

Os esquemáticos e suas descrições podem ser encontrados em <https://github.com/nicolas-dalcorso/nrdclib>

Este repositório servirá de biblioteca para armazenamento de todos os circuitos desenvolvidos na disciplina, bem como construções futuras.

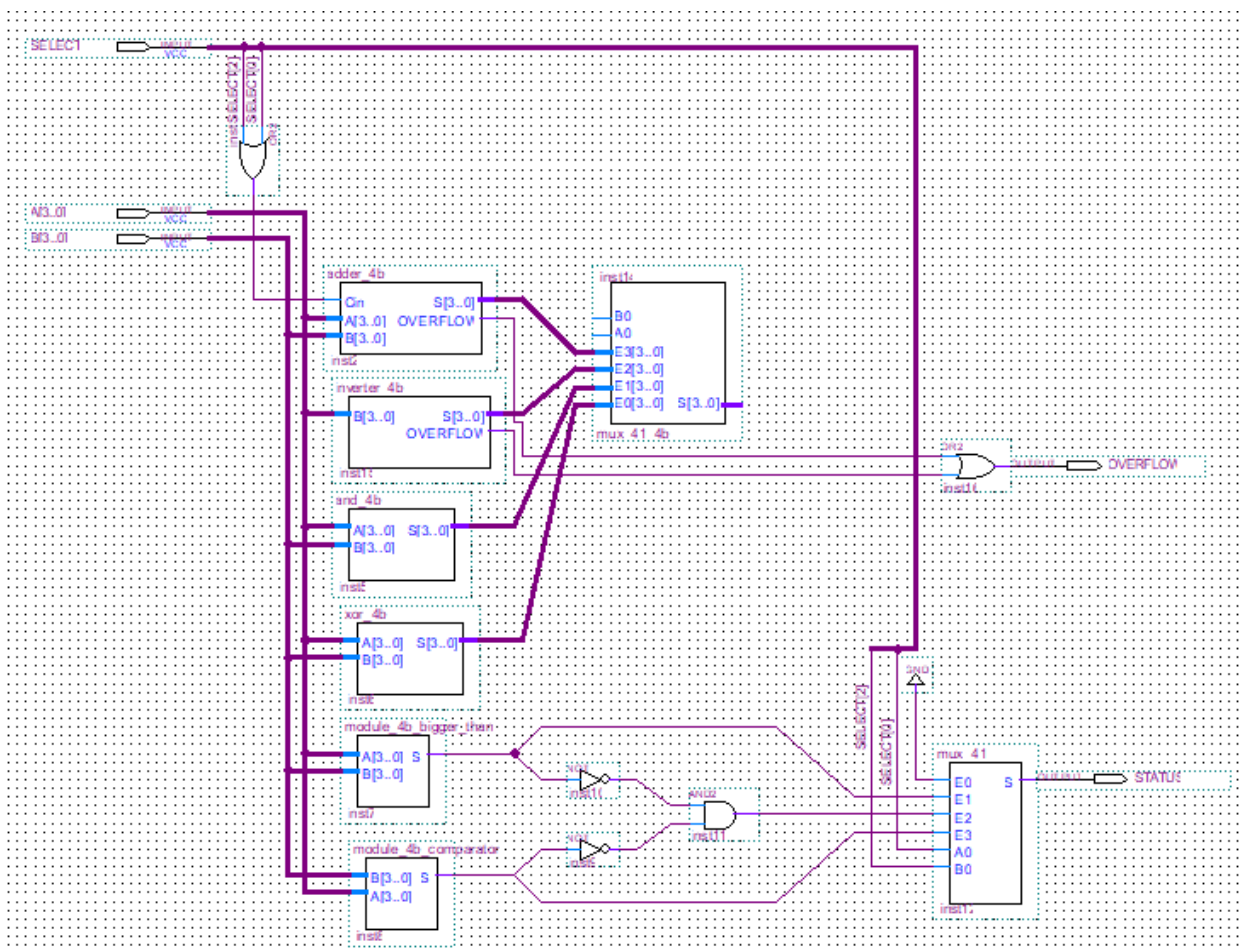
Unidade Lógica e Aritmética

A **Unidade Lógica e Aritmética** (ULA), também conhecida como ALU (*Arithmetic Logic Unit*), é um componente fundamental da CPU (*Central Processing Unit*), ou do processador, em um computador. Ela é responsável por executar operações aritméticas (como soma, subtração, multiplicação e divisão) e operações lógicas (como AND, OR, NOT, XOR) sobre os dados.

Abaixo, a implementação atual (incompleta) da ULA. Os blocos modulares têm seus esquemáticos descritos nos próximos itens deste trabalho.

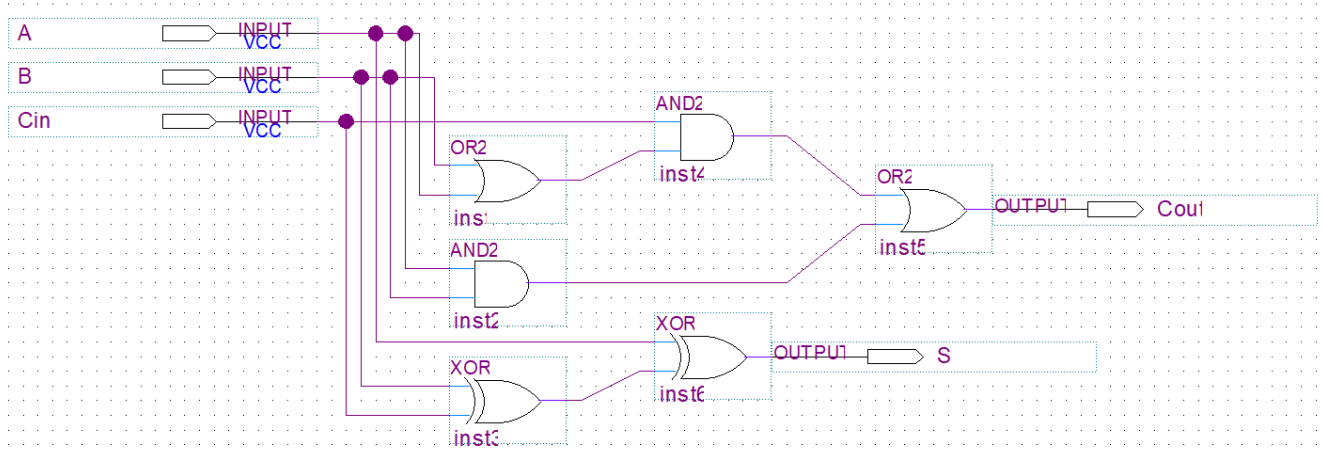
Variáveis booleanas de entrada

- SELECT[2..0]
 - Vetor de três elementos utilizado para selecionar as operações na ULA
- A[3..0]
- B[3..0]
 - Vetores de quatro elementos sobre os quais é possível realizar as operações lógicas e aritméticas.

