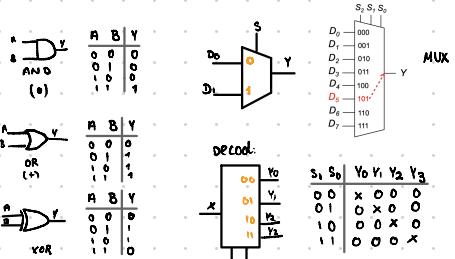




# Tema 3 : Procesador

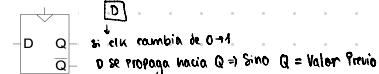
## Puertas Lógicas + lógica Combinacional



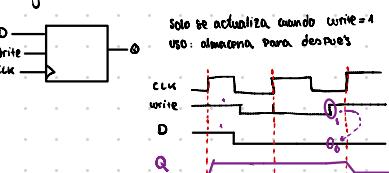
## Elementos Secuenciales

Registro: almacena datos en un circuito

Varios Flip-Flops



## Registro con control de escritura



## Circuitos Secuenciales

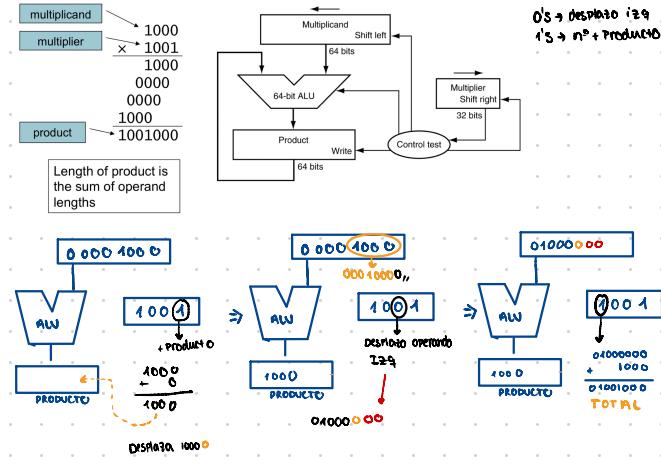
lógica Combinacional  $\rightarrow$  transforma datos  $\Rightarrow$  Ciclos 0



Ejemplo Registro ①

Moragan!!

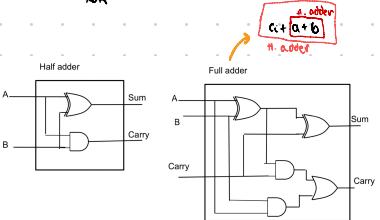
## Multiplicación en Ordenador



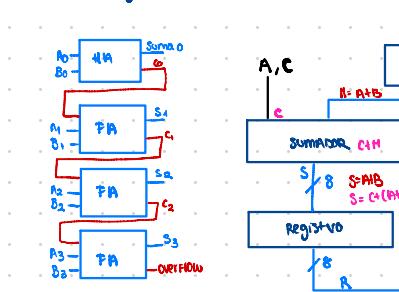
## Suma en Ordenadores

| A | B | A+B | acarreo |
|---|---|-----|---------|
| 0 | 0 | 0   | 0       |
| 0 | 1 | 1   | 0       |
| 1 | 0 | 1   | 0       |
| 1 | 1 | 0   | 1       |

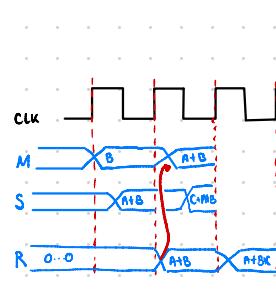
XOR AND



construir un sumador de 4 bits con HFA y FA

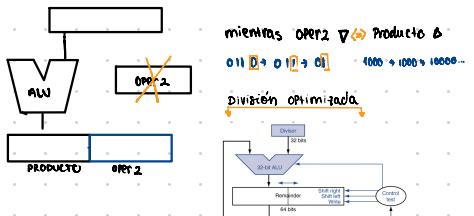


Si quiero sumar 3 números de 8 bits usando solamente un sumador, un registro de 8 bits y un multiplexor (selector), dibujar el diagrama de bloques y el diagrama de tiempo correspondiente

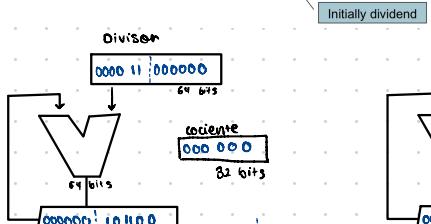
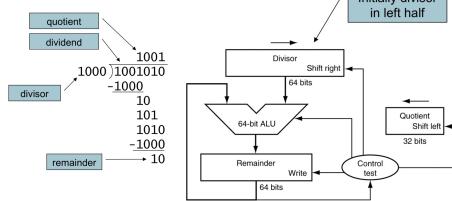


## Tema 3: Procesador

## Multiplicación optimizada



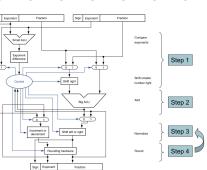
## División en el ordenador



$\frac{\text{Divisor}}{\text{Dividendo}}$  = cociente : +0

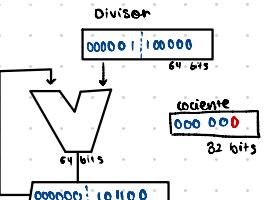
## Sumador de coma flotante

- Suele llevar varios ciclos ④
  - Estructura compleja
  - Suele ser → Pipeline (")

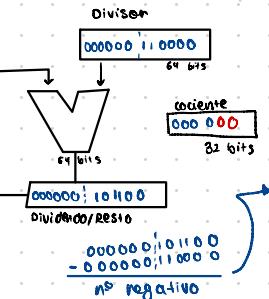


$$\begin{array}{r}
 \text{Dividendo} \\
 \underline{10\ 11\ 00} \\
 \underline{-\ 11} \\
 \underline{0\ 11\ 4} \\
 \end{array}
 \quad
 \begin{array}{r}
 \text{Divisor} \\
 \underline{11} \\
 \underline{0\ 11\ 4} \\
 \end{array}$$

102.11 =  
 101 > 11

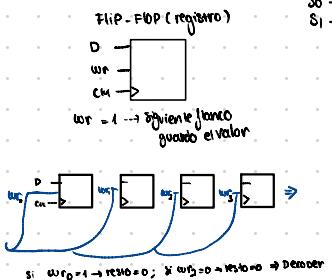


000001;0110  
- 000011;0000  
 número negativo !!  
 ↳ Dividir : 000001;100000  
 ↳ cociente : 000000



• n° negativo

## Memoria



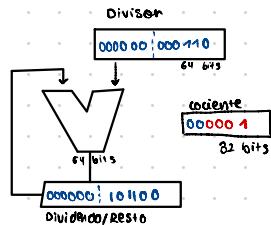
Memoria 4 x 2

bits de dirección = bits de la memoria RAM



Tamaño = 4 x 1  
↓      ↓  
nº regis.    registros

Si divisor no se puede desplazar  
s. 000011  $\Rightarrow$  Final!!



Divisor: → 1  
cociente: + 1  
Resto: 010100