 13 43      ld                hl, (word_0_4313)
seg000:48B9 2B      dec                hl

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seg000:48BA 22 13 43      ld      (word_0_4313), hl
seg000:48BD 18 E7      jr      loc_0_48A6
seg000:48BD      ; End of function sub_0_4888
seg000:48BD
seg000:48BF      ; ██████████ S U B R O U T I N E ██████████
seg000:48BF
seg000:48BF      sub_0_48BF:      ; CODE XREF: seg000:4F44|p
seg000:48BF 3A 0C 43      ld      a, (430Ch)
seg000:48C2 3C      inc     a
seg000:48C3 32 0C 43      ld      (430Ch), a
seg000:48C6 C0      ret     nz
seg000:48C7 3A 01 43      ld      a, (4301h)
seg000:48CA FE 08      cp      8
seg000:48CC D8      ret     c
seg000:48CD 3A 10 43      ld      a, (byte_0_4310)
seg000:48D0 B7      or      a
seg000:48D1 C0      ret     nz
seg000:48D2 D9      exx
seg000:48D3 3E 41      ld      a, 41h ; 'A'
seg000:48D5 32 0B 43      ld      (430Bh), a
seg000:48D8 3A 0D 43      ld      a, (430Dh)
seg000:48DB B7      or      a
seg000:48DC 28 05      jr      z, loc_0_48E3
seg000:48DE 21 00 3C      ld      hl, 3C00h
seg000:48E1 18 03      jr      loc_0_48E6
seg000:48E3
seg000:48E3
seg000:48E3      loc_0_48E3:      ; CODE XREF: sub_0_48BF+1D|j
seg000:48E3 21 3A 3C      ld      hl, 3C3Ah      ; cursor potition
seg000:48E6      loc_0_48E6:      ; CODE XREF: sub_0_48BF+22|j
seg000:48E6      ld      (4020h), hl
seg000:48E9 21 4A 43      ld      hl, ufo
seg000:48EC CD E5 44      call    display_message
seg000:48EF 3E 01      ld      a, 1
seg000:48F1 32 10 43      ld      (byte_0_4310), a
seg000:48F4 D9      exx
seg000:48F5 C9      ret
seg000:48F5      ; End of function sub_0_48BF
seg000:48F5
seg000:48F6      ; ██████████ S U B R O U T I N E ██████████
seg000:48F6
seg000:48F6      sub_0_48F6:      ; CODE XREF: seg000:4F41|p
seg000:48F6 3A 10 43      ld      a, (byte_0_4310)
seg000:48F9 B7      or      a
seg000:48FA C8      ret     z
seg000:48FB D9      exx
seg000:48FC 21 00 3C      ld      hl, 3C00h
seg000:48FF 06 3F      ld      b, 3Fh ; '?'
seg000:4901
seg000:4901      loc_0_4901:      ; CODE XREF: sub_0_48F6+15|j
seg000:4901 7E      ld      a, (hl)
seg000:4902 FE BB      cp      0BBh ; 'η'
seg000:4904 28 09      jr      z, loc_0_490F
seg000:4906 FE B7      cp      0B7h ; 'Ä'
seg000:4908 28 09      jr      z, loc_0_4913
seg000:490A
seg000:490A      loc_0_490A:      ; CODE XREF: sub_0_48F6+1B|j
seg000:490A 23      ; sub_0_48F6+1F|j
seg000:490A      inc     hl
seg000:490B 10 F4      djnz    loc_0_4901
seg000:490D 18 08      jr      loc_0_4917
seg000:490F
seg000:490F      loc_0_490F:      ; CODE XREF: sub_0_48F6+E|j
seg000:490F      ld      (hl), 0B7h ; 'Ä'
seg000:4911 18 F7      jr      loc_0_490A
seg000:4913
seg000:4913      loc_0_4913:      ; CODE XREF: sub_0_48F6+12|j
seg000:4913      ld      (hl), 0BBh ; 'η'
seg000:4915 18 F3      jr      loc_0_490A
seg000:4917
seg000:4917      loc_0_4917:      ; CODE XREF: sub_0_48F6+17|j
seg000:4917      ld      a, (430Dh)
seg000:491A B7      or      a
seg000:491B 28 08      jr      z, loc_0_4925
seg000:491D 21 00 3C      ld      hl, 3C00h
seg000:4920 CD 3E 46      call    sub_0_463E
seg000:4923 18 06      jr      loc_0_492B
seg000:4925
seg000:4925      loc_0_4925:      ; CODE XREF: sub_0_48F6+25|j
seg000:4925      ld      hl, 3C00h
seg000:4928 CD 60 46      call    sub_0_4660
seg000:492B
seg000:492B      loc_0_492B:      ; CODE XREF: sub_0_48F6+2D|j
seg000:492B      ld      a, (430Bh)
seg000:492E 3D      dec     a
seg000:492F 32 0B 43      ld      (430Bh), a
seg000:4932 28 02      jr      z, loc_0_4936
seg000:4934
seg000:4934      loc_0_4934:      ; CODE XREF: sub_0_48F6+44|j
seg000:4934      exx
seg000:4935 C9      ret
seg000:4936
seg000:4936      loc_0_4936:      ; CODE XREF: sub_0_48F6+3C|j
seg000:4936      xor     a
seg000:4937 32 10 43      ld      (byte_0_4310), a
seg000:493A 18 F8      jr      loc_0_4934
seg000:493A      ; End of function sub_0_48F6
seg000:493A
seg000:493C
seg000:493C      loc_0_493C:      ; CODE XREF: seg000:4AB4|j
seg000:493C      ; seg000:4B45|j
seg000:493C      ld      sp, 428Ah
seg000:493F 21 19 3C      ld      hl, 3C19h      ; cursor position
seg000:4942 22 20 40      ld      (4020h), hl
seg000:4945 21 00 3C      ld      hl, 3C00h      ; start of video

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seg000:4948 CD 7E 4C      call    clear_video_line_HL
seg000:494B 21 93 44      ld      hl, aGAMEOVER          ; "G A M E - O V E R"
seg000:494E CD 05 45      call    display_message_slowly
seg000:4951 CD 5F 4C      call    check_for_new_high_score
seg000:4954 01 FF FF      ld      bc, 0FFFFh           ; ~1s
seg000:4957 CD 60 00      call    60h                  ; delay
seg000:495A CD 60 00      call    60h                  ; delay
seg000:495D CD 60 00      call    60h                  ; delay
seg000:4960 C3 4F 45      jp      attract_loop

seg000:4963
; SUBROUTINE

seg000:4963
seg000:4963
seg000:4963
seg000:4963 E5      display_object_x10:          ; CODE XREF: seg000:4A78|p
; seg000:4A81|p ...
seg000:4963      push    hl
seg000:4964 D5      push    de
seg000:4965 C5      push    bc
seg000:4966 06 0A      ld      b, 10                ; 10 objects to display
seg000:4968 D5      push    de
seg000:4969 11 40 00      ld      de, 40h ; '@'
seg000:496C ED 52      sbc     hl, de
seg000:496E D1      pop     de
seg000:496F 23      inc     hl
seg000:4970
loc_0_4970:          ; CODE XREF: display_object_x10+1C|j
; cursor position
seg000:4970 22 20 40      ld      (4020h), hl
seg000:4973 D5      push    de
seg000:4974 E5      push    hl
seg000:4975 EB      ex      de, hl
seg000:4976 CD E5 44      call    display_message
seg000:4979 E1      pop     hl
seg000:497A 11 06 00      ld      de, 6
seg000:497D 19      add     hl, de
seg000:497E D1      pop     de
seg000:497F 10 EF      djnz    loc_0_4970
seg000:4981 C1      pop     bc
seg000:4982 D1      pop     de
seg000:4983 E1      pop     hl
seg000:4984 C9      ret
; End of function display_object_x10

seg000:4984
seg000:4985
; SUBROUTINE

seg000:4985
seg000:4985
seg000:4985
seg000:4985
seg000:4985 E5      sub_0_4985:          ; CODE XREF: sub_0_471C+6F|p
seg000:4986 D5      push    hl
seg000:4987 C5      push    de
seg000:4988 2A 02 43      push    bc
seg000:498B CD B0 49      ld      hl, (4302h)
seg000:498E 22 02 43      call    sub_0_49B0
seg000:4991 2A 04 43      ld      (4302h), hl
seg000:4994 CD B0 49      ld      hl, (4304h)
seg000:4997 22 04 43      call    sub_0_49B0
seg000:499A 2A 06 43      ld      (4304h), hl
seg000:499D CD B0 49      ld      hl, (4306h)
seg000:49A0 22 06 43      call    sub_0_49B0
seg000:49A3 2A 08 43      ld      (4306h), hl
seg000:49A6 CD B0 49      ld      hl, (4308h)
seg000:49A9 22 08 43      call    sub_0_49B0
seg000:49AC C1      ld      (4308h), hl
seg000:49AD D1      pop     bc
seg000:49AE E1      pop     de
seg000:49AF C9      pop     hl
; End of function sub_0_4985