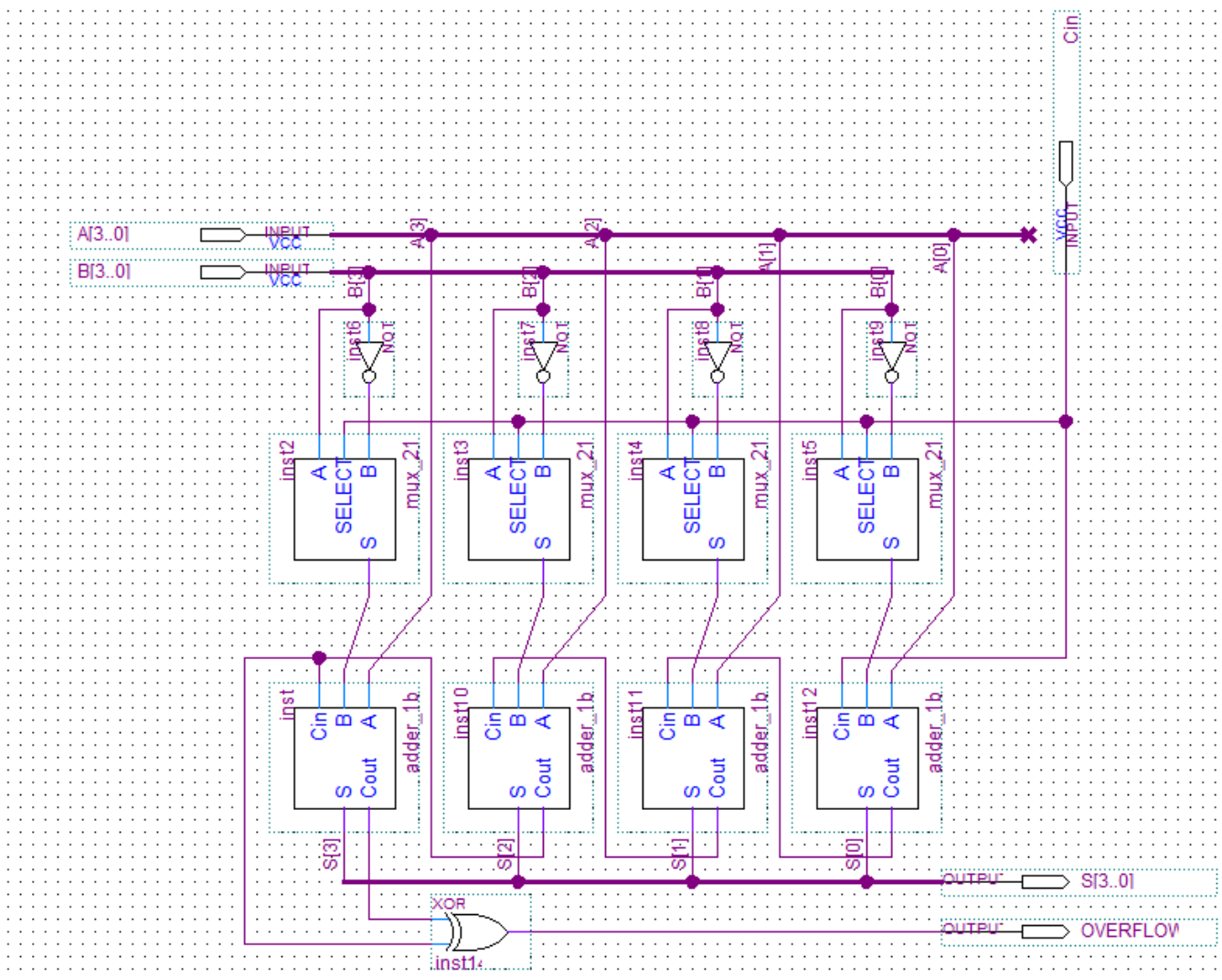


Somadores

Somador de 1 bit

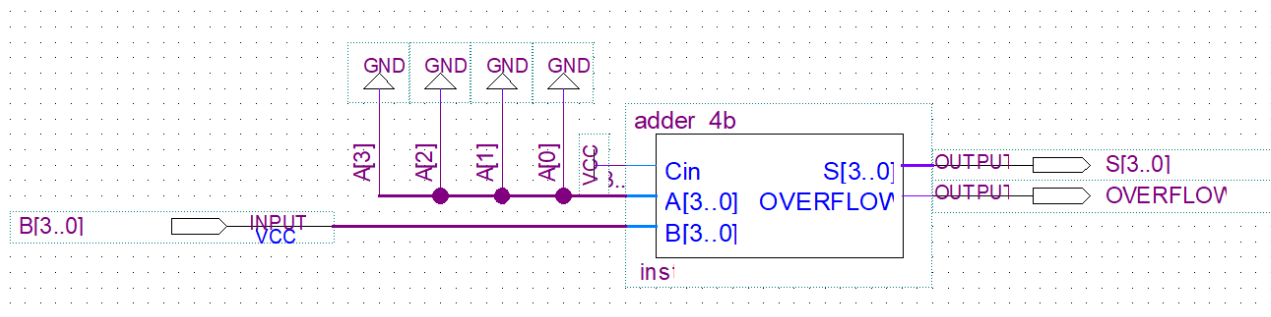


Somador de 4 bits



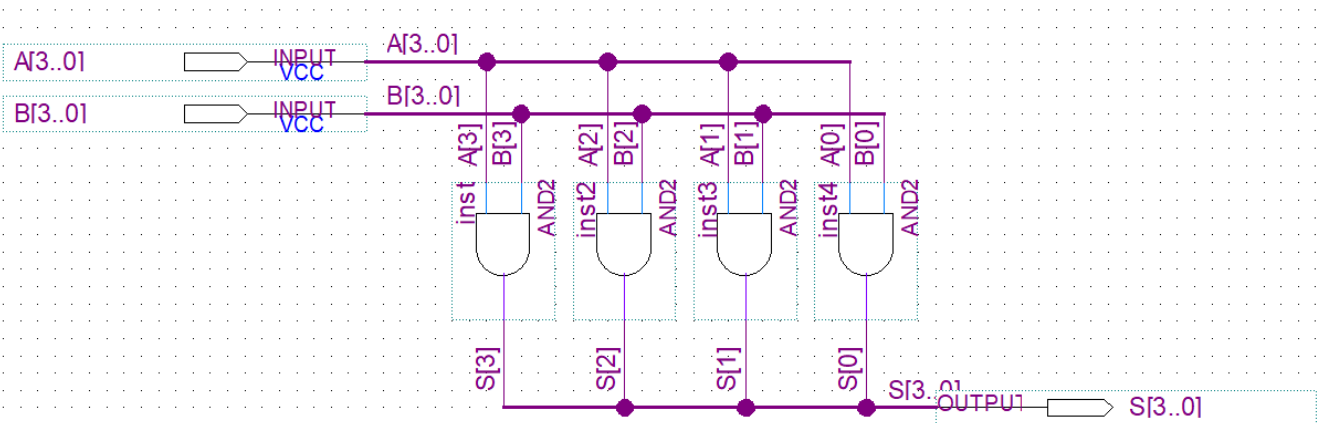
Inversores

Inversor de 4 bits

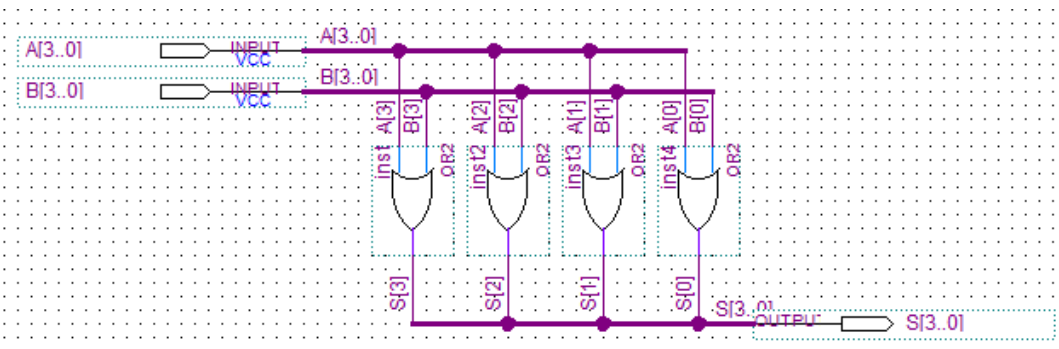


