CompArch: HW b010 - No Frills PDF
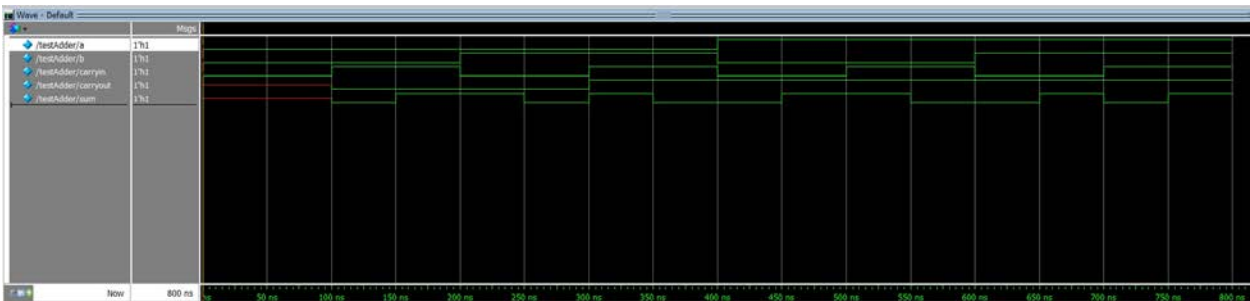
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Test Bench of Structural Adder:

```
#   a   b   carryin  |  carryout    sum  |  Expected CarryOut  |  Expected Sum
#   0   0     0      |     0         0   |        False        |       False
#   0   0     1      |     0         1   |        False        |       True
#   0   1     0      |     1         1   |        False        |       True
#   0   1     1      |     1         0   |        True         |       False
#   1   0     0      |     1         1   |        False        |       True
#   1   0     1      |     1         0   |        True         |       False
#   1   1     0      |     1         0   |        True         |       False
#   1   1     1      |     1         1   |        True         |       True
```
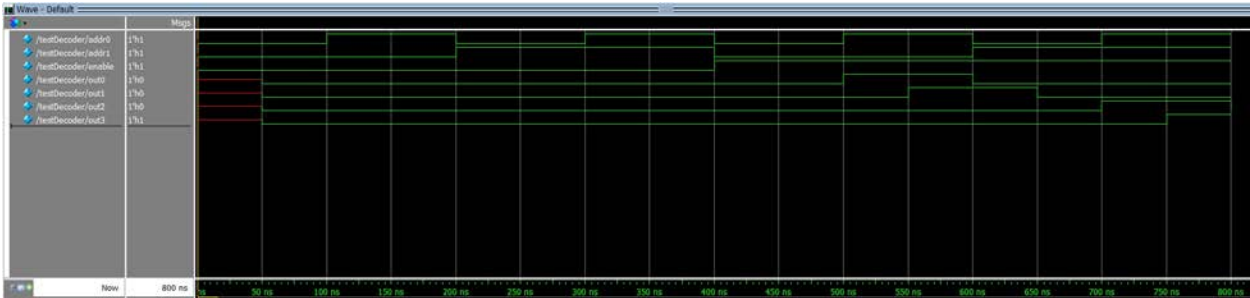
Waveform of Structural Adder:

Test Bench of 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
```

Waveform of Structural Decoder:

Test Bench of Structural Multiplexer:

```
# A1 A0 | in0 in1 in2 in3 | out | Expected Output
#  0  0 |  0   0   0   0  |  0  | False
#  0  0 |  1   0   0   0  |  1  | True
#  0  1 |  0   0   0   0  |  0  | False
#  0  1 |  0   1   0   0  |  1  | True
#  1  0 |  0   0   0   0  |  0  | False
#  1  0 |  0   0   1   0  |  1  | True
#  1  1 |  0   0   0   0  |  0  | False
#  1  1 |  0   0   0   1  |  1  | True
```

Waveform of Structural Multiplexer: