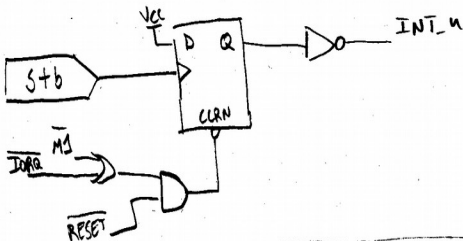
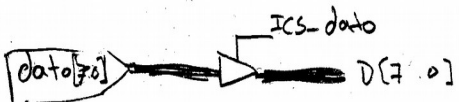
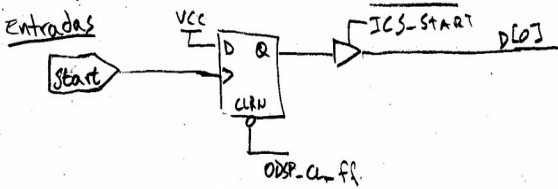
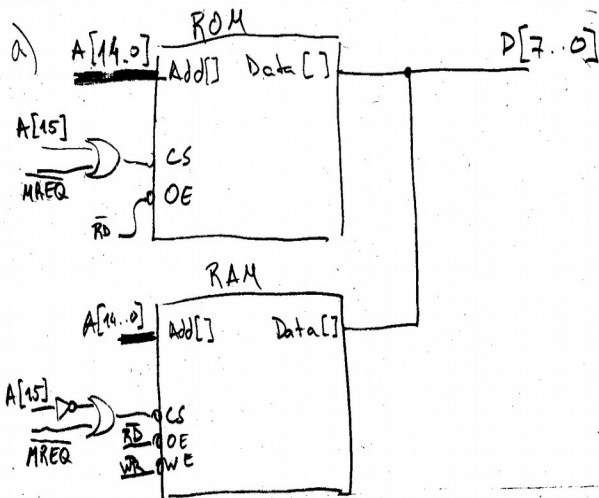
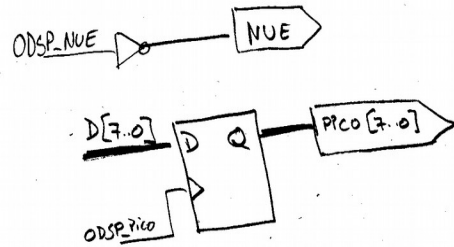


Problema 1

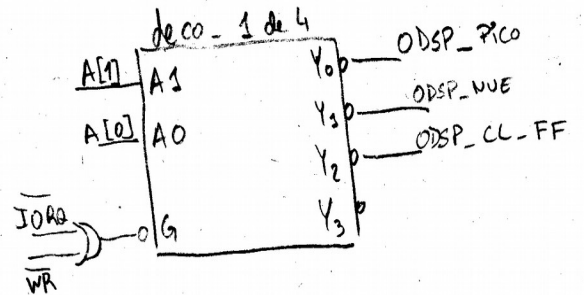
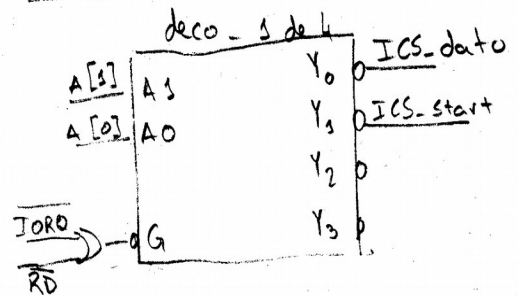
Memoria



Salidas



Decodificación



;;Software

```

mapa memoria:
|Dirección      | Memoria  |
|0x0000 a 0x7FFF| ROM 32K  |
|0x8000 a 0xFFFF| RAM 32K  |
mapa IO:
|Dirección | I | O
|0x00      | dato | pico
|0x01      | start | NUE
|0x02      |      | cl_ff
b)

```

```

dato equ 0x00
pico equ 0x00
start equ 0x01
NUE equ 0x01
cl_ff equ 0x02
umbral equ 0x80

