



INSTITUTO POLITÉCNICO NACIONAL
ESCUELA SUPERIOR DE CÓMPUTO



INTRODUCCIÓN A LOS MICROCONTROLADORES

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“TECLADO ANALÓGICO”

GRUPO: 3CM10

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1 | DIAGRAMAS

2 | CÓDIGO

```
.include "m8535def.inc"
.def ADH = r16
.def d = r17
.def col = r18
.def aux2 = r19

rjmp main
.org $08
rjmp scroll
rjmp barre

.org $00E
rjmp conv

main:
    ldi d, low (RAMEND)
    out spl, d

    ldi d, high (RAMEND)
    out sph, d

    ldi d, $20

    out ADMUX, d
    ldi d, $ED
    out ADCSRA, d
    ser d
    out ddrb, d
    out ddrd, d
    sei
    out ddrc, d
    ser d
    out porta, d

    ldi d, $00;
    clr r20
    mov r5, d
    mov r4, d
    mov r3, d
    mov r2, d
    mov r1, d
    mov r0, d
```

```
ldi d,1
out TCCR0, d
ldi d,2
out TCCR1B, d
ldi d,5
out TIMSK, d
sei
clr zh
ldi z1,5
ldi col,$20
ldi r27, 0
clr r20
```

```
uno:
out portd, ADH
out portb, d
in r25, pind
```

```
si2:
out portc,col
ld d,z
out portb,d
rjmp uno
```

```
barre:
ldi aux2,1
out TCNT0,aux2
out portc,zh
lsr col
brcs dos
dec z1
```

```
reti
```

```
dos:
    ldi col,$20
    ldi zl, 5
    reti

scroll:

    cpi r25,$50;
    brbc 1,tr1S

    ldi r27,$0C
    rcall mover

    tr1S:
    cpi r25,$74;
    brbc 1,tr2S

    ldi r27,$B6
    rcall mover

    tr2S:
    cpi r25,$88;
    brbc 1,tr3S

    ldi r27,$9E
    rcall mover

    tr3S:
    cpi r25,$4E;
    brbc 1,tr4S

    ldi r27,$CC
    rcall mover
```

```
tr4S:  
cpi r25,$6E;  
brbc 1,tr5S
```

```
ldi r27,$DA  
rcall mover
```

```
tr5S:  
cpi r25,$80;  
brbc 1,tr6S
```

```
ldi r27,$FA  
rcall mover
```

```
tr6S:  
cpi r25,$4B;  
brbc 1,tr7S
```

```
ldi r27,$0E  
rcall mover
```

```
tr7S:  
cpi r25,$68;  
brbc 1,tr8S
```

```
ldi r27,$FE  
rcall mover
```

```
tr8S:  
cpi r25,$78;  
brbc 1,tr9S
```

```
ldi r27,$CE  
rcall mover
```

```
tr9S:  
cpi r25,$65;  
brbc 1,trAS
```

```
ldi r27,$7E  
rcall mover
```

```
trAS:  
cpi r25,$D2;  
brbc 1,trBS
```

```
ldi r27,$EE  
rcall mover
```

```
trBS:  
cpi r25,$C0;  
brbc 1,trCS
```

```
ldi r27,$F8  
rcall mover
```

```
trCS:  
cpi r25,$AE;  
brbc 1,trDS
```

```
ldi r27,$72  
rcall mover
```

```
trDS:  
cpi r25,$A4;  
brbc 1,trES
```

```
ldi r27,$BC  
rcall mover
```

```

trES:
cpi r25,$49;
brbc 1,trFS

ldi r27,$F2
rcall mover

trFS:
cpi r25,$73;
brbc 1,trOTOS

ldi r27,$E2
rcall mover

trOTOS:

reti

conv:
in ADH, ADCH
reti

mover:

mov r0, r1
mov r1, r2
mov r2, r3
mov r3, r4
mov r4, r5
mov r5, r27

ret

```


