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               ;* ------------------------------------------------------------------------- *
               ;* Name   : GAWGETIM
               ;* Author : Gerard Wassink
               ;* Date   : December 24, 2021
               ;* Purpose: Get RTC time on the RC2014 CP/M computer
               ;* Versions:
               ;*   0.1  : Initial code base, and 1st ASM program on CP/M
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               ;
0100           START       ORG     0100H
               ;
               ; BIOS address and functions
               ;
0005 =         BDOS        EQU     0005H           ; BDOS address
0009 =         PRTSCR      EQU     009H            ; Print $ terminated string function
               ;
0020 =         RTCGTTM     EQU     020H            ; Get HBIOS time
               ;
0100 F5        SAVEREGS    PUSH    A               ; SAVE
0101 C5                    PUSH    B               ;  REGISTERS
0102 D5                    PUSH    D               ;   ON THE STACK
                           ;
                           ; Get time from RTC (Real Time Clock)
                           ;
0103 0620                  MVI     B,RTCGTTM       ; BIOS RTCGETTIM function
0105 215D01                LXI     H,TIMBUF        ; HL points to buffer for BIOS time
0108 CF                    RST     1               ; Call BIOS function 08H (8 times
specified value)
                           ;
                           ; Convert date to Ascii
                           ;
0109 015D01                LXI     B,TIMYR         ; BC points to value to convert
010C 118701                LXI     D,DSPY1         ; DE points to receiving buffer
010F CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
0112 015E01                LXI     B,TIMMT         ; BC points to value to convert
0115 118A01                LXI     D,DSPM1         ; DE points to receiving buffer
0118 CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
011B 015F01                LXI     B,TIMDY         ; BC points to value to convert
011E 118D01                LXI     D,DSPD1         ; DE points to receiving buffer
0121 CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
                           ; Convert time to Ascii
                           ;
0124 016001                LXI     B,TIMHR         ; BC points to value to convert
0127 119101                LXI     D,DSPH1         ; DE points to receiving buffer
012A CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
012D 016101                LXI     B,TIMMN         ; BC points to value to convert
0130 119401                LXI     D,DSPI1         ; DE points to receiving buffer
0133 CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
0136 016201                LXI     B,TIMSC         ; BC points to value to convert
0139 119701                LXI     D,DSPS1         ; DE points to receiving buffer
013C CD4B01                CALL    BCD2DISP        ; Convert BCD to displayable
                           ;
013F 0E09                  MVI     C,PRTSCR        ; Print string function in reg C
0141 116301                LXI     D,DISPLTIM      ; data address in DE
0144 CD0500                CALL    BDOS            ; call BDOS for print string function
                           ;
0147 D1        RESTREGS    POP     D               ;  POP REGISTERS
0148 C1                    POP     B               ;   FROM THE
0149 F1                    POP     A               ;    STACK
                           ;
014A C9                    RET                     ; GO BACK
                           ;
                           ;
                           ; Convert BCD value to two ascii bytes for display
                           ;
014B =         BCD2DISP    EQU     $
014B 0A                    LDAX    B               ; load BCD value
014C E6F0                  ANI     0F0H            ; Isolate first nibble
014E 0F                    RRC                     ; Rotate
014F 0F                    RRC                     ;  register
0150 0F                    RRC                     ;   A for
0151 0F                    RRC                     ;    four times
0152 F630                  ORI     030H            ; make Ascii number
0154 12                    STAX    D               ; store printable value 1st part
                           ;
0155 13                    INX     D               ; Increment DE for next store
                           ;
0156 0A                    LDAX    B               ; load value
0157 E60F                  ANI     00FH            ; Isolate second nibble
0159 F630                  ORI     030H            ; make Ascii number
015B 12                    STAX    D               ; store printable value 2nd part
                           ;
015C C9                    RET
                           ;
                           ; DATA STORAGE
                           ;
015D =         TIMBUF      EQU     $               ; Reserve room for time buffer
015D 57        TIMYR       DB      57H
015E 12        TIMMT       DB      12H
015F 07        TIMDY       DB      07H
0160 12        TIMHR       DB      12H
0161 34        TIMMN       DB      34H
0162 56        TIMSC       DB      56H
               ;
0163 =         DISPLTIM    EQU     $               ; Reserve room for displayable time
0163 4375727265            DB      'Current date and time from the RTC: '
               ;
0187 00        DSPY1       DB      0               ; YEAR
0188 00        DSPY2       DB      0               ;
0189 2D                    DB      '-'             ;
018A 00        DSPM1       DB      0               ; MONTH
018B 00        DSPM2       DB      0               ;
018C 2D                    DB      '-'             ;
018D 00        DSPD1       DB      0               ; DAY
018E 00        DSPD2       DB      0               ;
```

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                     ;
018F 2C                        DB       ','              ;
0190 20                        DB       ' '              ;
                     ;
0191 00              DSPH1     DB       0                ; HOURS
0192 00              DSPH2     DB       0                ;
0193 3A                        DB       ':'              ;
0194 00              DSPI1     DB       0                ; MINUTES
0195 00              DSPI2     DB       0                ;
0196 3A                        DB       ':'              ;
0197 00              DSPS1     DB       0                ; SECONDS
0198 00              DSPS2     DB       0                ;
                     ;
0199 0D                        DB       0DH
019A 0A                        DB       0AH
                     ;
019B 24                        DB       '$'              ; End of string character
                     ;
019C                 ENDPROG   END
SUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUBSUB
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