```

```

org 8000h
cola: ds 256
cabeza: dw
hay_pico: db

```

```

si equ 0xFF
no equ 0x00

```

;;Inicialización

```

org 0x0000
ld SP, 0x0000
iml
ld HL, cabeza
ld (HL),0x8000
ei
jp main

```

;; Rutina de atención a interrupción

```

org 0x0038
rutint:
push AF
push HL
ld HL, (cabeza)
in a, (dato)
ld (HL), a
inc L
ld (cabeza),HL
salgo:
pop HL
pop AF
ei
ret

```

;;; Programa principal

```

main:
in A, (start)
bit 0, A
jp Z, main

out (clr_ff),A

ld B, 200 - 2
ld HL, (cabeza)
ld A, no
ld (hay_pico),A

no_termine:
ld C, (HL) ; C = muestra 3
DEC L
ld A, (HL) ; A = muestra 2
DEC L
ld E, (HL) ; E = muestra 1
cp umbral
jp c, no_pico
cp E
jp c, no_pico
cp C
jp c, no_pico
out (pico),A
out (NUE),A
ld A, si
ld (hay_pico),A

no_pico:
INC L ; para que HL apunte a un lugar más en
        ;la cola que la ultima pasada del loop
djnz, no_termine

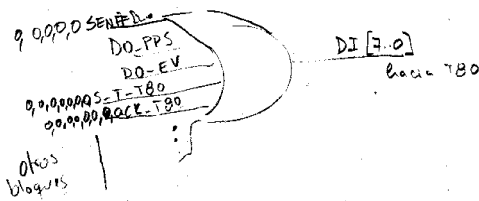
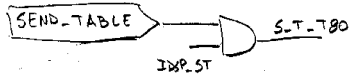
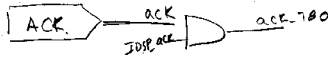
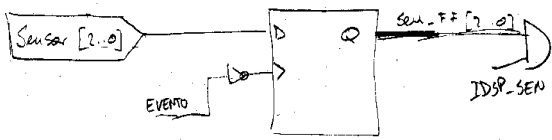
ld A, (hay_pico)
cp, si
jp z, main

ld A, 0x00
out (pico),A
out (NUE),A

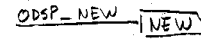
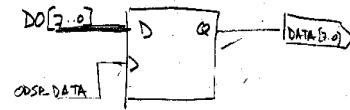
jp main

