

Jenny Vaccaro

CompArch HW2 Writup:

Behavioral Decoder

En A0 A1 | O0 O1 O2 O3 | Expected Output

0 0 0 | 0 0 0 0 | All false

0 1 0 | 0 0 0 0 | All false

0 0 1 | 0 0 0 0 | All false

0 1 1 | 0 0 0 0 | All false

1 0 0 | 1 0 0 0 | O0 Only

1 1 0 | 0 1 0 0 | O1 Only

1 0 1 | 0 0 1 0 | O2 Only

1 1 1 | 0 0 0 1 | O3 Only

Structural Decoder

En A0 A1 | O0 O1 O2 O3 | Expected Output

0 0 0 | 0 0 0 0 | All false

0 1 0 | 0 0 0 0 | All false

0 0 1 | 0 0 0 0 | All false

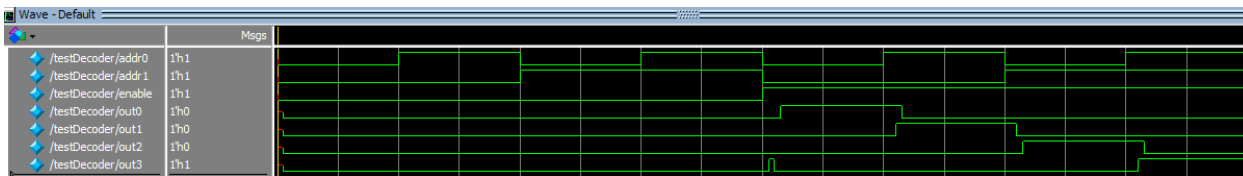
0 1 1 | 0 0 0 0 | All false

1 0 0 | 1 0 0 0 | O0 Only

1 1 0 | 0 1 0 0 | O1 Only

1 0 1 | 0 0 1 0 | O2 Only

1 1 1 | 0 0 0 1 | O3 Only



Behavioral Multiplexer

A0 A1 | in0 in1 in2 in3 | Out | Expected Output

0 0 | 0 0 0 0 | 0 | False

0 0 | 1 0 0 0 | 1 | True

0 0 | 1 1 1 1 | 1 | True

1 0 | 0 0 0 0 | 0 | False

1 0 | 0 1 0 0 | 1 | True

1 0 | 1 1 1 1 | 1 | True

0 1 | 0 0 0 0 | 0 | False

0 1 | 0 0 1 0 | 1 | True

0 1 | 1 1 1 1 | 1 | True

1 1 | 0 0 0 0 | 0 | False

1 1 | 0 0 0 1 | 1 | True

1 1 | 1 1 1 1 | 1 | True

Structural Multiplexer

A0 A1 | in0 in1 in2 in3 || Out | Expected Output

0 0 | 0 0 0 0 || 0 | False

0 0 | 1 0 0 0 || 1 | True

0 0 | 1 1 1 1 || 1 | True

1 0 | 0 0 0 0 || 0 | False

1 0 | 0 1 0 0 || 1 | True

1 0 | 1 1 1 1 || 1 | True

0 1 | 0 0 0 0 || 0 | False

0 1 | 0 0 1 0 || 1 | True

0 1 | 1 1 1 1 || 1 | True

1 1 | 0 0 0 0 || 0 | False

1 1 | 0 0 0 1 || 1 | True

1 1 | 1 1 1 1 || 1 | True

Behavioral FullAdder

A B CarryIn || Sum CarryOut | Expected Output

0 0 0 || 0 0 | All false

0 0 1 || 1 0 | Sum only

0 1 0 || 1 0 | Sum only

0 1 1 || 0 1 | Carryout only

1 0 0 || 1 0 | Sum only

1 0 1 || 0 1 | CarryOut only

1 1 0 || 0 1 | CarryOut only

1 1 1 || 1 1 | All true

Structural FullAdder

A B CarryIn || Sum CarryOut | Expected Output

0 0 0 || 0 0 | All false

0 0 1 || 1 0 | Sum only

0 1 0 || 1 0 | Sum only

0 1 1 || 0 1 | Carryout only

1 0 0 || 1 0 | Sum only

1 0 1 || 0 1 | CarryOut only

1 1 0 || 0 1 | CarryOut only

1 1 1 || 1 1 | All true