Operações Lógicas

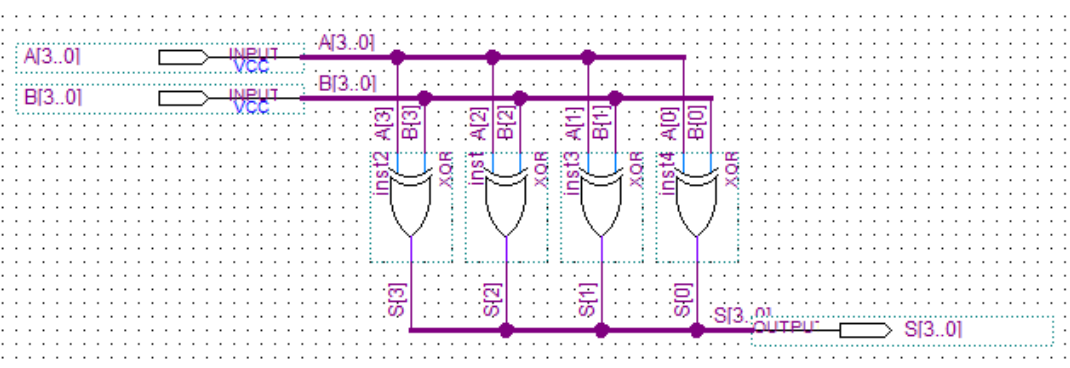
AND de 4 bits



OR de 4 bits

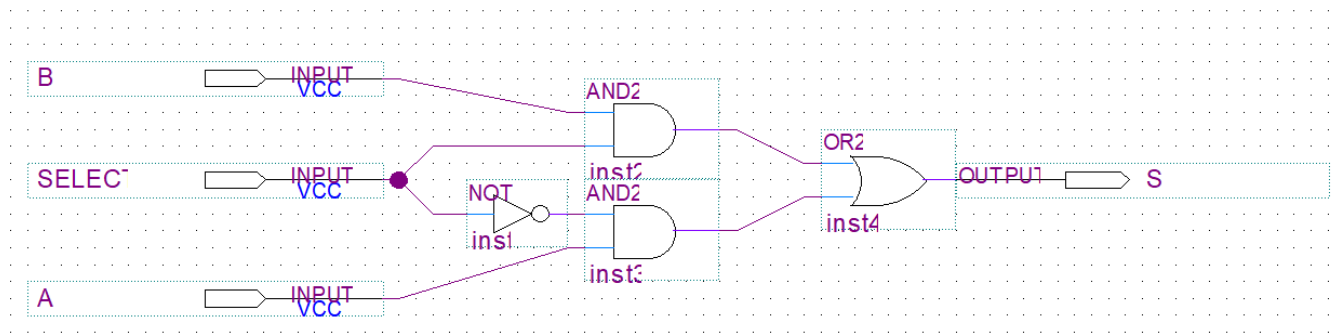


XOR de 4 bits

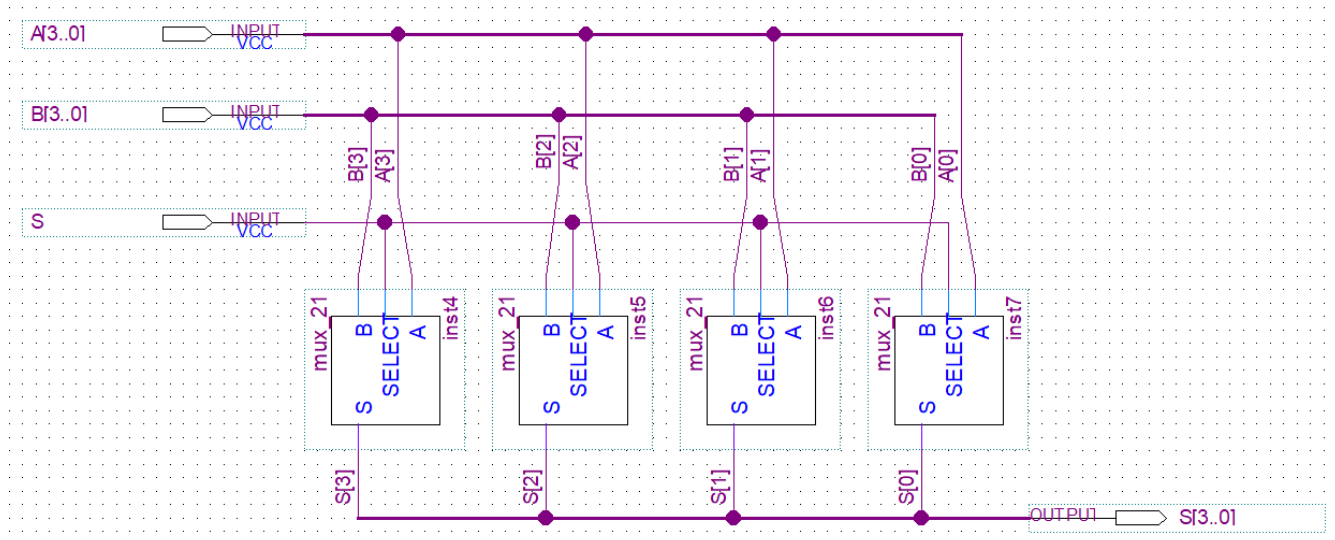


Multiplexadores

