Instituto Politécnico Nacional

Escuela Superior de Cómputo

Fundamentos de

Diseño Digital

Práctica no. 1:

Compuertas Lógicas

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Grupo: 2 CM2

# Desarrollo

1.- Determine las tablas de verdad de las siguientes compuertas y llene las columnas con los valores correspondientes con los voltajes de salida que mide el multímetro.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compuerta AND, C. I. 74LS08** | | | | |
| # | A | B | F | F (Volts) |
|  |  |  |  |  |
|  |  |  |  |  |
| 0 | 0 | 0 | 0 |  |
|  |  |  |  |
|  |  |  |  |
| 1 | 0 | 1 | 0 |
|  |  |  |  |
|  |  |  |  |
| 2 | 1 | 0 | 0 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 3 | 1 | 1 | 1 |  |

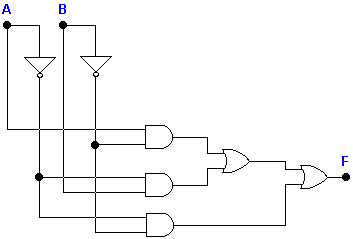
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compuerta OR C. I. 74LS32** | | | | |
| # | A | B | F | F (Volts) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 0 | 0 | 0 | 0 |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 1 | 0 | 1 | 1 |
|  |  |  |  |
|  |  |  |  |
| 2 | 1 | 0 | 1 |
|  |  |  |  |
|  |  |  |  |
| 3 | 1 | 1 | 1 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compuerta NAND C. I. 74LS00** | | | | |
| # | A | B | F | F (Volts) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 0 | 0 | 0 | 1 |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 1 | 0 | 1 | 1 |
|  |  |  |  |
|  |  |  |  |
| 2 | 1 | 0 | 1 |
|  |  |  |  |
|  |  |  |  |
| 3 | 1 | 1 | 0 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compuerta XOR C. I. 74LS86** | | | | |
| # | A | B | F | F (Volts) |
|  |  |  |  |  |
|  |  |  |  |  |
| 0 | 0 | 0 | 0 |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 1 | 0 | 1 | 1 |
|  |  |  |  |
|  |  |  |  |
| 2 | 1 | 0 | 1 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 3 | 1 | 1 | 0 |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compuerta NOR C. I. 74LS02**  **(verifique la asignación de pines ésta compuerta)** | | | | |
| # | A | B | F | F (Volts) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 0 | 0 | 0 | 1 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 1 | 0 | 1 | 0 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 2 | 1 | 0 | 0 |
|  |  |  |  |
| 3 | 1 | 1 | 0 |  |

2.- Arme el circuito mostrado a continuación, verifique sus valores digitales de salida y posteriormente mida el voltaje a la salida con el multímetro.



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | A | B | F | F (Volts) | |
| 0 | 0 | 0 | 1 | |  |
| 1 | 0 | 1 | 1 | |  |
| 2 | 1 | 0 | 1 | |  |
| 3 | 1 | 1 | 0 |  | |

¿Con los resultados obtenidos de la tabla anterior qué puede concluir con el comportamiento del circuito?

El circuito se comporta como una compuerta NAND, por lo que se puede concluir que algunas compuertas se cancelan mientras que otras se combinan.

# Circuito armado

