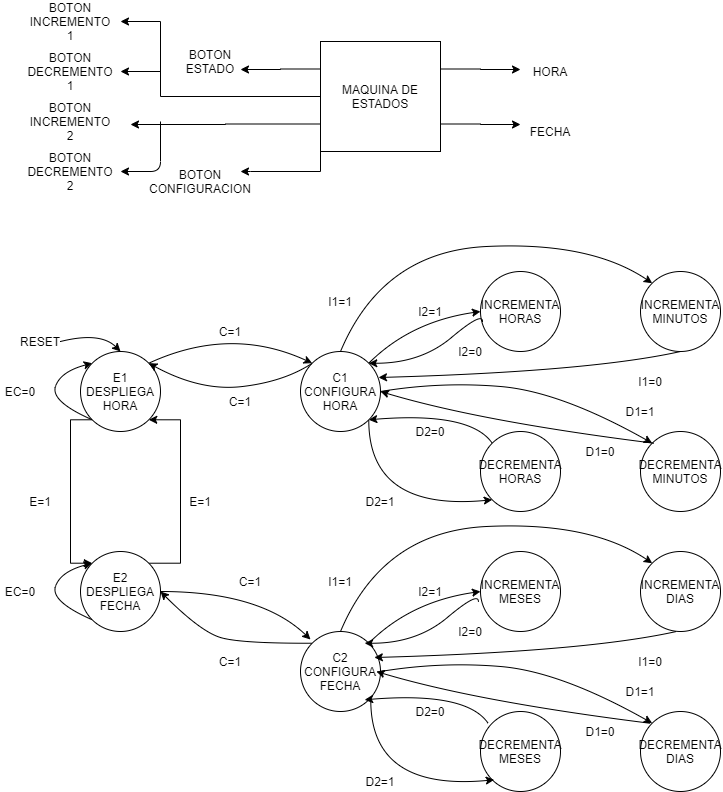
Máquina de estados finitos: Reloj programable



S0=DESPLIEGA HORA

S1=CONFIGURA HORA

S2=INCREMENTA MINUTOS

S3=INCREMENTA HORAS

S4=DECREMENTA MINUTOS

S5=DECREMENTA HORAS

S6=DESPLIEGA FECHA

S7=CONFIGURA FECHA

S8=INCREMENTA DIAS

S9=INCREMENTA MESES

S10=DECREMENTA DIAS

S11=DECREMENTA MESES

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ESTADO ACTUAL | E | C | I1 | I2 | D1 | D2 | SIGUIENTE ESTADO |
| S0 | 0 | 0 | X | X | X | X | S0 |
| S0 | 0 | 1 | X | X | X | X | S1 |
| S0 | 1 | 0 | X | X | X | X | S6 |
| S1 | X | 1 | 0 | 0 | 0 | 0 | S0 |
| S1 | X | 0 | 1 | 0 | 0 | 0 | S2 |
| S1 | X | 0 | 0 | 1 | 0 | 0 | S3 |
| S1 | X | 0 | 0 | 0 | 1 | 0 | S4 |
| S1 | X | 0 | 0 | 0 | 0 | 1 | S5 |
| S2 | X | X | 0 | X | X | X | S1 |
| S2 | X | X | 1 | X | X | X | S2 |
| S3 | X | X | X | 0 | X | X | S1 |
| S3 | X | X | X | 1 | X | X | S3 |
| S4 | X | X | 0 | X | 0 | X | S1 |
| S4 | X | X | 1 | X | 1 | X | S4 |
| S5 | X | X | 0 | X | X | 0 | S1 |
| S5 | X | X | 1 | X | X | 1 | S5 |
| S6 | 0 | 0 | X | X | X | X | S6 |
| S6 | 0 | 1 | X | X | X | X | S7 |
| S6 | 1 | 0 | X | X | X | X | S0 |
| S7 | X | 1 | 0 | 0 | 0 | 0 | S6 |
| S7 | X | 0 | 1 | 0 | 0 | 0 | S8 |
| S7 | X | 0 | 0 | 1 | 0 | 0 | S9 |
| S7 | X | 0 | 0 | 0 | 1 | 0 | S10 |
| S7 | X | 0 | 0 | 0 | 0 | 1 | S11 |
| S8 | X | X | 0 | X | X | X | S7 |
| S8 | X | X | 1 | X | X | X | S8 |
| S9 | X | X | X | 0 | X | X | S7 |
| S9 | X | X | X | 1 | X | X | S9 |
| S10 | X | X | 0 | X | 0 | X | S7 |
| S10 | X | X | 1 | X | 1 | X | S10 |
| S11 | X | X | 0 | X | X | 0 | S7 |
| S11 | X | X | 1 | X | X | 1 | S11 |