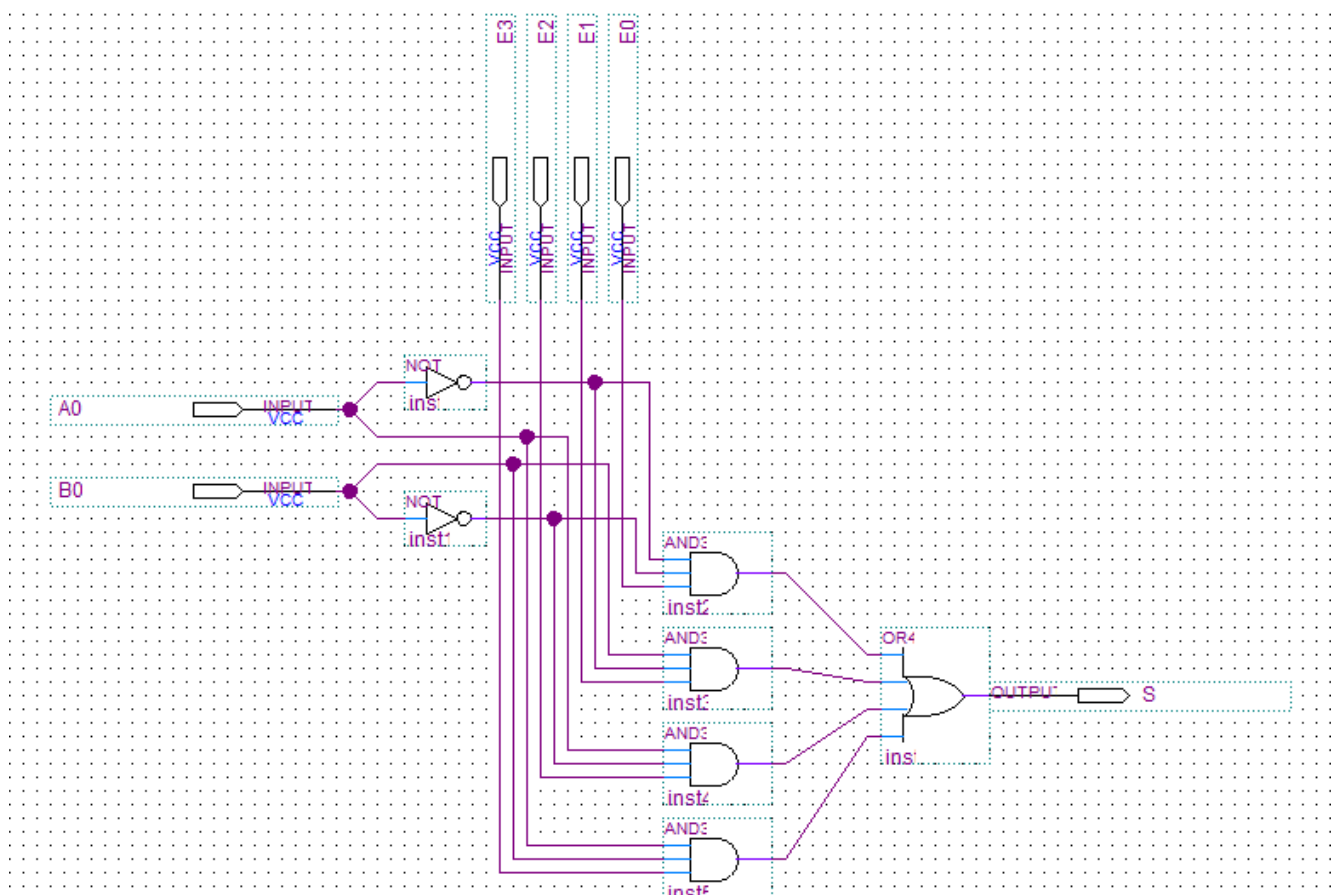
Multiplexador 2:1



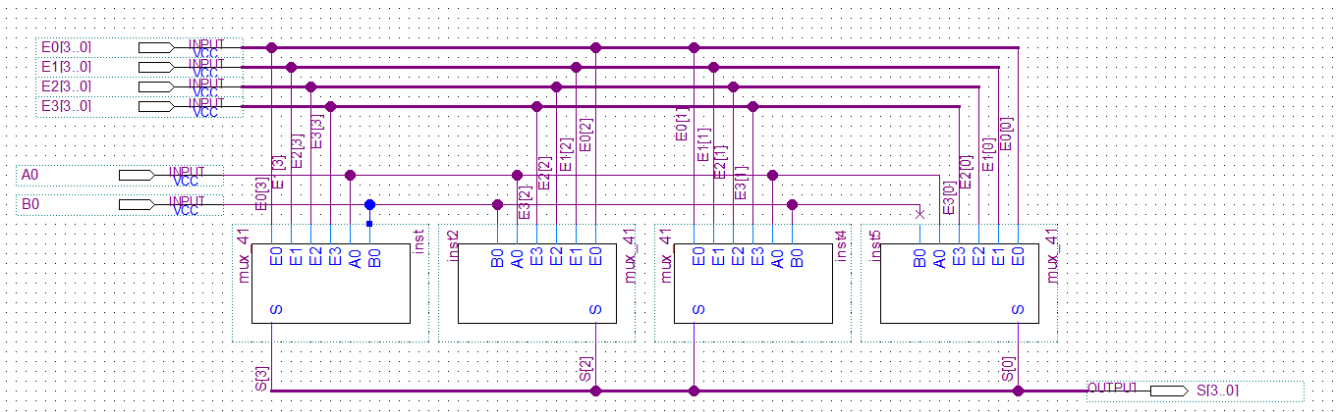
Multiplexador 2:1 de 4 bits



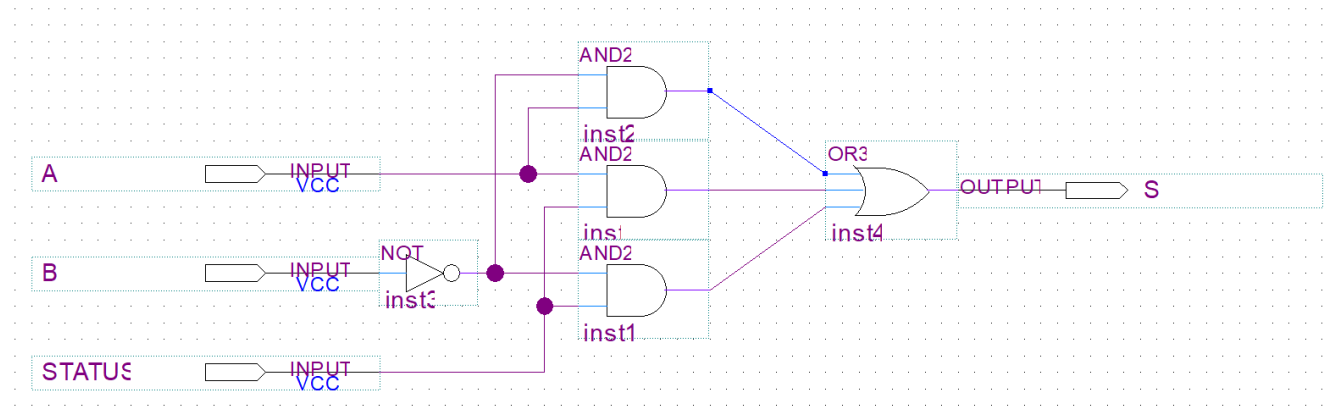
Multiplexador 4:1 de 1 bit



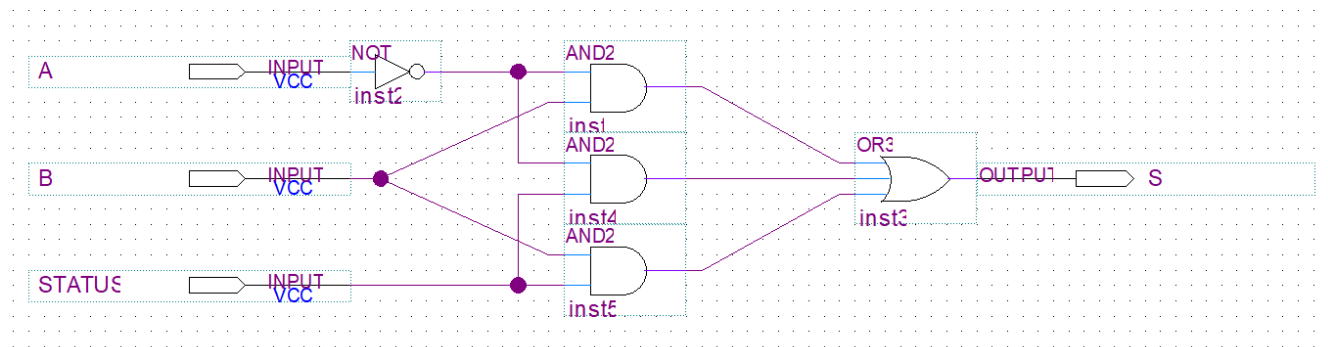