seg000:49AF
seg000:49AF
; SUBROUTINE

seg000:49B0
seg000:49B0
seg000:49B0
seg000:49B0
seg000:49B0 E5      sub_0_49B0:          ; CODE XREF: sub_0_4985+6|p
; sub_0_4985+F|p ...
seg000:49B0      push    hl
seg000:49B1 06 3F      ld      b, 3Fh ; '?'
seg000:49B3
loc_0_49B3:          ; CODE XREF: sub_0_49B0+9|j
seg000:49B3      ld      a, (hl)
seg000:49B4 CB 7F      bit     7, a
seg000:49B6 23      inc     hl
seg000:49B7 20 06      jr      nz, loc_0_49BF
seg000:49B9 10 F8      djnz    loc_0_49B3
seg000:49BB E1      pop     hl
seg000:49BC 26 00      ld      h, 0
seg000:49BE C9      ret
;
seg000:49BF
seg000:49BF
loc_0_49BF:          ; CODE XREF: sub_0_49B0+7|j
seg000:49BF      pop     hl
seg000:49C0 19      add     hl, de
seg000:49C1 C9      ret
; End of function sub_0_49B0

seg000:49C1
;
seg000:49C2
seg000:49C2
seg000:49C2
seg000:49C2 AF      start_game:          ; CODE XREF: check_for_R_key+5|j
seg000:49C3 32 0C 43      xor     a
seg000:49C6 32 15 43      ld      (430Ch), a
seg000:49C9 32 12 43      ld      (byte_0_4315), a
seg000:49CC 32 0D 43      ld      (byte_0_4312), a
seg000:49CF 32 0E 43      ld      (430Dh), a
seg000:49D2 32 10 43      ld      (430Eh), a
seg000:49D5 32 11 43      ld      (byte_0_4310), a
seg000:49D8 32 22 43      ld      (byte_0_4311), a
seg000:49DB 3C      ld      (byte_0_4322), a
seg000:49DC 32 0A 43      inc     a
seg000:49DF 3E 05      ld      a, 5
seg000:49E1 32 0C 43      ld      (430Ah), a
seg000:49E4 3E 03      ld      a, 3
seg000:49E6 32 0F 43      ld      (430Ch), a
seg000:49E9 CD 90 4E      ld      a, 3
seg000:49EC 31 8A 42      call    sub_0_4E90
seg000:49EF CD B0 46      ld      sp, 428Ah
seg000:49F2 CD 31 4E      call    sub_0_46B0
call    display_GOOD_LUCK

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seg000:49F5
seg000:49F5      loc_0_49F5:      ; CODE XREF: seg000:4874↑j
seg000:49F5 31 8A 42      ld      sp, 428Ah
seg000:49F8 AF          xor      a
seg000:49F9 32 11 43      ld      (byte_0_4311), a
seg000:49FC 3A 0E 43      ld      a, (430Eh)
seg000:49FF 3C          inc      a
seg000:4A00 FE 07      cp      7
seg000:4A02 20 02      jr      nz, loc_0_4A06
seg000:4A04 3E 01      ld      a, 1
seg000:4A06
seg000:4A06      loc_0_4A06:      ; CODE XREF: seg000:4A02↑j
seg000:4A06 32 0E 43      ld      (430Eh), a
seg000:4A09 E6 06      and      6
seg000:4A0B 11 40 00      ld      de, 40h ; '@'
seg000:4A0E 62          ld      h, d
seg000:4A0F 6B          ld      l, e
seg000:4A10 06 01      ld      b, 1
seg000:4A12 FE 02      cp      2
seg000:4A14 38 06      jr      c, loc_0_4A1C
seg000:4A16 28 02      jr      z, loc_0_4A1A
seg000:4A18 04          inc      b
seg000:4A19 19          add     hl, de
seg000:4A1A
seg000:4A1A      loc_0_4A1A:      ; CODE XREF: seg000:4A16↑j
seg000:4A1A 04          inc      b
seg000:4A1B 19          add     hl, de
seg000:4A1C
seg000:4A1C      loc_0_4A1C:      ; CODE XREF: seg000:4A14↑j
seg000:4A1C EB          ex      de, hl
seg000:4A1D
seg000:4A1D      loc_0_4A1D:      ; CODE XREF: seg000:4A40↑j
seg000:4A1D C5          push    bc
seg000:4A1E DD 21 16 43      ld      ix, 4316h
seg000:4A22 FD 21 02 43      ld      iy, 4302h
seg000:4A26 06 04      ld      b, 4
seg000:4A28
seg000:4A28      loc_0_4A28:      ; CODE XREF: seg000:4A3D↑j
seg000:4A28 DD 6E 00      ld      l, (ix+0)
seg000:4A2B DD 66 01      ld      h, (ix+1)
seg000:4A2E 19          add     hl, de
seg000:4A2F FD 75 00      ld      (iy+0), l
seg000:4A32 FD 74 01      ld      (iy+1), h
seg000:4A35 DD 23          inc     ix
seg000:4A37 DD 23          inc     ix
seg000:4A39 FD 23          inc     iy
seg000:4A3B FD 23          inc     iy
seg000:4A3D 10 E9      djnz    loc_0_4A28
seg000:4A3F C1          pop     bc
seg000:4A40 10 DB      djnz    loc_0_4A1D
seg000:4A42 CD 18 45      call    wipe_screen_left_to_right_slow
seg000:4A45 21 09 3F      ld      hl, 3F09h ; cursor position
seg000:4A48 22 20 40      ld      (4020h), hl
seg000:4A4B 21 51 43      ld      hl, shield ; shield #1
seg000:4A4E E5          push    hl
seg000:4A4F CD E5 44      call    display_message
seg000:4A52 21 17 3F      ld      hl, 3F17h ; cursor position
seg000:4A55 22 20 40      ld      (4020h), hl
seg000:4A58 E1          pop     hl
seg000:4A59 E5          push    hl
seg000:4A5A CD E5 44      call    display_message
seg000:4A5D 21 24 3F      ld      hl, 3F24h ; cursor position
seg000:4A60 22 20 40      ld      (4020h), hl
seg000:4A63 E1          pop     hl
seg000:4A64 E5          push    hl
seg000:4A65 CD E5 44      call    display_message
seg000:4A68 21 31 3F      ld      hl, 3F31h ; cursor position
seg000:4A6B 22 20 40      ld      (4020h), hl
seg000:4A6E E1          pop     hl
seg000:4A6F CD E5 44      call    display_message
seg000:4A72 11 23 43      ld      de, invader_30pt
seg000:4A75 2A 02 43      ld      hl, (4302h)
seg000:4A78 CD 63 49      call    display_object_x10
seg000:4A7B 11 30 43      ld      de, invader_20pt
seg000:4A7E 2A 04 43      ld      hl, (4304h)
seg000:4A81 CD 63 49      call    display_object_x10
seg000:4A84 11 3D 43      ld      de, invader_10pt
seg000:4A87 2A 06 43      ld      hl, (4306h)
seg000:4A8A CD 63 49      call    display_object_x10
seg000:4A8D 2A 08 43      ld      hl, (4308h)
seg000:4A90 CD 63 49      call    display_object_x10
seg000:4A93 3E 28          ld      a, 40 ; number of invaders left
seg000:4A95 32 01 43      ld      (4301h), a
seg000:4A98 32 21 43      ld      (byte_0_4321), a
seg000:4A9B
seg000:4A9B      loc_0_4A9B:      ; CODE XREF: seg000:4AD9↑j
seg000:4A9B 21 84 3F      ld      hl, 3F84h ; cursor position
seg000:4A9E 22 20 40      ld      (4020h), hl
seg000:4AA1 21 64 43      ld      hl, player
seg000:4AA4 CD E5 44      call    display_message
seg000:4AA7 21 86 3F      ld      hl, 3F86h
seg000:4AAA 22 13 43      ld      (word_0_4313), hl
seg000:4AAD C3 FB 4E      jp      loc_0_4EFB
;
seg000:4AB0
seg000:4AB0      loc_0_4AB0:      ; CODE XREF: seg000:4B2A↑j
seg000:4AB0 3A 0F 43      ld      a, (430Fh)
seg000:4AB3 3D          dec      a
seg000:4AB4 CA 3C 49      jp      z, loc_0_493C
seg000:4AB7 32 0F 43      ld      (430Fh), a
seg000:4ABA CD 90 4E      call    sub_0_4E90
seg000:4ABD AF          xor      a
seg000:4ABE 32 11 43      ld      (byte_0_4311), a
seg000:4AC1 32 12 43      ld      (byte_0_4312), a
seg000:4AC4 CD 3B 4D      call    sub_0_4D3B
seg000:4AC7 21 80 3F      ld      hl, 3F80h
seg000:4ACA CD 7E 4C      call    clear_video_line_HL
seg000:4ACD 01 FF FF      ld      bc, 0FFFFh
seg000:4AD0 CD 60 00      call    60h
seg000:4AD3 CD 60 00      call    60h
seg000:4AD6 31 8A 42      ld      sp, 428Ah
seg000:4AD9 C3 9B 4A      jp      loc_0_4A9B
;
SUBROUTINE

