```
DAI FIRMWARE DBFB-DAD3 V1.0 Rev.1
PAGE 01
002
                             ORG
                                   : DBFB
                    *
003
004
005
006
                       ----------------
                     *** INTERRUPT HANDLER ***
007
                       _______
008
009
010
                    *******************
011
                     * INITIALISE INTERRUPT SYSTEM *
012
                     *******************
013
014
                    * Initialises the interrupt system of the machine.
015
016
                    * Entry: No conditions.
017
018
                             All registers corrupted.
019
020 D8FB 21F8FF
                     INTINI
                             LXI
                                   H.:FFF8
                                             Address int.mask register
                                   A,:04
021 D8FE 3E04
                             MVI
                             MOV
                                   M. A
                                             Only stack interrupt
022 D900 77
                                   :005F
                             STA
                                             Remember int. mask
023 D901 325F00
                                   L,:F4
024 D904 2EF4
                             MVI
                                   A, 10C
                             MVI
025 D906 3E0C
                                             Select ext.int. and INTA
                             MOV
                                   M, A
026 D908 77
                             INR
027 D909 3C
                                   A
028 D90A 77
                             MOV
                                   M. A
                                             Reset
                             MVI
                                   A, : OC
029 D90B 3E0C
                                             Init. cursor timer
                                   :0100
                             STA
030 D90D 32C001
031 D910 3E02
                            MVI
                                   A,:02
                                   :0101
                                             Init. keyboard scan counter
032 D912 32C101
                             STA
                                             Reload sound timer
                             CALL
                                   : D9A3
033 D915 CDA3D9
                                   : D99D
                                             Reload keyboard timer
034 D918 CD9DD9
                             CALL
                                   : D949
                             CALL
                                             Set up int. entry points
035 D91B CD49D9
036
                    * Set-up interrupt vectors (also entry from utility)
037
038
                                   H.: D9A9
                    INTSU
                             LXI
039 D91E 21A9D9
                                             Clock int. vector (7)
                                   :0070
                             SHLD
040 D921 227000
                                   H,: D578
                             LXI
041 D924 2178D5
                                             Keyboard int. vector 6
                                   : 006E
                             SHLD
042 D927 226E00
                                   H.: C6FD
                            LXI
043 D92A 21FDC6
                                             Screen restart vector ()
                             SHLD
                                   :0060
044 D92D 226C00
                                   H,: C6C0
                            LXI
045 D930 21C0C6
                                             Math. restart vector 4
                                   :006A
046 D933 226A00
                             SHLD
                                   H,: D755
                            LXI
Q47 D936 2155D7
                                             Sound int. vector (3)
                             SHLD
                                   :0068
048 D939 226800
                             LXI
                                   H.: D9E2
049 D93C 21E2D9
                                             Stack int. vector
050 D93F 226600
                                   :0066
                             SHLD
                             LXI
                                   H,: C70E
051 D942 210EC7
                                             Utility/encode vector //
                                   :0064
052 D945 226400
                             SHLD
                            RET
053 D948 C9
054
                    * SET UP INTERRUPT VECTOR AREA:
055
056
                    * Sets up the vector area 0000-003F.
057
058
                    * Entry: No conditions.
059
                            All registers corrupted.
                    * Exit:
060
061
062 D949 010000
                                   B.:0000
                                             Start at zero
                    VECSU
                             LXI
                             LXI
                                   D,: D96B
                                             Startaddr. int. routine
063 D94C 116BD9
                    VCS10
```