Multiplexador 4:1 de 4 bits



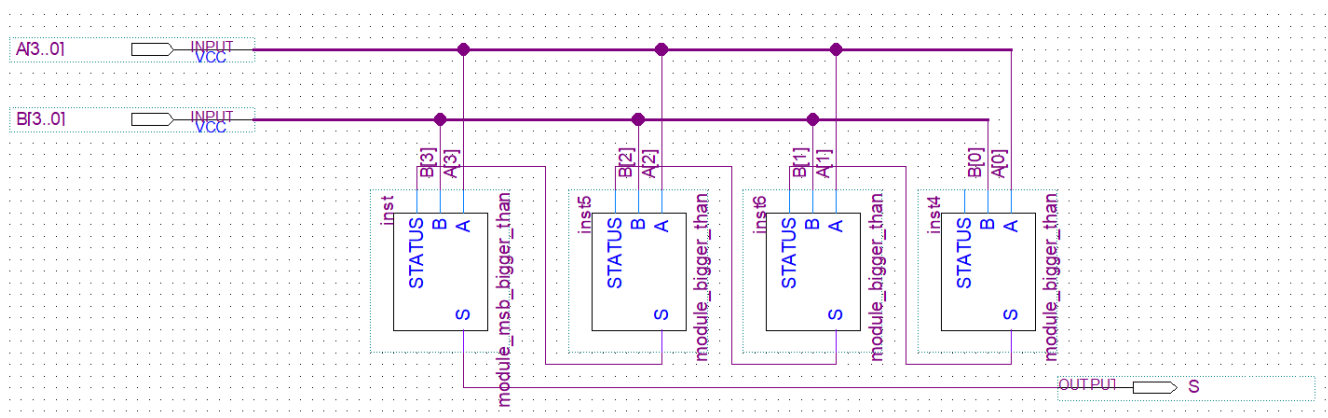
Módulo *LSB_MaiorQue*



Módulo *MSB_MaiorQue*

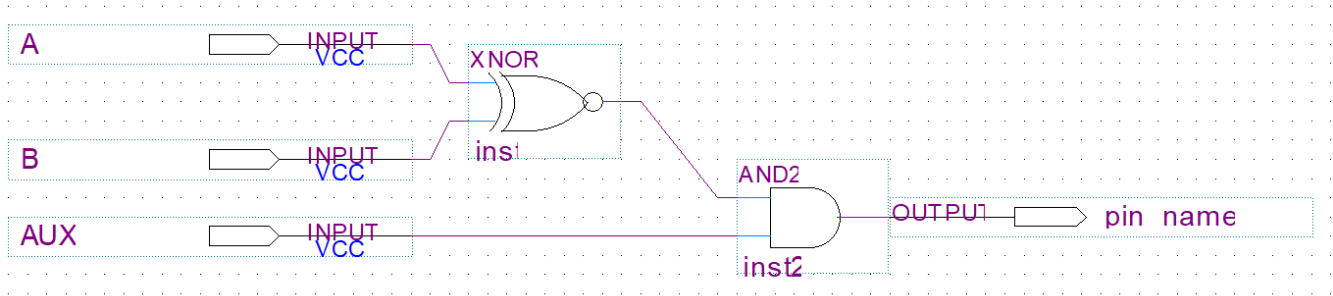


Módulo *4b_MaiorQue*

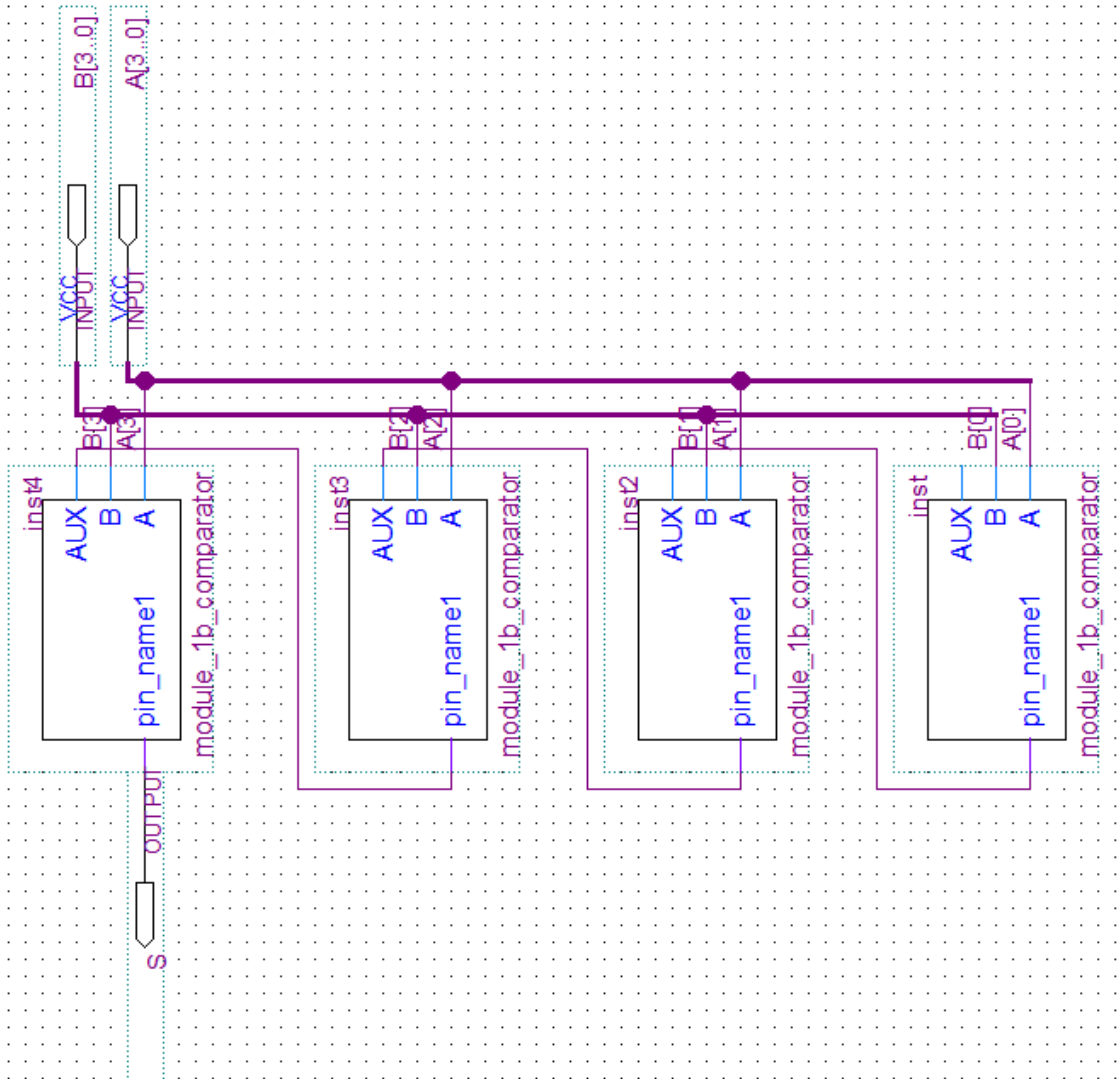


Comparadores