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seg000:4ADC      sub_0_4ADC:                                ; CODE XREF: sub_0_4B1A+4|p
seg000:4ADC      ld      hl, 3C00h                          ; sub_0_4B1A+B|j ...
seg000:4ADC      ld      bc, 400h
seg000:4AE2
seg000:4AE2      loc_0_4AE2:                                ; CODE XREF: sub_0_4ADC+1C|j
seg000:4AE2      ld      a, (hl)
seg000:4AE2      cp      20h ; ' '
seg000:4AE3      jr      nz, loc_0_4AE9
seg000:4AE5      ld      (hl), 80h ; 'Ç'
seg000:4AE7
seg000:4AE9      loc_0_4AE9:                                ; CODE XREF: sub_0_4ADC+9|j
seg000:4AE9      bit      7, (hl)
seg000:4AE9      jr      z, loc_0_4AF4
seg000:4AEB      ld      a, (hl)
seg000:4AED      cpl
seg000:4AEE      set     7, a
seg000:4AEF      res     6, a
seg000:4AF1      ld      (hl), a
seg000:4AF3
seg000:4AF4      loc_0_4AF4:                                ; CODE XREF: sub_0_4ADC+F|j
seg000:4AF4      inc     hl
seg000:4AF4      dec     bc
seg000:4AF5      ld      a, b
seg000:4AF6      or      c
seg000:4AF7      jr      nz, loc_0_4AE2
seg000:4AF8      ret
seg000:4AFA      ; End of function sub_0_4ADC
seg000:4AFA
seg000:4AFB      ; SUBROUTINE
seg000:4AFB
seg000:4AFB      sub_0_4AFB:                                ; CODE XREF: sub_0_4B1A|p
seg000:4AFB      ld      hl, (word_0_4313)
seg000:4AFB      dec     hl
seg000:4AFB      dec     hl
seg000:4AFB      ret
seg000:4B00      ; End of function sub_0_4AFB
seg000:4B00
seg000:4B01      ; SUBROUTINE
seg000:4B01
seg000:4B01      sub_0_4B01:                                ; CODE XREF: sub_0_4B1A+8|p
seg000:4B01      ld      a, 0A6h ; 'A'
seg000:4B03      ld      b, 0
seg000:4B05      loc_0_4B05:                                ; CODE XREF: sub_0_4B01+16|j
seg000:4B05      push    bc
seg000:4B06      push    hl
seg000:4B07      ld      b, 5
seg000:4B09      xor     3Fh ; '?'
seg000:4B0B      loc_0_4B0B:                                ; CODE XREF: sub_0_4B01+C|j
seg000:4B0B      ld      (hl), a
seg000:4B0C      inc     hl
seg000:4B0D      djnz   loc_0_4B0B
seg000:4B0F      loc_0_4B0F:                                ; CODE XREF: sub_0_4B01+12|j
seg000:4B0F      ex      (sp), hl
seg000:4B10      ex      (sp), hl
seg000:4B11      ex      (sp), hl
seg000:4B12      ex      (sp), hl
seg000:4B13      djnz   loc_0_4B0F
seg000:4B15      pop     hl
seg000:4B16      pop     bc
seg000:4B17      djnz   loc_0_4B05
seg000:4B19      ret
seg000:4B19      ; End of function sub_0_4B01
seg000:4B19
seg000:4B1A      ; SUBROUTINE
seg000:4B1A
seg000:4B1A      sub_0_4B1A:                                ; CODE XREF: seg000:4B27|p
seg000:4B1A      call    sub_0_4AFB
seg000:4B1D      push    hl
seg000:4B1E      call    sub_0_4ADC
seg000:4B21      pop     hl
seg000:4B22      call    sub_0_4B01
seg000:4B25      jr      sub_0_4ADC
seg000:4B25      ; End of function sub_0_4B1A
seg000:4B25
seg000:4B27      ;
seg000:4B27
seg000:4B27      loc_0_4B27:                                ; CODE XREF: sub_0_4D5F+93|j
seg000:4B27      call    sub_0_4B1A
seg000:4B2A      jp      loc_0_4AB0
seg000:4B2D      loc_0_4B2D:                                ; CODE XREF: seg000:4C02|j
seg000:4B2D      ld      b, 0Ah
seg000:4B2F      loc_0_4B2F:                                ; CODE XREF: seg000:4B43|j
seg000:4B2F      push    bc
seg000:4B30      call    sub_0_4ADC
seg000:4B33      ld      bc, 2710h
seg000:4B36      call    60h
seg000:4B39      call    sub_0_4ADC
seg000:4B3C      ld      bc, 2710h
seg000:4B3F      call    60h
seg000:4B42      pop     bc
seg000:4B43      djnz   loc_0_4B2F
seg000:4B45      jp      loc_0_493C
seg000:4B48      ; SUBROUTINE
seg000:4B48
seg000:4B48      sub_0_4B48:                                ; CODE XREF: seg000:4F71|p
seg000:4B48      push    hl
seg000:4B49      push    de
seg000:4B4A      push    bc
seg000:4B4B      ld      a, (430Ah)
seg000:4B4E      or      a
seg000:4B4F      jr      z, loc_0_4B88

```

```

seg000:4B51 21 7F 3C      ld      hl, 3C7Fh
seg000:4B54 CD 77 48      call    sub_0_4877
seg000:4B57 B7          or      a
seg000:4B58 CA BE 4B      jp      z, loc_0_4BBE
seg000:4B5B 2A 08 43      ld      hl, (4308h)
seg000:4B5E CD 7A 4B      call    sub_0_4B7A
seg000:4B61 2A 06 43      ld      hl, (4306h)
seg000:4B64 CD 7A 4B      call    sub_0_4B7A
seg000:4B67 2A 04 43      ld      hl, (4304h)
seg000:4B6A CD 7A 4B      call    sub_0_4B7A
seg000:4B6D 2A 02 43      ld      hl, (4302h)
seg000:4B70 CD 7A 4B      call    sub_0_4B7A
seg000:4B73 CD FC 45      call    sub_0_45FC
seg000:4B76
loc_0_4B76:                ; CODE XREF: seg000:4BAC↑j
                        ; seg000:4C1D↑j ...
seg000:4B76 C1          pop      bc
seg000:4B76          pop      de
seg000:4B77 D1          pop      hl
seg000:4B78 E1          ret
seg000:4B79 C9          ; End of function sub_0_4B48
seg000:4B79
seg000:4B7A          ; ██████████ S U B R O U T I N E ██████████
seg000:4B7A
seg000:4B7A
seg000:4B7A
seg000:4B7A 7C          sub_0_4B7A:                ; CODE XREF: sub_0_4B48+16↑p
                        ; sub_0_4B48+1C↑p ...
seg000:4B7A          ld      a, h
seg000:4B7B B7          or      a
seg000:4B7C C8          ret      z
seg000:4B7D CD 3E 46      call    sub_0_463E
seg000:4B80 11 40 00      ld      de, 40h ; '@'
seg000:4B83 ED 52          sbc     hl, de
seg000:4B85 C3 3E 46      jp      sub_0_463E
seg000:4B85          ; End of function sub_0_4B7A
seg000:4B85
seg000:4B88          ; ██████████ S U B R O U T I N E ██████████
seg000:4B88
seg000:4B88
seg000:4B88 21 40 3C      loc_0_4B88:                ; CODE XREF: sub_0_4B48+7↑j
                        ld      hl, 3C40h
seg000:4B8B CD 77 48      call    sub_0_4877
seg000:4B8E B7          or      a
seg000:4B8F 28 38          jr      z, loc_0_4BC9
seg000:4B91 CD FC 45      call    sub_0_45FC
seg000:4B94
loc_0_4B94:                ; CODE XREF: seg000:4BC6↑j
                        ld      hl, (4308h)
seg000:4B97 CD AE 4B      call    sub_0_4BAE
seg000:4B9A 2A 06 43      ld      hl, (4306h)
seg000:4B9D CD AE 4B      call    sub_0_4BAE
seg000:4BA0 2A 04 43      ld      hl, (4304h)
seg000:4BA3 CD AE 4B      call    sub_0_4BAE
seg000:4BA6 2A 02 43      ld      hl, (4302h)
seg000:4BA9 CD AE 4B      call    sub_0_4BAE
seg000:4BAC 18 C8          jr      loc_0_4B76
seg000:4BAE
seg000:4BAE          ; ██████████ S U B R O U T I N E ██████████
seg000:4BAE
seg000:4BAE
seg000:4BAE
seg000:4BAE 7C          sub_0_4BAE:                ; CODE XREF: seg000:4B97↑p
                        ; seg000:4B9D↑p ...
seg000:4BAE          ld      a, h
seg000:4BAF B7          or      a
seg000:4BB0 C8          ret      z
seg000:4BB1 E5          push    hl
seg000:4BB2 CD 60 46      call    sub_0_4660
seg000:4BB5 E1          pop     hl
seg000:4BB6 11 40 00      ld      de, 40h ; '@'
seg000:4BB9 ED 52          sbc     hl, de
seg000:4BBB C3 60 46      jp      sub_0_4660
seg000:4BBB          ; End of function sub_0_4BAE
seg000:4BBB
seg000:4BBE          ; ██████████ S U B R O U T I N E ██████████
seg000:4BBE
seg000:4BBE
seg000:4BBE
seg000:4BBE 3A 0A 43      loc_0_4BBE:                ; CODE XREF: sub_0_4B48+10↑j
                        ld      a, (430Ah)
seg000:4BC1 EE 01          xor     l, 1
seg000:4BC3 32 0A 43      ld      (430Ah), a
seg000:4BC6 C3 94 4B      jp      loc_0_4B94
seg000:4BC9
seg000:4BC9
loc_0_4BC9:                ; CODE XREF: seg000:4B8F↑j
                        ld      a, (byte_0_4311)
seg000:4BC9          or      a
seg000:4BCD 28 05          jr      z, loc_0_4BD4
seg000:4BCF 2A 1E 43      ld      hl, (word_0_431E)
seg000:4BD2 36 20          ld      (hl), 20h ; ' '
seg000:4BD4
loc_0_4BD4:                ; CODE XREF: seg000:4BCD↑j
                        ld      ix, 4308h
seg000:4BD4          ld      b, 4
seg000:4BD8 06 04          ; CODE XREF: seg000:4BE9↑j
loc_0_4BDA:                ; CODE XREF: seg000:4BE9↑j
                        ld      l, (ix+0)
seg000:4BDA          ld      h, (ix+1)
seg000:4BDD DD 66 01      ld      a, h
seg000:4BE0 7C          or      a
seg000:4BE1 B7          or      a
seg000:4BE2 C4 2E 4C      call    nz, sub_0_4C2E
seg000:4BE5 DD 2B          dec     ix
seg000:4BE7 DD 2B          dec     ix
seg000:4BE9 10 EF      djnz    loc_0_4BDA
seg000:4BEB DD 21 08 43      ld      ix, 4308h
seg000:4BEF 06 04          ld      b, 4
seg000:4BF1 11 80 3F      ld      de, 3F80h
seg000:4BF4
loc_0_4BF4:                ; CODE XREF: seg000:4C0F↑j
                        ld      l, (ix+0)
seg000:4BF4          ld      h, (ix+1)
seg000:4BF7 DD 66 01      call    sub_0_4C55
seg000:4BFA CD 55 4C      call    sub_0_45E2
seg000:4BFD CD E2 45      cp      20h ; ' '
seg000:4C00 FE 20          jp      z, loc_0_4B2D
seg000:4C02 CA 2D 4B      ld      (ix+0), l
seg000:4C05 DD 75 00      ld      (ix+1), h
seg000:4C08 DD 74 01          dec     ix
seg000:4C0B DD 2B          dec     ix

