

Circuitos Lógicos Digitais

Sistemas de Computação
Quinta Aula

Haroldo Gambini Santos
Universidade Federal de Ouro Preto - UFOP
3 de setembro de 2009

Haroldo Gambini SantosSistemas de Computação1/14

Notas

Seção

1 Circuitos Lógicos Digitais

Notas

Circuitos Lógicos Digitais

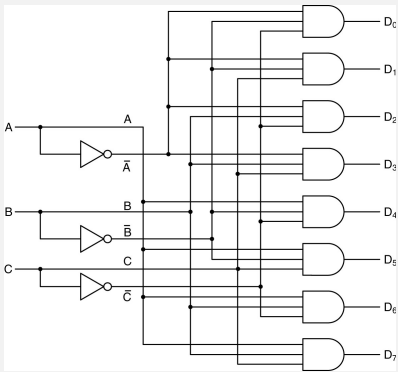
Multiplexador

A circuit diagram of an 8-to-1 multiplexer. It features 8 data inputs labeled D_0 through D_7 on the left. At the bottom, there are 3 select inputs labeled A , B , and C . Each select input has a corresponding inverted input labeled $\bar{A}$, $\bar{B}$, and $\bar{C}$. The circuit consists of 8 AND gates arranged in a column. Each AND gate takes one data input D_i and a specific combination of the select inputs and their complements as inputs. For example, the top AND gate takes D_0 , $\bar{A}$, $\bar{B}$, and $\bar{C}$. The outputs of all 8 AND gates are connected to a single 8-input OR gate on the right, which produces the final output F .

Haroldo Gambini SantosSistemas de Computação2/14

Notas

Decodificador



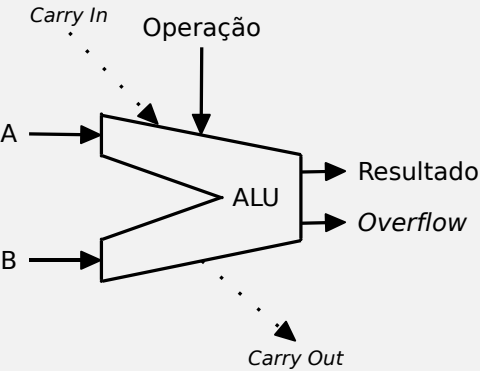
Notas

ULA: Unidade Lógica Aritmética

- Mesmo circuito efetua:
 - AND
 - OR
 - Soma de palavras

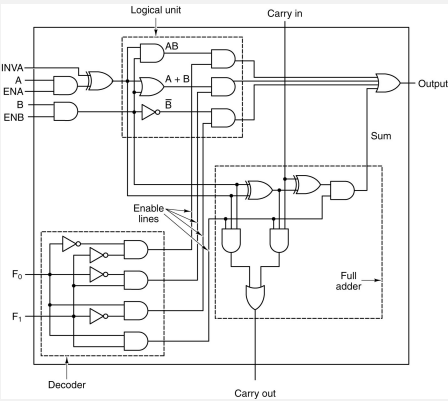
Notas

ULA - 1 bit



Notas

ULA - 1 bit



Notas

Relógios

Função: respeitar relações de **precedência** entre eventos.

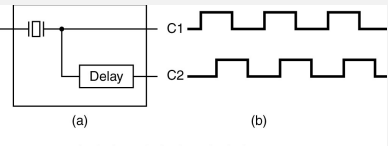
Tempo de ciclo: intervalo entre dois pulsos consecutivos

Muitos eventos possíveis em um ciclo

- Resolução adicional: atraso

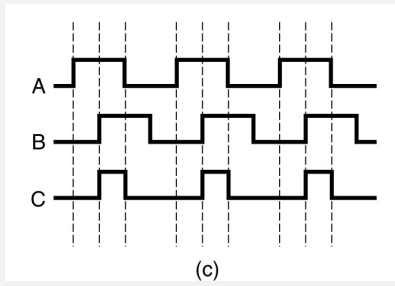
Notas

Relógios - Atraso



Notas

Relógios - Assimetria



Notas

Circuitos

- Combinacionais
- Sequenciais

Notas

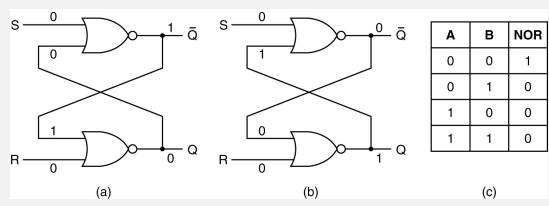
Circuitos

Circuitos Sequenciais

Saídas não dependem
somente
das entradas.

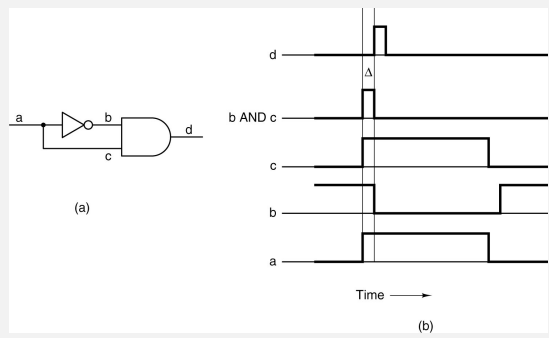
Notas

Latches



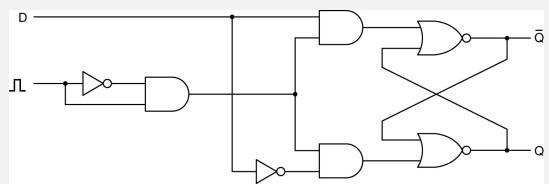
Notas

Flip-Flops



Notas

Flip-Flops



Notas