Módulo 1b_Igual

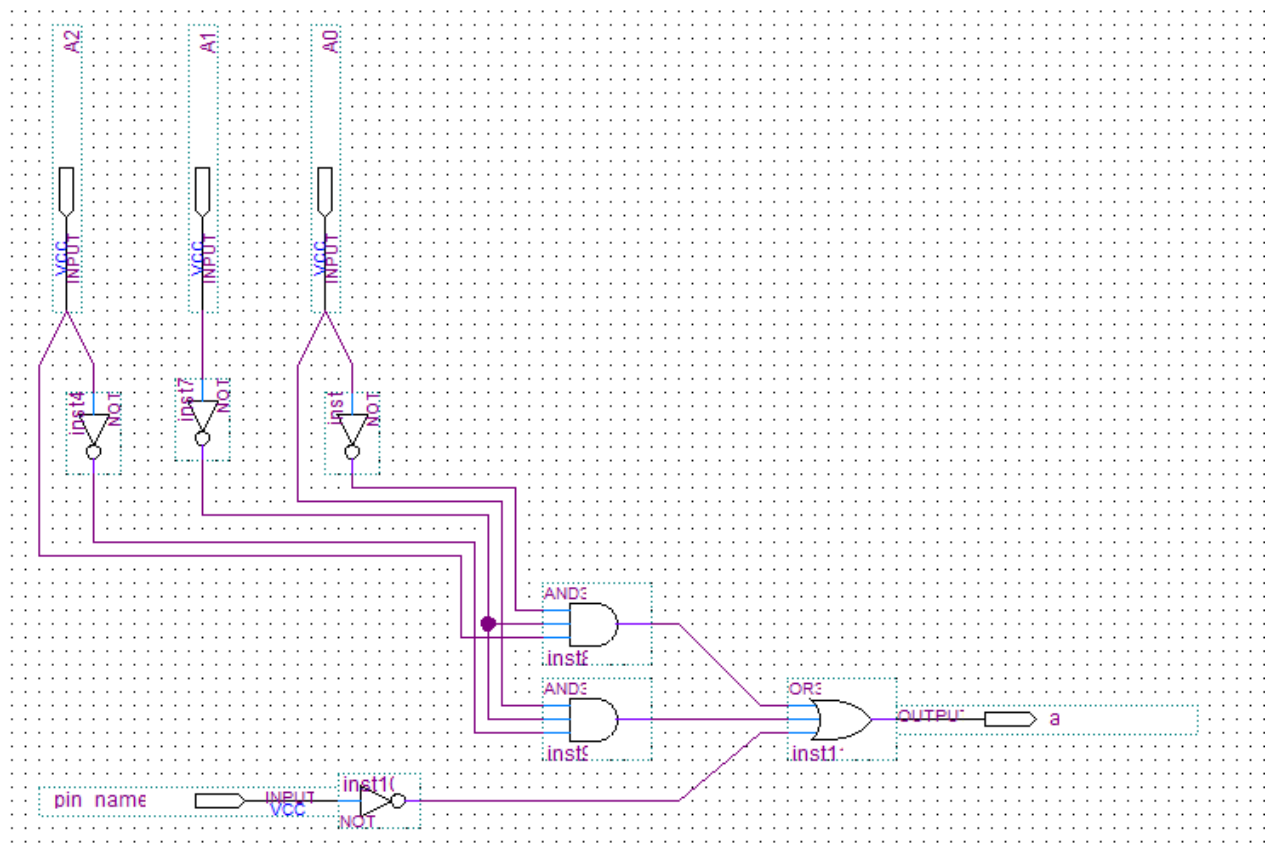


Módulo 4b_Igual

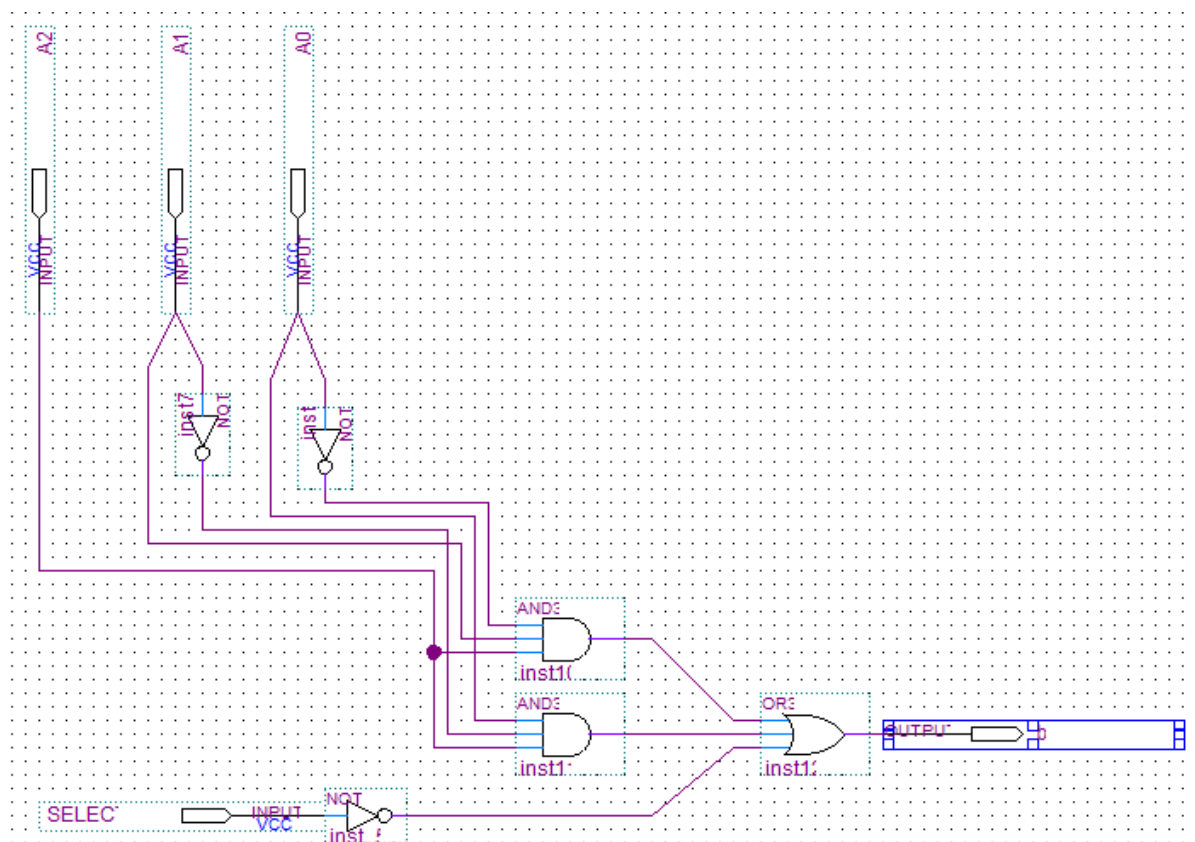


Display de 7 Segmentos

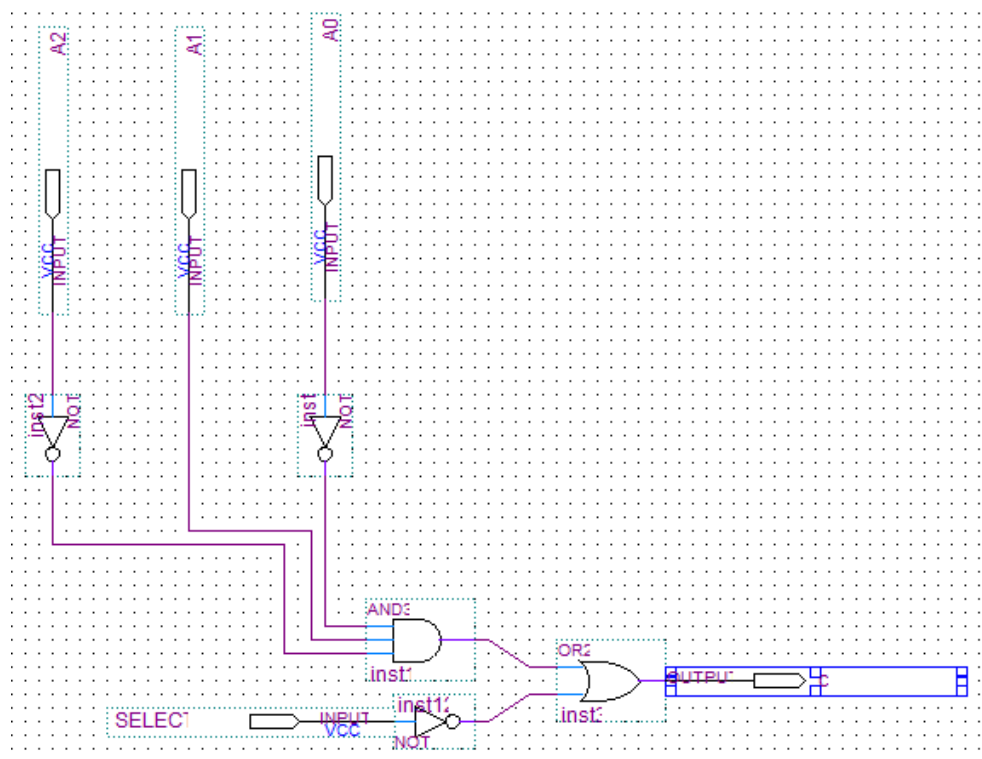
Segmento A



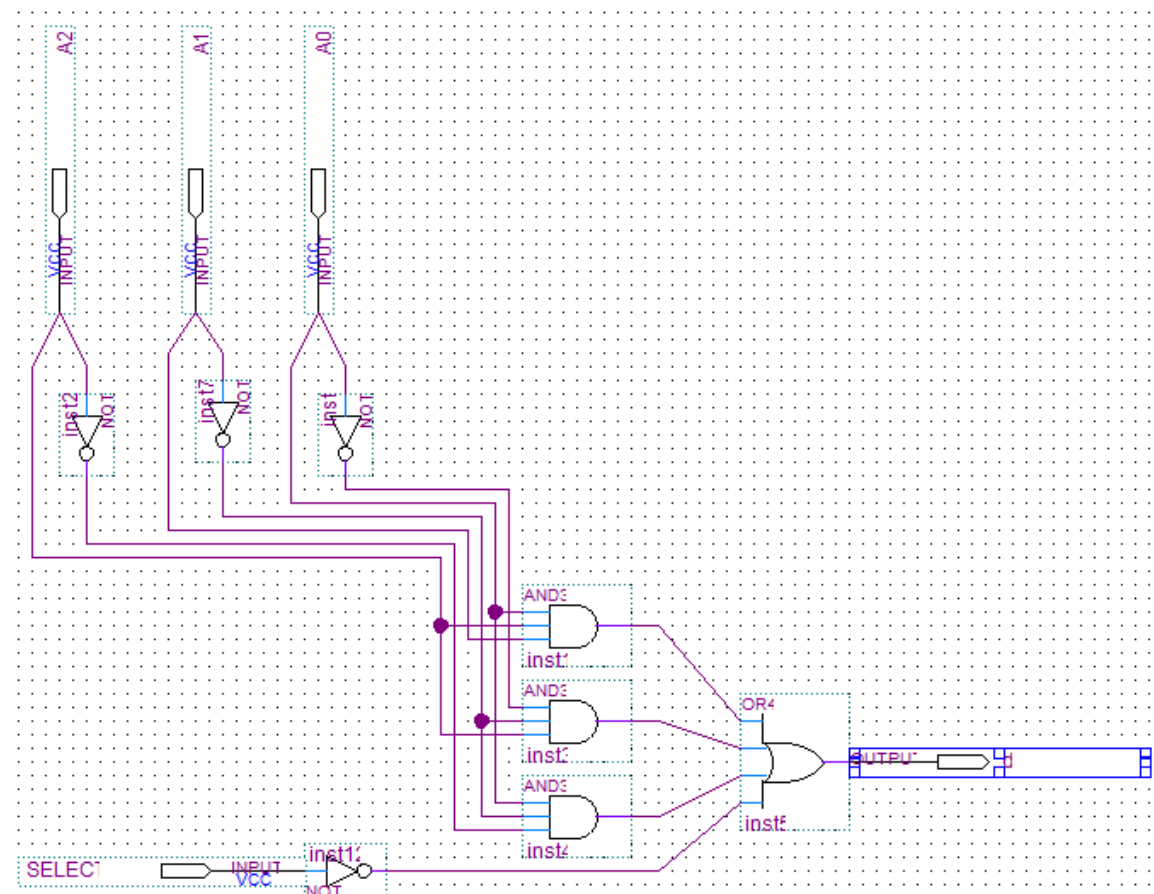