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seg000:4C0D DD 2B          dec      ix
seg000:4C0F 10 E3          djnz     loc_0_4BF4
seg000:4C11 3A 0A 43         ld       a, (430Ah)
seg000:4C14 EE 01          xor      l, 1
seg000:4C16 32 0A 43         ld       (430Ah), a
seg000:4C19 3A 11 43         ld       a, (byte_0_4311)
seg000:4C1C B7            or       a
seg000:4C1D CA 76 4B        jp       z, loc_0_4B76
seg000:4C20 2A 1E 43         ld       hl, (word_0_431E)
seg000:4C23 7E            ld       a, (hl)
seg000:4C24 FE 20          cp       20h ; ' '
seg000:4C26 C2 76 4B        jp       nz, loc_0_4B76
seg000:4C29 36 5B          ld       (hl), 5Bh ; '['
seg000:4C2B C3 76 4B        jp       loc_0_4B76
seg000:4C2E                ; SUBROUTINE
seg000:4C2E
seg000:4C2E
seg000:4C2E
seg000:4C2E
sub_0_4C2E:                ; CODE XREF: seg000:4BE2|p
push     bc
push     hl
ld       de, 3Fh ; '?'
add      hl, de
push     hl
inc      de
add      hl, de
ex       de, hl
pop      hl
ld       b, 80h ; 'Ç'
seg000:4C3B                loc_0_4C3B:                ; CODE XREF: sub_0_4C2E+1A|j
ld       a, (de)
cp       80h ; 'Ç'
ld       a, (hl)
jr       nc, loc_0_4C45
cp       80h ; 'Ç'
jr       c, loc_0_4C46
seg000:4C45                loc_0_4C45:                ; CODE XREF: sub_0_4C2E+11|j
ld       (de), a
seg000:4C46                loc_0_4C46:                ; CODE XREF: sub_0_4C2E+15|j
dec      de
dec      hl
djnz     loc_0_4C3B
pop      hl
ld       de, 40h ; '@'
sbc      hl, de
call     clear_video_line_HL
pop      bc
ret
; End of function sub_0_4C2E
seg000:4C54
seg000:4C54
seg000:4C55
seg000:4C55
seg000:4C55
seg000:4C55
sub_0_4C55:                ; CODE XREF: seg000:4BFA|p
ld       a, h
or       a
ret      z
push     de
ld       de, 40h ; '@'
add      hl, de
pop      de
ret
; End of function sub_0_4C55
seg000:4C5E
seg000:4C5E
seg000:4C5F
seg000:4C5F
seg000:4C5F
seg000:4C5F
check_for_new_high_score:  ; CODE XREF: seg000:4951|p
ld       hl, 3FC9h          ; score
ld       de, 3FFAh          ; high score
ld       b, 4               ; 4 digits to compare
seg000:4C67                loc_0_4C67:                ; CODE XREF: check_for_new_high_score+10|j
ld       c, (hl)            ; get score digit
ld       a, (de)            ; get high score digit
cp       c                  ; score higher?
jr       c, update_high_score ; yes, skip
nz       ; done if not the same
inc      hl                 ; next digits
inc      de                 ; loop through all digits
djnz     loc_0_4C67
ret
;
seg000:4C72
seg000:4C72
seg000:4C72
seg000:4C72 21 C9 3F          update_high_score:        ; CODE XREF: check_for_new_high_score+B|j
ld       hl, 3FC9h          ; source = score
ld       de, 3FFAh          ; destination = high score
ld       bc, 5              ; 5 digits to copy
ldir     ; copy
ret
; End of function check_for_new_high_score
seg000:4C7D
seg000:4C7D
seg000:4C7E
seg000:4C7E
seg000:4C7E
seg000:4C7E
clear_video_line_HL:        ; CODE XREF: sub_0_471C+94|p
; seg000:4948|p ...
push     bc
push     de
ld       b, 40h ; '@'      ; characters/line
seg000:4C82                loc_0_4C82:                ; CODE XREF: clear_video_line_HL+7|j
ld       (hl), 20h ; ' '    ; display space
inc      hl                 ; next video address
djnz     loc_0_4C82         ; clear a line
pop      de
pop      bc
ret
; End of function clear_video_line_HL
seg000:4C89