```

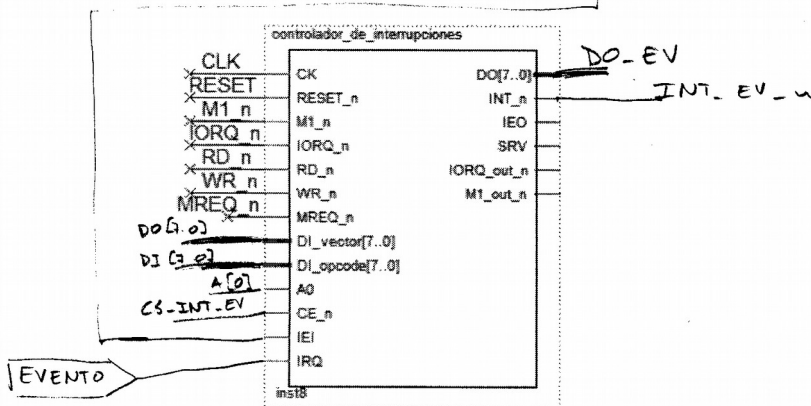
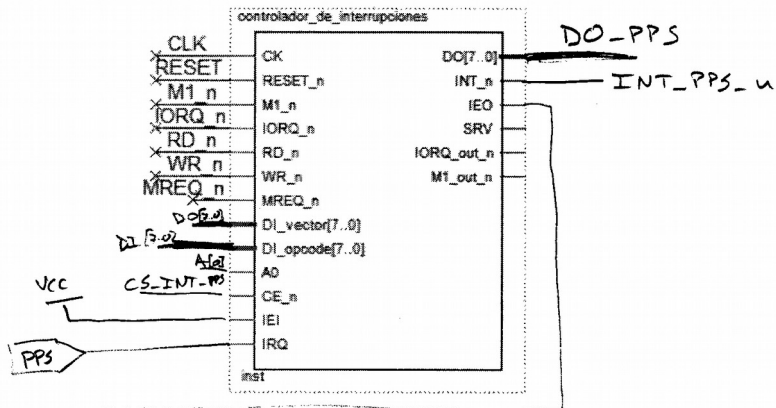
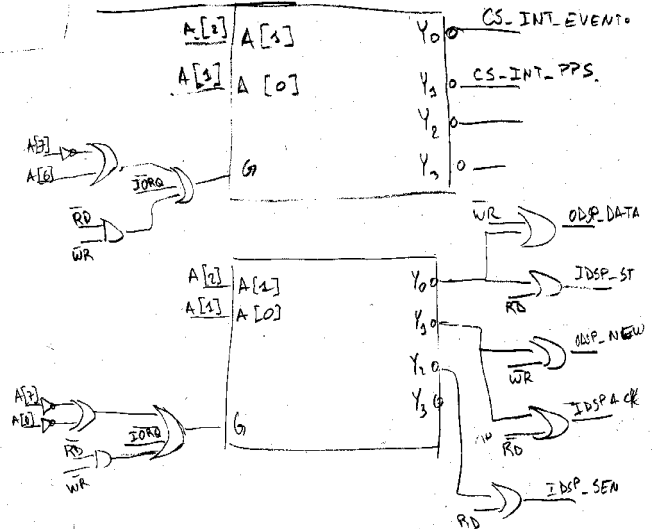
Entradas



Salida



Decodificación



```

VI_EVENTO      equ 0x00          jp Z, main_loop
VI_PPS         equ 0x02          ld HL, variables
CI_EVENTO      equ 0x80          ld B, 16
CI_PPS         equ 0x82          loop_send_table:
ACK            equ 0xC2          in A, (ACK)
send_table     equ 0xC0          bit 0, A
data           equ 0xC0          jp Z, loop_send_table
new            equ 0xC2          ld A, (HL)
sensor         equ 0xC4          out (data), A

                                out (new), A ; no importa contenido
                                A, solo el pulso de deco
org 9000
variables:
    ds 16
    segundos dw

                                inc HL
                                djnz, loop_send_table
                                jp main_loop

org 0x100
tabla_int:
    dw rutint_evento
    dw rutint_pps

org 0x0000
    ld SP, 0x0000
    ld A, tabla_int / 256
    ld I, A
    im2
    ld A, VI_EVENTO
    out (CI_EVENTO), A
    out (CI_EVENTO+1), A
    ld A, VI_PPS
    out (CI_PPS), A
    out (CI_PPS+1), A
    ld B, 18 ; hora alarmas + segundos
    ld A, 0
    ld HL, variables

loop_ini_var:
    ld (HL), A
    inc HL
    djnz, loop_ini_var

    jp main_loop
org 0x200
main_loop:
    in A, (send_table)
    bit 0, A

                                org 0x0300
                                rutint_evento:
                                    ei
                                    push AF
                                    push HL
                                    in A, (sensor)
                                    and 0000 0111b
                                    ld HL, variables
                                    ld L, A
                                    ld A, (segundos)
                                    ld (HL), A
                                    inc HL
                                    ld A, (segundos+1)
                                    ld (HL), A
                                    pop HL
                                    pop AF
                                    reti

                                rutint_pps:
                                    ei
                                    push AF
                                    push HL
                                    ld HL, (segundos)
                                    inc HL
                                    ld (segundos), HL
                                    pop HL
                                    pop AF
                                    reti

```