Segmento B



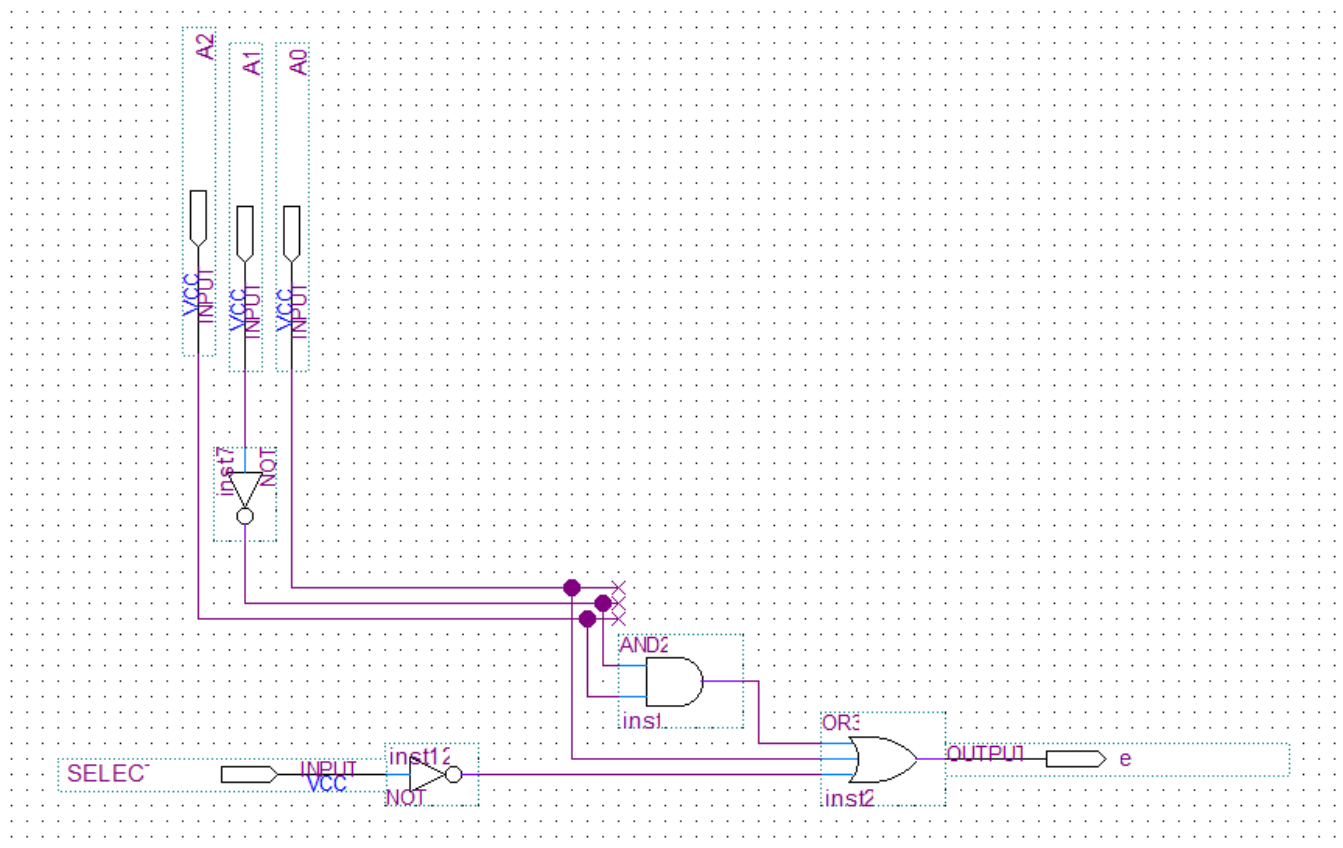
Segmento C



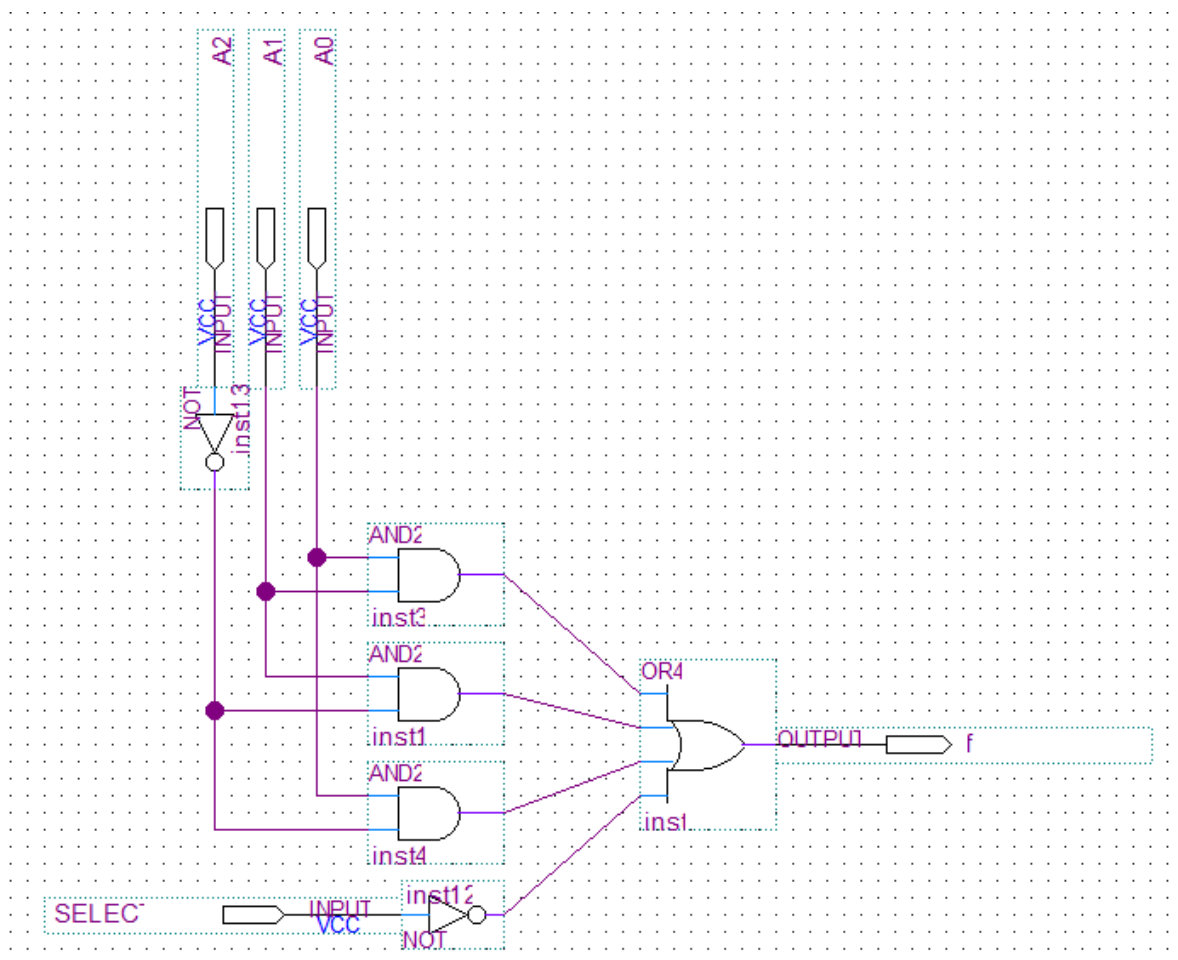
Segmento D



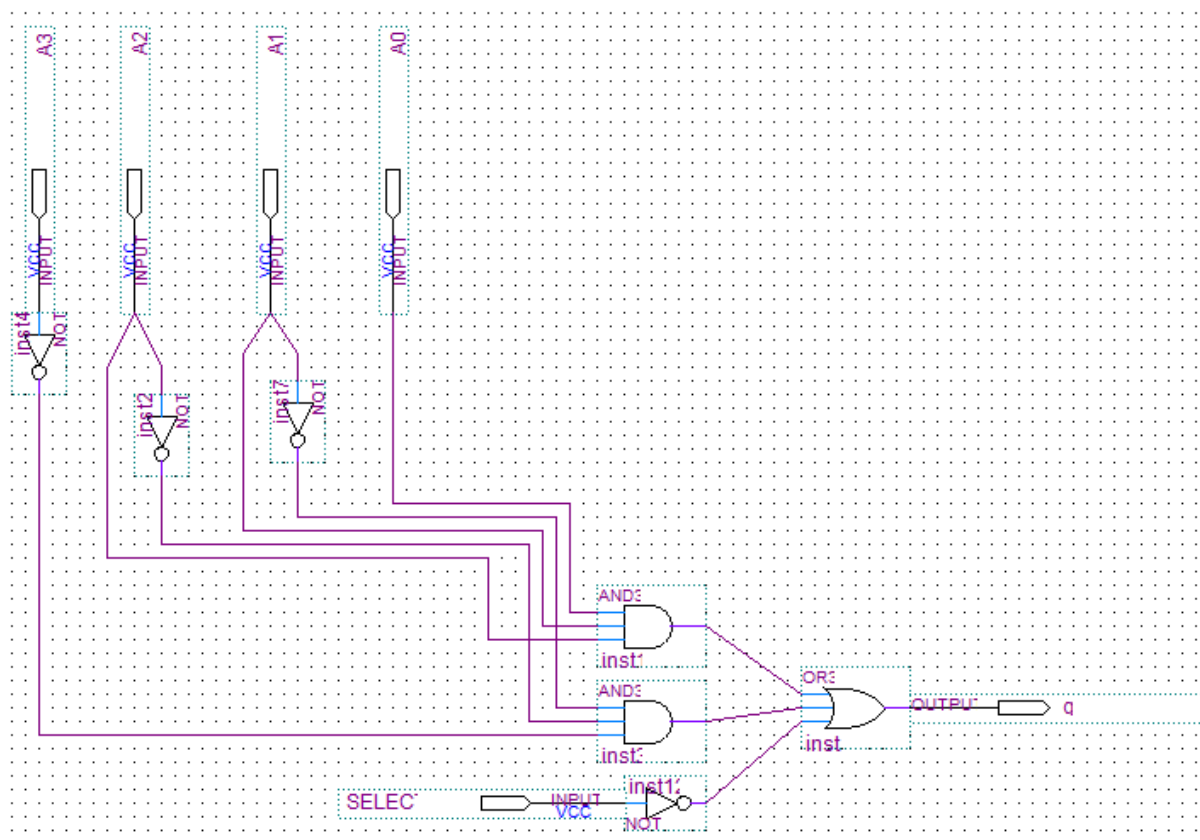
Segmento E



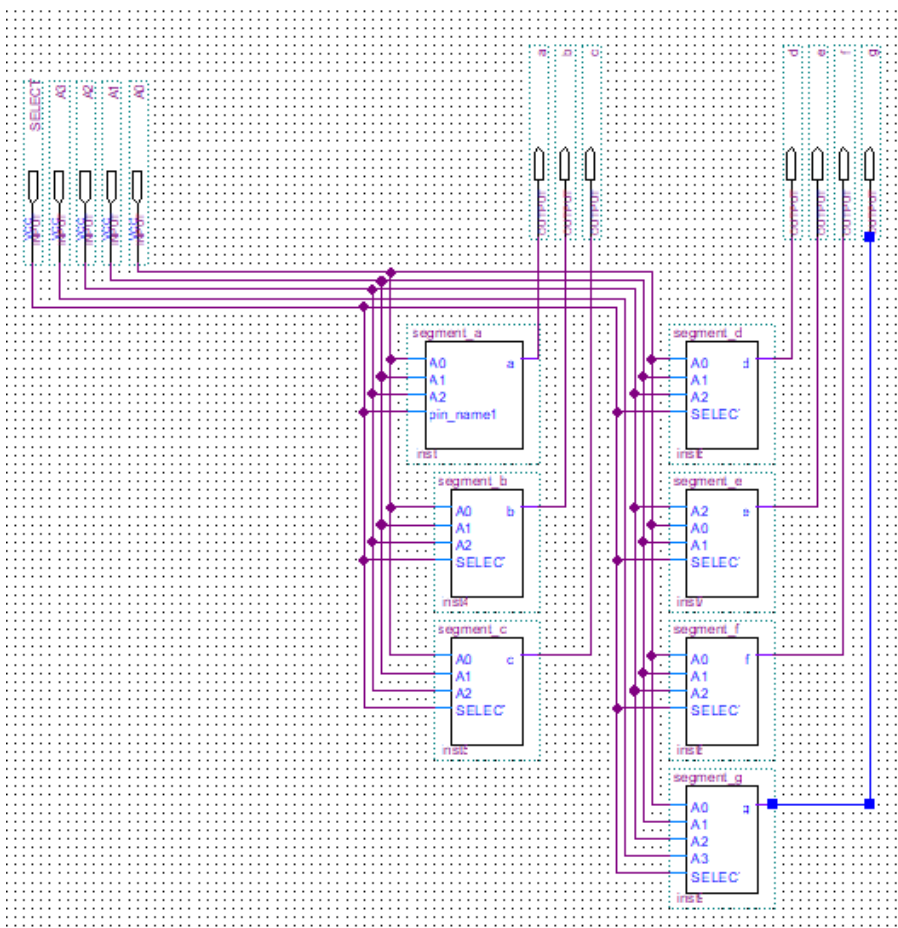
Segmento F