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seg000:4C8A
seg000:4C8A ; SUBROUTINE
seg000:4C8A
seg000:4C8A
seg000:4C8A sub_0_4C8A: ; CODE XREF: seg000:4F65|p
seg000:4C8A D9 exx
seg000:4C8B 06 04 ld b, 4
seg000:4C8D DD 21 08 43 ld ix, 4308h
seg000:4C91
seg000:4C91 loc_0_4C91: ; CODE XREF: sub_0_4C8A+11|j
seg000:4C91 DD 7E 01 ld a, (ix+1)
seg000:4C94 B7 or a
seg000:4C95 20 08 jr nz, loc_0_4C9F
seg000:4C97 DD 2B dec ix
seg000:4C99 DD 2B dec ix
seg000:4C9B 10 F4 djnz loc_0_4C91
seg000:4C9D
seg000:4C9D loc_0_4C9D: ; CODE XREF: sub_0_4C8A+3B|j
seg000:4C9D D9 ; sub_0_4C8A+4E|j ...
seg000:4C9D exx
seg000:4C9E C9 ret
seg000:4C9F
seg000:4C9F ;
seg000:4C9F loc_0_4C9F: ; CODE XREF: sub_0_4C8A+B|j
seg000:4C9F 2A 13 43 ld hl, (word_0_4313)
seg000:4CA2 11 80 C0 de, 0C080h
seg000:4CA5 19 add hl, de
seg000:4CA6 EB de, hl
seg000:4CA7 DD 6E 00 ld l, (ix+0)
seg000:4CAA DD 66 01 ld h, (ix+1)
seg000:4CAD E5 push hl
seg000:4CAE 21 03 00 ld hl, 3
seg000:4CB1 CD 1D 4D call sub_0_4D1D
seg000:4CB4 7D ld a, l
seg000:4CB5 E1 pop hl
seg000:4CB6 FE 01 cp 1
seg000:4CB8 20 4B jr nz, loc_0_4D05
seg000:4CBA
seg000:4CBA loc_0_4CBA: ; CODE XREF: sub_0_4C8A+84|j
seg000:4CBA 19 add hl, de
seg000:4CBB 11 80 FF de, 0FF80h
seg000:4CBE
seg000:4CBE loc_0_4CBE: ; CODE XREF: sub_0_4C8A+39|j
seg000:4CBE CB 7E bit 7, (hl)
seg000:4CC0 20 05 jr nz, loc_0_4CC7
seg000:4CC2 19 add hl, de
seg000:4CC3 10 F9 djnz loc_0_4CBE
seg000:4CC5 18 D6 jr loc_0_4C9D
seg000:4CC7
seg000:4CC7 ;
seg000:4CC7 loc_0_4CC7: ; CODE XREF: sub_0_4C8A+36|j
seg000:4CC7 DD 21 EA 4E ld ix, 4EEAh
seg000:4CCB 06 04 ld b, 4
seg000:4CCD
seg000:4CCD loc_0_4CCD: ; CODE XREF: sub_0_4C8A+4C|j
seg000:4CCD DD 7E 01 ld a, (ix+1)
seg000:4CD0 B7 or a
seg000:4CD1 28 08 jr z, loc_0_4CDB
seg000:4CD3 CD 2A 4E call add_3_to_ix
seg000:4CD6 10 F5 djnz loc_0_4CCD
seg000:4CD8 C3 9D 4C jp loc_0_4C9D
seg000:4CDB
seg000:4CDB ;
seg000:4CDB loc_0_4CDB: ; CODE XREF: sub_0_4C8A+47|j
seg000:4CDB CD 28 4D call sub_0_4D28
seg000:4CDE 11 82 00 de, 82h ; 'é'
seg000:4CE1 19 add hl, de
seg000:4CE2 E5 push hl
seg000:4CE3 21 03 00 ld hl, 3
seg000:4CE6 CD 1D 4D call sub_0_4D1D
seg000:4CE9 11 D2 4E ld de, 4ED2h
seg000:4CEC 19 add hl, de
seg000:4CED D1 pop de
seg000:4CEE CB 7B bit 7, e
seg000:4CF0 28 1E jr z, loc_0_4D10
seg000:4CF2
seg000:4CF2 loc_0_4CF2: ; CODE XREF: sub_0_4C8A+8A|j
seg000:4CF2 1A ld a, (de)
seg000:4CF3 FE 20 cp 20h ; ' '
seg000:4CF5 20 A6 jr nz, loc_0_4C9D
seg000:4CF7 7E ld a, (hl)
seg000:4CF8 12 ld (de), a
seg000:4CF9 DD 73 00 ld (ix+0), e
seg000:4CFC DD 72 01 ld (ix+1), d
seg000:4CFF DD 77 02 ld (ix+2), a
seg000:4D02 C3 9D 4C jp loc_0_4C9D
seg000:4D05
seg000:4D05 ;
seg000:4D05 loc_0_4D05: ; CODE XREF: sub_0_4C8A+2E|j
seg000:4D05 E5 push hl
seg000:4D06 21 40 00 ld hl, 40h ; '@'
seg000:4D09 CD 1D 4D call sub_0_4D1D
seg000:4D0C EB ex de, hl
seg000:4D0D E1 pop hl
seg000:4D0E 18 AA jr loc_0_4CBA
seg000:4D10
seg000:4D10 ;
seg000:4D10 loc_0_4D10: ; CODE XREF: sub_0_4C8A+66|j
seg000:4D10 EB ex de, hl
seg000:4D11 CB 7E bit 7, (hl)
seg000:4D13 EB ex de, hl
seg000:4D14 28 DC jr z, loc_0_4CF2
seg000:4D16 EB ex de, hl
seg000:4D17 E5 push hl
seg000:4D18 D9 exx
seg000:4D19 E1 pop hl
seg000:4D1A C3 10 48 jp sub_0_4810
seg000:4D1A ; End of function sub_0_4C8A
seg000:4D1A
seg000:4D1D
seg000:4D1D ; SUBROUTINE
seg000:4D1D
seg000:4D1D
seg000:4D1D sub_0_4D1D: ; CODE XREF: sub_0_471C+9A|p
seg000:4D1D D5 ; sub_0_471C+D2|p ...
seg000:4D1D push de

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seg000:4D1E C5      push    bc
seg000:4D1F CD CC 14 call    14CCh
seg000:4D22 CD 7F 0A call    0A7Fh
seg000:4D25 C1      pop     bc
seg000:4D26 D1      pop     de
seg000:4D27 C9      ret
; End of function sub_0_4D1D
seg000:4D27
seg000:4D28
seg000:4D28 ; SUBROUTINE
seg000:4D28
seg000:4D28 sub_0_4D28: ; CODE XREF: sub_0_471C+3F↑p
seg000:4D28 D5      ; sub_0_4C8A+51↑p
seg000:4D28      push    de
seg000:4D29 7E      ld      a, (hl)
seg000:4D2A E6 30 and     30h ; '0'
seg000:4D2C 11 C0 FF ld      de, 0FFC0h
seg000:4D2F 20 01 jr      nz, loc_0_4D32
seg000:4D31 19      add     hl, de
seg000:4D32
seg000:4D32 loc_0_4D32: ; CODE XREF: sub_0_4D28+7↑j
seg000:4D32 CB 7E      ; sub_0_4D28+D↑j
seg000:4D32      bit      7, (hl)
seg000:4D34 2B      dec     hl
seg000:4D35 20 FB jr      nz, loc_0_4D32
seg000:4D37 23      inc     hl
seg000:4D38 23      inc     hl
seg000:4D39 D1      pop     de
seg000:4D3A C9      ret
; End of function sub_0_4D28
seg000:4D3A
seg000:4D3A ; SUBROUTINE
seg000:4D3B
seg000:4D3B
seg000:4D3B sub_0_4D3B: ; CODE XREF: seg000:4AC4↑p
seg000:4D3B      ld      hl, 3C00h
seg000:4D3E 01 C0 03      ld      bc, 3C0h
seg000:4D41
seg000:4D41 loc_0_4D41: ; CODE XREF: sub_0_4D3B+16↑j
seg000:4D41 CB 7E      bit      7, (hl)
seg000:4D43 28 05 jr      z, loc_0_4D4A
seg000:4D45 7E      ld      a, (hl)
seg000:4D46 FE 80 cp      80h ; 'Ç'
seg000:4D48 20 02 jr      nz, loc_0_4D4C
seg000:4D4A
seg000:4D4A loc_0_4D4A: ; CODE XREF: sub_0_4D3B+8↑j
seg000:4D4A 36 20      ld      (hl), 20h ; ' '
seg000:4D4C
seg000:4D4C loc_0_4D4C: ; CODE XREF: sub_0_4D3B+D↑j
seg000:4D4C 23      inc     hl
seg000:4D4D 0B      dec     bc
seg000:4D4E 78      ld      a, b
seg000:4D4F B1      or      c
seg000:4D50 C8      ret
seg000:4D51 18 EE jr      z, loc_0_4D41
; End of function sub_0_4D3B
seg000:4D51
seg000:4D53 ; SUBROUTINE
seg000:4D53
seg000:4D53 sub_0_4D53: ; CODE XREF: sub_0_4D5F+20↑p
seg000:4D53 AF      ; sub_0_4D5F+60↑p ...
seg000:4D53      xor     a
seg000:4D54 DD 77 01      ld      (ix+1), a
seg000:4D57
seg000:4D57 loc_0_4D57: ; CODE XREF: sub_0_4810+1B↑j
seg000:4D57 3A 12 43      ld      a, (byte_0_4312)
seg000:4D5A 3D      dec     a
seg000:4D5B 32 12 43      ld      (byte_0_4312), a
seg000:4D5E C9      ret
; End of function sub_0_4D53
seg000:4D5E
seg000:4D5E ; SUBROUTINE
seg000:4D5F
seg000:4D5F
seg000:4D5F sub_0_4D5F: ; CODE XREF: seg000:4F61↑p
seg000:4D5F D9      exx
seg000:4D60 DD 21 EA 4E      ld      ix, 4EEAh
seg000:4D64 06 04      ld      b, 4
seg000:4D66
seg000:4D66 loc_0_4D66: ; CODE XREF: sub_0_4D5F+10↑j
seg000:4D66 DD 7E 01      ld      a, (ix+1)
seg000:4D69 B7      or      a
seg000:4D6A 20 07 jr      nz, loc_0_4D73
seg000:4D6C
seg000:4D6C loc_0_4D6C: ; CODE XREF: sub_0_4D5F+23↑j
seg000:4D6C CD 2A 4E      ; sub_0_4D5F+4B↑j ...
seg000:4D6C      call    add_3_to_ix
seg000:4D6F 10 F5      djnz    loc_0_4D66
seg000:4D71 D9      exx
seg000:4D72 C9      ret
;
seg000:4D73
seg000:4D73 loc_0_4D73: ; CODE XREF: sub_0_4D5F+B↑j
seg000:4D73 DD 6E 00      ld      l, (ix+0)
seg000:4D76 DD 66 01      ld      h, (ix+1)
seg000:4D79 DD 7E 02      ld      a, (ix+2)
seg000:4D7C BE      cp      (hl)
seg000:4D7D 28 05 jr      z, loc_0_4D84
seg000:4D7F CD 53 4D      call    sub_0_4D53
seg000:4D82 18 E8 jr      loc_0_4D6C
;
seg000:4D84
seg000:4D84 loc_0_4D84: ; CODE XREF: sub_0_4D5F+1E↑j
seg000:4D84 36 20      ld      (hl), 20h ; ' '
seg000:4D86 11 40 00      ld      de, 40h ; '@'
seg000:4D89 19      add     hl, de
seg000:4D8A DD 75 00      ld      (ix+0), l
seg000:4D8D DD 74 01      ld      (ix+1), h
seg000:4D90 E5      push    hl
seg000:4D91 11 C0 3F      ld      de, 3FC0h
seg000:4D94 CD E2 45      call    sub_0_45E2