Bits de salida: EI1I2D1D2

E= ESTADO (0 hora, 1 fecha)

I1=INCREMENTO (0 no cambia, 1 incrementa)

I2=INCREMENTO (0 no cambia, 1 incrementa)

D1=DECREMENTO (0 no cambia, 1 incrementa)

D2=DECREMENTO (0 no cambia, 1 incrementa)

# DIAGRAMAS FACTORIZADOS

Diagrama de estados

Diagrama

Descripción generada automáticamente S0 = Reloj

S1 = Fecha

Diagrama de Salidas

Diagrama

Descripción generada automáticamente

S0 = Configuración

S1 = Incrementa 1

S2 = Incrementa 2

S3 = Decrementa 1

S4 = Decrementa 2

## Diagramas de estado

Tabla estados

|  |  |  |
| --- | --- | --- |
| ESTADO | E | FUTURO |
| S0 | 0 | S0 |
| S0 | 1 | S1 |
| S1 | 0 | S0 |
| S1 | 1 | S1 |

Tabla salidas

|  |  |
| --- | --- |
| ESTADO | SALIDA |
| S0 | 0 |
| S1 | 1 |

Tabla transición codificada

|  |  |  |
| --- | --- | --- |
| E | S0 | S0’ |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

Ecuación dada por Logic Friday

S00 = E’ S0 + E S0 ;

## Diagramas salida

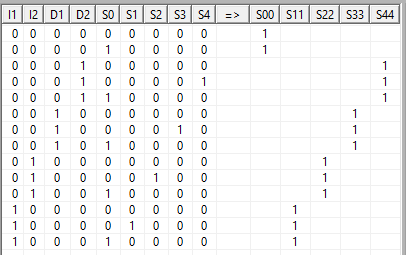
Tabla Estados

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ESTADO | I1 | I2 | D1 | D2 | FUTURO |
| S0 | 0 | 0 | 0 | 0 | S0 |
| S0 | 0 | 0 | 0 | 1 | S4 |
| S0 | 0 | 0 | 1 | 0 | S3 |
| S0 | 0 | 1 | 0 | 0 | S2 |
| S0 | 1 | 0 | 0 | 0 | S1 |
| S1 | 1 | X | X | X | S1 |
| S1 | 0 | X | X | X | S0 |
| S2 | X | 1 | X | X | S2 |
| S2 | X | 0 | X | X | S0 |
| S3 | X | X | 1 | X | S3 |
| S3 | X | X | 0 | X | S0 |
| S4 | X | X | X | 1 | S4 |
| S4 | X | X | X | 0 | S0 |

Tabla salidas

|  |  |
| --- | --- |
| ESTADO | SALIDA |
| S0 | A |
| S1 | B |
| S2 | C |
| S3 | E |
| S4 | I |

Tabla de transición codificada reducida en LF



Ecuaciones

S00 = I1' I2' D1' D2' S0' S1' S2' S3' S4' + I1' I2' D1' D2' S0 S1' S2' S3' S4';

S11 = I1 I2' D1' D2' S0' S1' S2' S3' S4' + I1 I2' D1' D2' S0' S1 S2' S3' S4' + I1 I2' D1' D2' S0 S1' S2' S3' S4';

S22 = I1' I2 D1' D2' S0' S1' S2' S3' S4' + I1' I2 D1' D2' S0' S1' S2 S3' S4' + I1' I2 D1' D2' S0 S1' S2' S3' S4';

S33 = I1' I2' D1 D2' S0' S1' S2' S3' S4' + I1' I2' D1 D2' S0' S1' S2' S3 S4' + I1' I2' D1 D2' S0 S1' S2' S3' S4';

S44 = I1' I2' D1' D2 S0' S1' S2' S3' S4' + I1' I2' D1' D2 S0' S1' S2' S3' S4 + I1' I2' D1' D2 S0 S1' S2' S3' S4';