Segmento G

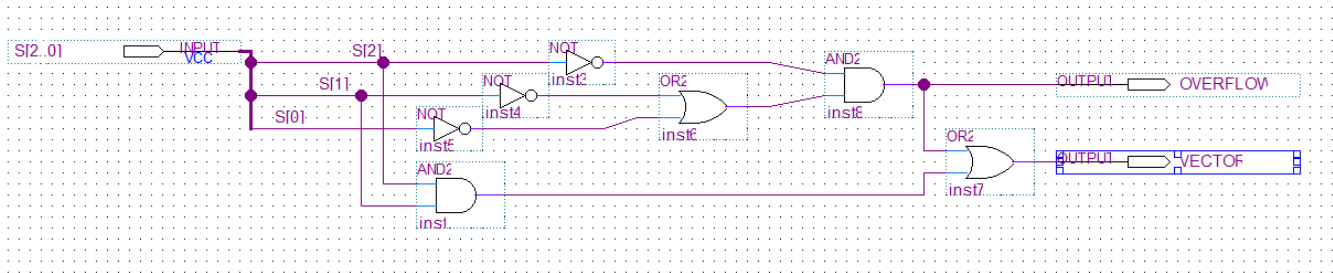


Decodificador para o Display de 7 Segmentos

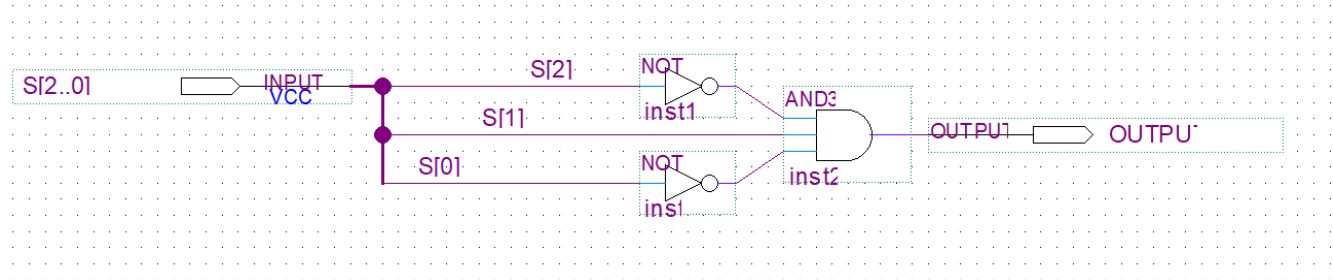


Seletores

Seletor Especial



Seletor de Overflow de Operação



Seletor de Operação Vetorial