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seg000:4D97 B7          or      a
seg000:4D98 F5          push   af
seg000:4D99 20 2D      jr      nz, loc_0_4DC8
seg000:4D9B F1          pop    af
seg000:4D9C E1          pop    hl
seg000:4D9D 7E          ld      a, (hl)
seg000:4D9E FE 5B      cp      5Bh ; '['
seg000:4DA0 28 0A      jr      z, loc_0_4DAC
seg000:4DA2 FE 81      cp      81h ; 'ü'
seg000:4DA4 30 35      jr      nc, loc_0_4DDB
seg000:4DA6 DD 7E 02   ld      a, (ix+2)
seg000:4DA9 77          ld      (hl), a
seg000:4DAA 18 C0      jr      loc_0_4D6C
;
seg000:4DAC
seg000:4DAC          loc_0_4DAC:                ; CODE XREF: sub_0_4D5F+41↑j
seg000:4DAC E5          push   hl
seg000:4DAD F5          push   af
seg000:4DAE 21 03 00   ld      hl, 3
seg000:4DB1 CD 1D 4D   call   sub_0_4D1D
seg000:4DB4 7D          ld      a, 1
seg000:4DB5 FE 02      cp      2
seg000:4DB7 38 0F      jr      c, loc_0_4DC8
seg000:4DB9 20 14      jr      nz, loc_0_4DCF
seg000:4DBB AF          xor     a
seg000:4DBC 32 11 43   ld      (byte_0_4311), a
seg000:4DBF CD 53 4D   call   sub_0_4D53
seg000:4DC2 F1          pop    af
seg000:4DC3 E1          pop    hl
seg000:4DC4 36 20      ld      (hl), 20h ; ' '
seg000:4DC6 18 A4      jr      loc_0_4D6C
;
seg000:4DC8
seg000:4DC8          loc_0_4DC8:                ; CODE XREF: sub_0_4D5F+3A↑j
seg000:4DC8 CD 53 4D   ; sub_0_4D5F+58↑j ...
seg000:4DC8          call   sub_0_4D53
seg000:4DCB F1          pop    af
seg000:4DCC E1          pop    hl
seg000:4DCD 18 9D      jr      loc_0_4D6C
;
seg000:4DCF
seg000:4DCF          loc_0_4DCF:                ; CODE XREF: sub_0_4D5F+5A↑j
seg000:4DCF AF          xor     a
seg000:4DD0 32 11 43   ld      (byte_0_4311), a
seg000:4DD3 F1          pop    af
seg000:4DD4 E1          pop    hl
seg000:4DD5 DD 7E 02   ld      a, (ix+2)
seg000:4DD8 77          ld      (hl), a
seg000:4DD9 18 91      jr      loc_0_4D6C
;
seg000:4DDB
seg000:4DDB          loc_0_4DDB:                ; CODE XREF: sub_0_4D5F+45↑j
seg000:4DDB EB          ex      de, hl
seg000:4DDC CD 4A 48   call   sub_0_484A
seg000:4DDF CD E2 45   call   sub_0_45E2
seg000:4DE2 EB          ex      de, hl
seg000:4DE3 E5          push   hl
seg000:4DE4 F5          push   af
seg000:4DE5 FE FF      cp      0FFh
seg000:4DE7 28 DF      jr      z, loc_0_4DC8
seg000:4DE9 F1          pop    af
seg000:4DEA E1          pop    hl
seg000:4DEB 11 80 3F   ld      de, 3F80h
seg000:4DEE CD E2 45   call   sub_0_45E2
seg000:4DF1 B7          or      a
seg000:4DF2 C2 27 4B   jp      nz, loc_0_4B27
seg000:4DF5 CD 10 48   call   sub_0_4810
seg000:4DF8 E5          push   hl
seg000:4DF9 F5          push   af
seg000:4DFA 18 CC      jr      loc_0_4DC8
; End of function sub_0_4D5F
seg000:4DFA
seg000:4DFA
seg000:4DFC
seg000:4DFC          ; SUBROUTINE
seg000:4DFC
seg000:4DFC          sub_0_4DFC:                ; CODE XREF: seg000:4EFB↑p
seg000:4DFC 21 EA 4E      ld      hl, 4EEAh
seg000:4DFF 11 EB 4E      ld      de, 4EEBh
seg000:4E02 01 0C 00   ld      bc, 0Ch
seg000:4E05 36 00      ld      (hl), 0
seg000:4E07 ED B0      ldir
seg000:4E09 C9          ret
; End of function sub_0_4DFC
seg000:4E09
seg000:4E09          ; SUBROUTINE
seg000:4E0A
seg000:4E0A          sub_0_4E0A:                ; CODE XREF: sub_0_471C+DA↑p
seg000:4E0A E5          push   hl
seg000:4E0B D9          exx
seg000:4E0C D1          pop    de
seg000:4E0D DD 21 EA 4E ld      ix, 4EEAh
seg000:4E11 06 04      ld      b, 4
seg000:4E13
seg000:4E13          loc_0_4E13:                ; CODE XREF: sub_0_4E0A+1A↑j
seg000:4E13 DD 6E 00      ld      l, (ix+0)
seg000:4E16 DD 66 01      ld      h, (ix+1)
seg000:4E19 CD E2 45   call   sub_0_45E2
seg000:4E1C FE 20      cp      20h ; ' '
seg000:4E1E CA 26 4E   jp      z, loc_0_4E26
seg000:4E21 CD 2A 4E   call   add_3_to_ix
seg000:4E24 10 ED      djnz   loc_0_4E13
seg000:4E26
seg000:4E26          loc_0_4E26:                ; CODE XREF: sub_0_4E0A+14↑j
seg000:4E26 D9          exx
seg000:4E27 C3 53 4D      jp      sub_0_4D53
; End of function sub_0_4E0A
seg000:4E27
seg000:4E27          ; SUBROUTINE
seg000:4E2A
seg000:4E2A          add_3_to_ix:                ; CODE XREF: sub_0_4C8A+49↑p
seg000:4E2A DD 23          ; sub_0_4D5F+D↑p ...