124

```
Endaddress
                            LXI
                                   H,: D973
064 D94F 2173D9
                                             Transfer int. routine
                                   : DE4F
                            CALL
065 D952 CD4FDE
                             MOV
                                   A.C
066 D955 79
                                   : 40
                                             8 routines done?
                             CPI
067 D956 FE40
                                             Next one if not ready
                                   : D94C
068 D958 C24CD9
                             JNZ
                                   H,:003B
                                             Addr. highest int.vector
                            LXI
069 D95B 213B00
070 D95E 01FBFF
                             LXI
                                   B,:FFFB
                            MVI
                                   D,:70
071 D961 1670
                                   M.D
                                             Load vector addr.
072 D963 72
                    VCS20
                             MOV
                                   D
                             DCR
073 D964 15
                             DCR
                                   D
074 D965 15
                                             Calculate next addr
                             DAD
                                   B
075 D966 09
076 D967 DA63D9
                                   :D963
                                             Next one if not ready
                             JC
                             RET
077 D96A C9
078
                      INTERRUPT VECTOR ROUTINE:
079
080
                    * During initialisation loaded into RAM on the
081
                    * Restart routine locations of the CPU.
082
                    * The address after LHLD is later changed into
083
                    * the appropriate vector address by #D8FB.
084
085
                    ITMPL
                             NOP
086 D96B 00
                             PUSH
                                   н
087 D96C E5
                             LHLD
                                   :0070
088 D96D 2A7000
                             PCHL
089 D970 E9
                             NOP
090 D971 00
                             NOF
091 D972 00
092
                    ****************
093
                     * DISABLE KEYBOARD INTERRUPTS *
094
                    ***********
095
096
                    * Disables keyboard interrupts only.
097
098
                    * Entry can be different. From INTCH common part
099
                    * to disable/enable sound, clock and keyboard
100
                    * interrupts.
101
102
                    * Entry: None.
103
                             All registers preserved.
                    * Exit:
104
105
                    KBDI
                            PUSH
106 D973 C5
                                   B, : BF00
                                             Disable keyboard interrupts
                            LXI
107 D974 0100BF
108
                    INTCH
                            PUSH
                                   PSW
109 D977 F5
                                             Disable interrupts
                            DI
110 D978 F3
                                             Get current int.mask
                                   :005F
                            LDA
111 D979 3A5F00
                                             ) Calculate new one
                            ANA
                                   B
112 D97C A0
                                             >
                                   C
                            ORA
113 D97D B1
                                             Remember new mask
                                   : 005F
114 D97E 325F00
                            STA
                                             and set mask
                            STA
                                   :FFFB
115 D981 32F8FF
                                             Enable interrupts again
116 D984 FB
                            EI
                            POP
                                   PSW
117 D985 F1
                            POP
                                   В
118 D986 C1
                            RET
119 D987 C9
120
                    ****************
121
                    * ENABLE KEYBOARD INTERRUPTS *
122
                    *******************
123
```

```
126
                    KBEI
                            PUSH
127 D988 C5
                            LXI
                                  B, : FF40
                                            Enable keyboard interrupts
128 D989 0140FF
129 D98C C377D9
                            JMP
                                  : D977
                                            Update int. mask
130
                    ***************
131
                    * DISABLE SOUND INTERRUPTS *
132
                    ****************
133
134
                    * Disables sound interrupts only.
135
136
                    SNDDI
                            PUSH
                                  В
137 D98F C5
                                  B,:F700
                                            Disable sound interrupts
                            LXI
138 D990 0100F7
                            JMP
                                  : D977
                                            Update int. mask
139 D993 C377D9
140
                    ****************
141
                    * ENABLE SOUND INTERRUPTS *
142
                    ***************
143
144
                    * Enables sound interrupts only.
145
146
                    SNDEI
                            PUSH
                                  В
147 D996 C5
                                  B.: FF08
                                            Enable sound interrupts
                            LXI
14B D997 0108FF
                                  : D977
                                            Update int. mask
                            JMP
149 D99A C377D9
150
                    **************
151
                    * LOAD KEYBOARD TIMER *
152
                    **************
153
154
                    * Starts a keyboard interrupt.
155
156
                            MVI
                                  A. : FF
                                            Init. 16.32 msec
157 D99D 3EFF
                    KBIS
                                  : FFFC
                                            Load timer 4 (keyboard)
                            STA
158 D99F 32FCFF
159 D9A2 C9
                            RET
160
                    *************
161
                    * LOAD SOUND TIMER *
162
                    ************
163
164
165
                    * Starts a sound interrupt.
166
                                            Init. 5.12 msec
167 D9A3 3E50
                    SIDIS
                            MVI
                                  A.:50
                            STA
                                  :FFFB
                                            Load timer 3 (sound)
168 D9A5 32FBFF
                            RET
169 D9A8 C9
170
                    *****************
171
                    * CLOCK INTERRUPT (RST 7) *
172
173
                    *****************
174
                    * Triggered every 20 msec by the TV page
175
176
                    * blanking signal.
                    * Decrements timer O1BE/BF until O. Checks also
177
                    * the contents of cursor clock timer 0100. It is
178
                    * decremented: if it becomes 0, the timer is re-
179
                    * loaded and the cursor is flashed.
180
181
182
                    * Exit: All registers preserved.
183
                   CLKINT
                            PUSH
                                  PSW
184 D9A9 F5
185 D9AA C5
                            PUSH
                                  В
                           PUSH
                                  D
186 D9AB D5
```