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seg000:4E2A          inc     ix
seg000:4E2C DD 23    inc     ix
seg000:4E2E DD 23    inc     ix
seg000:4E30 C9      ret
; End of function add_3_to_ix
seg000:4E30
seg000:4E31
seg000:4E31 ; SUBROUTINE
seg000:4E31
seg000:4E31
seg000:4E31 display_GOOD_LUCK: ; CODE XREF: seg000:49F2|p
seg000:4E31 call    wipe_screen_left_to_right_slow
seg000:4E34 21 19 3E ld      hl, 3E19h ; cursor position
seg000:4E37 06 32 ld      b, 50 ; flash 50 times
seg000:4E39
seg000:4E39 loc_0_4E39: ; CODE XREF: display_GOOD_LUCK+26|j
seg000:4E39 push    bc
seg000:4E3A 22 20 40 ld      (4020h), hl ; current cursor position
seg000:4E3D E5      push    hl
seg000:4E3E 21 D6 4E ld      hl, aGoodLuck ; "GOOD LUCK"
seg000:4E41 CD E5 44 call    display_message
seg000:4E44 CD 5A 4E call    delay_15ms
seg000:4E47 E1      pop     hl ; cursor position
seg000:4E48 22 20 40 ld      (4020h), hl
seg000:4E4B E5      push    hl
seg000:4E4C 21 E0 4E ld      hl, blank_x9
seg000:4E4F CD E5 44 call    display_message
seg000:4E52 CD 5A 4E call    delay_15ms
seg000:4E55 E1      pop     hl
seg000:4E56 C1      pop     bc
seg000:4E57 10 E0 djnz   loc_0_4E39 ; loop though all flashes
seg000:4E59 C9      ret
; End of function display_GOOD_LUCK
seg000:4E59
seg000:4E5A ; SUBROUTINE
seg000:4E5A
seg000:4E5A
seg000:4E5A delay_15ms: ; CODE XREF: sub_0_471C+59|p
seg000:4E5A 01 E8 03 ld      bc, 3E8h ; display_GOOD_LUCK+13|p ...
seg000:4E5A ; ~15ms
seg000:4E5D C3 60 00 jp      60h ; delay
; End of function delay_15ms
seg000:4E5D
seg000:4E60 ; SUBROUTINE
seg000:4E60
seg000:4E60
seg000:4E60 delay_1_5ms: ; CODE XREF: wipe_screen_left_to_right_slow+14|p
seg000:4E60 01 64 00 ; seg000:4F76|p
seg000:4E60 ld      bc, 64h ; 'd'
seg000:4E63 C3 60 00 jp      60h ; ~1.5ms
; End of function delay_1_5ms
seg000:4E63
seg000:4E66 ; SUBROUTINE
seg000:4E66
seg000:4E66
seg000:4E66 print_slow_and_check_for_R_key: ; CODE XREF: seg000:4567|p
seg000:4E66 E5      ; seg000:45A3|p ...
seg000:4E66 push    hl ; ptr message
seg000:4E67 DD E1 pop     ix
seg000:4E69
seg000:4E69 loc_0_4E69: ; CODE XREF: print_slow_and_check_for_R_key+18|j
seg000:4E69 DD 7E 00 ; print_slow_and_check_for_R_key+28|j
seg000:4E69 ld      a, (ix+0) ; get character
seg000:4E6C B7      or      a ; done?
seg000:4E6D C8      ret     z ; yes, exit
seg000:4E6E FE 09 cp      9 ; cursor position embedded?
seg000:4E70 20 0E jr      nz, loc_0_4E80 ; no, skip
seg000:4E72 DD 6E 01 ld      l, (ix+1)
seg000:4E75 DD 66 02 ld      h, (ix+2)
seg000:4E78 22 20 40 ld      (4020h), hl ; cursor position
seg000:4E7B CD 2A 4E call    add_3_to_ix ; set ROM variable
seg000:4E7E 18 E9 jr      loc_0_4E69 ; next character
seg000:4E80
seg000:4E80
seg000:4E80 loc_0_4E80: ; CODE XREF: print_slow_and_check_for_R_key+A|j
seg000:4E80 CD 33 00 call    33h ; display character
seg000:4E83 01 00 05 ld      bc, 500h ; ~20ms
seg000:4E86 CD 60 00 call    60h ; delay
seg000:4E89 CD D9 45 call    check_for_R_key
seg000:4E8C DD 23 inc     ix ; next character
seg000:4E8E 18 D9 jr      loc_0_4E69 ; loop
; End of function print_slow_and_check_for_R_key
seg000:4E8E
seg000:4E90 ; SUBROUTINE
seg000:4E90
seg000:4E90
seg000:4E90 sub_0_4E90: ; CODE XREF: sub_0_46BB+24|p
seg000:4E90 E5      ; seg000:49E9|p ...
seg000:4E90 push    hl
seg000:4E91 D5      push    de
seg000:4E92 C5      push    bc
seg000:4E93 F5      push    af
seg000:4E94 2A 20 40 ld      hl, (4020h)
seg000:4E97 E5      push    hl
seg000:4E98 21 D0 3F ld      hl, 3FD0h
seg000:4E9B 22 20 40 ld      (4020h), hl
seg000:4E9E 3A 0F 43 ld      a, (430Fh)
seg000:4EA1 3D      dec     a
seg000:4EA2 28 14 jr      z, loc_0_4EB8
seg000:4EA4 47      ld      b, a
seg000:4EA5
seg000:4EA5 loc_0_4EA5: ; CODE XREF: sub_0_4E90+1B|j
seg000:4EA5 21 CF 4E ld      hl, mini_player
seg000:4EA8 CD E5 44 call    display_message
seg000:4EAB 10 F8 djnz   loc_0_4EA5
seg000:4EAD 3A 0F 43 ld      a, (430Fh)
seg000:4EB0 47      ld      b, a
seg000:4EB1 3E 04 ld      a, 4
seg000:4EB3 90      sub     b
seg000:4EB4 28 0C jr      z, loc_0_4EC2
seg000:4EB6 18 02 jr      loc_0_4EBA
seg000:4EB8 ;

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seg000:4EB8
seg000:4EB8
seg000:4EB8 06 03      loc_0_4EB8:      ; CODE XREF: sub_0_4E90+12↑j
                        ld      b, 3
seg000:4EBA
seg000:4EBA      loc_0_4EBA:      ; CODE XREF: sub_0_4E90+26↑j
                        ; sub_0_4E90+30↑j
seg000:4EBA 21 CB 4E      ld      hl, blank_x3
seg000:4EBA      call   display_message
seg000:4EBD CD E5 44      djnz   loc_0_4EBA
seg000:4EC0 10 F8
seg000:4EC2      loc_0_4EC2:      ; CODE XREF: sub_0_4E90+24↑j
seg000:4EC2 E1      pop     hl
seg000:4EC3 22 20 40      ld      (4020h), hl
seg000:4EC6 F1      pop     af
seg000:4EC7 C1      pop     bc
seg000:4EC8 D1      pop     de
seg000:4EC9 E1      pop     hl
seg000:4ECA C9      ret
seg000:4ECA      ; End of function sub_0_4E90
seg000:4ECA
seg000:4ECA      ; -----
seg000:4ECB 20 20 20 00 blank_x3:.db 20h, 20h, 20h, 0      ; DATA XREF: sub_0_4E90+2A↑o
seg000:4ECF 88 8E 8C 00 mini_player:.db 88h, 8Eh, 8Ch, 0      ; DATA XREF: sub_0_4E90+15↑o
seg000:4ED3 5C      .db 5Ch ; \
seg000:4ED4 56      .db 56h ; V
seg000:4ED5 2A      .db 2Ah ; *
seg000:4ED6 47 4F 4F 44+aGoodLuck:.text "GOOD LUCK"      ; DATA XREF: display_GOOD_LUCK+D↑o
seg000:4ED6 20 4C 55 43+      .db 0
seg000:4EE0 20 20 20 20+blank_x9:.db 20h, 20h, 20h, 20h, 20h, 20h, 20h, 20h, 20h, 0
seg000:4EE0 20 20 20 20+      ; DATA XREF: display_GOOD_LUCK+1B↑o
seg000:4EEA D1      .db 0D1h ; D
seg000:4EEB 3E      .db 3Eh ; >
seg000:4EEC 56      .db 56h ; V
seg000:4EED DF      .db 0DFh ; █
seg000:4EEE 00      .db 0 ;
seg000:4EEF 56      .db 56h ; V
seg000:4EF0 92      .db 92h ; E
seg000:4EF1 3F      .db 3Fh ; ?
seg000:4EF2 56      .db 56h ; V
seg000:4EF3 00      .db 0 ;
seg000:4EF4 00      .db 0 ;
seg000:4EF5 00      .db 0 ;
seg000:4EF6 00      .db 0 ;
seg000:4EF7 00      .db 0 ;
seg000:4EF8 00      .db 0 ;
seg000:4EF9 00      .db 0 ;
seg000:4EFA 00      .db 0 ;
seg000:4EFB      ; -----
seg000:4EFB
seg000:4EFB      loc_0_4EFB:      ; CODE XREF: seg000:4AAD↑j
seg000:4EFB CD FC 4D      call   sub_0_4DFC
seg000:4EFE AF      xor     a
seg000:4EFF 32 12 43      ld      (byte_0_4312), a
seg000:4F02 32 20 43      ld      (byte_0_4320), a
seg000:4F05
seg000:4F05      loc_0_4F05:      ; CODE XREF: seg000:4F95↑j
seg000:4F05 3A 40 38      ld      a, (3840h)
seg000:4F08 57      ld      d, a
seg000:4F09 01 00 02      ld      bc, 200h
seg000:4F0C CD 60 00      call   60h
seg000:4F0F 3A 40 38      ld      a, (3840h)
seg000:4F12 AA      xor     d
seg000:4F13 E6 80      and     80h ; 'Ç'
seg000:4F15 20 0F      jr      nz, loc_0_4F26
seg000:4F17 3A 22 43      ld      a, (byte_0_4322)
seg000:4F1A 5F      ld      e, a
seg000:4F1B AA      xor     d
seg000:4F1C A2      and     d
seg000:4F1D E6 80      and     80h ; 'Ç'
seg000:4F1F 7A      ld      a, d
seg000:4F20 32 22 43      ld      (byte_0_4322), a
seg000:4F23 C4 E5 46      call   nz, sub_0_46E5
seg000:4F26
seg000:4F26      loc_0_4F26:      ; CODE XREF: seg000:4F15↑j
seg000:4F26 3A 20 43      ld      a, (byte_0_4320)
seg000:4F29 E6 03      and     3
seg000:4F2B CC 88 48      call   z, sub_0_4888
seg000:4F2E 3A 11 43      ld      a, (byte_0_4311)
seg000:4F31 B7      or      a
seg000:4F32 28 08      jr      z, loc_0_4F3C
seg000:4F34 3A 20 43      ld      a, (byte_0_4320)
seg000:4F37 E6 03      and     3
seg000:4F39 CC 1C 47      call   z, sub_0_471C
seg000:4F3C
seg000:4F3C      loc_0_4F3C:      ; CODE XREF: seg000:4F32↑j
seg000:4F3C 3A 20 43      ld      a, (byte_0_4320)
seg000:4F3F E6 07      and     7
seg000:4F41 CC F6 48      call   z, sub_0_48F6
seg000:4F44 CD BF 48      call   sub_0_48BF
seg000:4F47 3A 10 43      ld      a, (byte_0_4310)
seg000:4F4A B7      or      a
seg000:4F4B 20 0D      jr      nz, loc_0_4F5A
seg000:4F4D 3A 0C 43      ld      a, (430Ch)
seg000:4F50 FE 80      cp      80h ; 'Ç'
seg000:4F52 20 06      jr      nz, loc_0_4F5A
seg000:4F54 21 00 3C      ld      hl, 3C00h
seg000:4F57 CD 7E 4C      call   clear_video_line_HL
seg000:4F5A
seg000:4F5A      loc_0_4F5A:      ; CODE XREF: seg000:4F4B↑j
seg000:4F5A 00      ; seg000:4F52↑j
seg000:4F5A      nop
seg000:4F5B 3A 20 43      ld      a, (byte_0_4320)
seg000:4F5E E6 0F      and     0Fh
seg000:4F60 F5      push    af
seg000:4F61 CC 5F 4D      call   z, sub_0_4D5F
seg000:4F64 F1      pop     af
seg000:4F65 CC 8A 4C      call   z, sub_0_4C8A
seg000:4F68 21 20 43      ld      hl, 4320h
seg000:4F6B 34      inc     (hl)
seg000:4F6C 3A 21 43      ld      a, (byte_0_4321)
seg000:4F6F 3D      dec     a
seg000:4F70 F5      push    af
seg000:4F71 CC 48 4B      call   z, sub_0_4B48
seg000:4F74 F1      pop     af
seg000:4F75 F5      push    af
seg000:4F76 C4 60 4E      call   nz, delay_1_5ms

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seg000:4F79 F1          pop     af
seg000:4F7A 20 06      jr      nz, loc_0_4F82
seg000:4F7C 3A 01 43      ld      a, (4301h)
seg000:4F7F 87          add     a, a
seg000:4F80 D6 01      sub     1
seg000:4F82
seg000:4F82          loc_0_4F82:          ; CODE XREF: seg000:4F7A↑j
seg000:4F82 32 21 43      ld      (byte_0_4321), a
seg000:4F85 3A 11 43      ld      a, (byte_0_4311)
seg000:4F88 B7          or      a
seg000:4F89 20 0A      jr      nz, loc_0_4F95
seg000:4F8B 3A 00 43      ld      a, (4300h)
seg000:4F8E B7          or      a
seg000:4F8F 28 04      jr      z, loc_0_4F95
seg000:4F91 3D          dec     a
seg000:4F92 32 00 43      ld      (4300h), a
seg000:4F95
seg000:4F95          loc_0_4F95:          ; CODE XREF: seg000:4F89↑j
seg000:4F95 C3 05 4F      ; seg000:4F8F↑j
seg000:4F95          jp      loc_0_4F05
seg000:4F95
seg000:4F98 43 4F 50 59+aCopyrightC1979:.text "COPYRIGHT (C) 1979, "
seg000:4FAC B0          .db 0B0h ; ☹
seg000:4FAD 37          .db 37h ; 7
seg000:4FAE 2F          .db 2Fh ; /
seg000:4FAF 31          .db 31h ; 1
seg000:4FB0 33          .db 33h ; 3
seg000:4FB1 42          .db 42h ; B
seg000:4FB2 59          .db 59h ; Y
seg000:4FB3 20          .db 20h ;
seg000:4FB4 54          .db 54h ; T
seg000:4FB5 52          .db 52h ; R
seg000:4FB6 53          .db 53h ; S
seg000:4FB7 2D          .db 2Dh ; -
seg000:4FB8 42          .db 42h ; B
seg000:4FB9 4D          .db 4Dh ; M
seg000:4FBA 20          .db 20h ;
seg000:4FBB 4B          .db 4Bh ; K
seg000:4FBC 4F          .db 4Fh ; O
seg000:4FBD 47          .db 47h ; G
seg000:4FBE 41          .db 41h ; A
seg000:4FBF 4E          .db 4Eh ; N
seg000:4FC0 45          .db 45h ; E
seg000:4FC1 49          .db 49h ; I
seg000:4FC2 00          .db 0 ;
seg000:4FC3 81          .db 81h ; ũ
seg000:4FC4 5F          .db 5Fh ; _
seg000:4FC5 7A          .db 7Ah ; z
seg000:4FC6 FE          .db 0FEh ; █
seg000:4FC7 30          .db 30h ; 0
seg000:4FC8 28          .db 28h ; (
seg000:4FC9 02          .db 2 ;
seg000:4FCA 77          .db 77h ; w
seg000:4FCB 23          .db 23h ; #
seg000:4FCC 7B          .db 7Bh ; {
seg000:4FCD 0E          .db 0Eh ;
seg000:4FCE 0A          .db 0Ah ;
seg000:4FCF 10          .db 10h ;
seg000:4FD0 EC          .db 0ECh ; Ÿ
seg000:4FD1 C6          .db 0C6h ; ā
seg000:4FD2 30          .db 30h ; 0
seg000:4FD3 77          .db 77h ; w
seg000:4FD4 23          .db 23h ; #
seg000:4FD5 36          .db 36h ; 6
seg000:4FD6 03          .db 3 ;
seg000:4FD7 E1          .db 0E1h ; Ě
seg000:4FD8 06          .db 6 ;
seg000:4FD9 20          .db 20h ;
seg000:4FDA 3E          .db 3Eh ; >
seg000:4FDB 00          .db 0 ;
seg000:4FDC 3D          .db 3Dh ; =
seg000:4FDD 20          .db 20h ;
seg000:4FDE 04          .db 4 ;
seg000:4FDF 77          .db 77h ; w
seg000:4FE0 23          .db 23h ; #
seg000:4FE1 10          .db 10h ;
seg000:4FE2 FC          .db 0FCh ; ¢
seg000:4FE3 AF          .db 0AFh ; »
seg000:4FE4 C9          .db 0C9h ; ₣
seg000:4FE5 3A          .db 3Ah ; ¸
seg000:4FE6 C4          .db 0C4h ; −
seg000:4FE7 4E          .db 4Eh ; N
seg000:4FE8 6F          .db 6Fh ; o
seg000:4FE9 CB          .db 0CBh ; ₣
seg000:4FEA A6          .db 0A6h ; ¢
seg000:4FEB 5A          .db 5Ah ; Z
seg000:4FEC 23          .db 23h ; #
seg000:4FED 56          .db 56h ; V
seg000:4FEE CD          .db 0CDh ; =
seg000:4FEF 82          .db 82h ; é
seg000:4FF0 4E          .db 4Eh ; N
seg000:4FF1 7B          .db 7Bh ; {
seg000:4FF2 0F          .db 0Fh ;
seg000:4FF3 0F          .db 0Fh ;
seg000:4FF4 0F          .db 0Fh ;
seg000:4FF5 E6          .db 0E6h ; μ
seg000:4FF6 1F          .db 1Fh ;
seg000:4FF7 C5          .db 0C5h ; †
seg000:4FF8 21          .db 21h ; !
seg000:4FF9 C0          .db 0C0h ; L
seg000:4FFA 4D          .db 4Dh ; M
seg000:4FFB 4F          .db 4Fh ; O
seg000:4FFC 06          .db 6 ;
seg000:4FFD 00          .db 0 ;
seg000:4FFE 09          .db 9 ;
seg000:4FFF 7B          .db 7Bh ; {
seg000:4FFF          ; end of 'seg000'
seg000:4FFF
seg000:4FFF
seg000:4FFF
seg000:4FFF          .end

```