:005F

LDA

187 D9AC 3A5F00

Get current int. mask

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                                              and remember it
                                   PSW
                             PUSH
188 D9AF F5
                                   A,:04
                             MVI
189 D9B0 3E04
                                             Set stack interrupt only
                             STA
                                   :FFF8
190 D9B2 32F8FF
                             EI
191 D9B5 FB
                                             Get timer contents
                                   : 01BE
                             LHLD
192 D9B6 2ABE01
                             MOV
                                   A,H
193 D9B9 7C
                             DRA
                                   L
194 D9BA B5
                                   : D9C2
                                              If timer = 0
                             JZ
195 D9BB CAC2D9
                                              Else:
                             DCX
                                   H
196 D9BE 2B
                                              decrement timer
                                   :01BE
                             SHLD
197 D9BF 22BE01
                                   H.: 01C0
                                              Addr. cursor clock
                             LXI
198 D9C2 21C001
                    CKI10
                                              Decr. clock
                             DCR
199 D9C5 35
                                   :D9CD
                                              Return if <>0
                             JNZ
200 D9C6 C2CDD9
                                              Load 20 ms flash time
                             MVI
                                   M. : OF
201 D9C9 360F
                                              Flash cursor
                                   5
                             RST
202 D9CB EF
                             DATA
                                   :12
203 D9CC 12
204
                     * GENERAL INTERRUPT RETURN:
205
206
                    * Restores interrupt mask and all registers.
207
208
                     * Entry: Interrupt mask and all registers on stack.
209
210
                                              Get old int. mask
                     INTRM
                             POP
                                   PSW
211 D9CD F1
                             DI
212 D9CE F3
                                              Restore int. mask
                                   :FFF8
213 D9CF 32F8FF
                             STA
                                              and remember it.
214 D9D2 325F00
                                   :005F
                             STA
                             EI
215 D9D5 FB
216 D9D6 D1
                             POP
                                   D
                                   B
                             POP
217 D9D7 C1
                             POP
                                   PSW
218 D9D8 F1
                             POP
                                   H
219 D9D9 E1
                             RET
220 D9DA C9
221
                     **********
222
                     * ENABLE CLOCK INTERRUPT *
223
                     *********
224
225
                             PUSH
                                   B
226 D9DB C5
                     CLKEI
                                   B,:FF80
                                              Enable clock interrupt
                             LXI
227 D9DC 0180FF
                                   : D977
                                              Update int.mask
228 D9DF C377D9
                             JMP
229
                     ***************
230
                     * STACK INTERRUPT (RST2) *
231
                     *********
232
233
                     * This routine handles an interrupt caused by the
234
                     * stack overflow hardware logic.
235
                     *
236
                                              Reset stackpointer
                     SPINT
                             LXI
                                   SP.:F900
237 D9E2 3100F9
                             XRA
                                   A
238 D9E5 AF
                                              No running inputs
                             STA
                                   :0117
239 D9E6 321701
                                              No encoding of stored line
                                   :0122
                             STA
240 D9E9 322201
                                              Input from keyboard, reload
                                   : D743
                             CALL
241 D9EC CD43D7
                                              timers sound/keyb
242
                             EI
243 D9EF FB
                             MVI
                                   A.: 16
244 D9F0 3E16
                                              Run error 'STACK OVERFLOW'
245 D9F2 C3F5D9
                             JMP
                                   : D9F5
                     *
246
                     *
247
```

248 249