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COMP 4300

# Lab 2 Transcript (Screenshots)

I.  Unsigned Add
   A. Without Overflow

      1.
      

   **B. With Overflow**

      1.
      

II.  Unsigned Sub
   A. Without Overflow

      1.
      

   **B. With Overflow (5-7 = -2)**

      1.
      

   C.

III.  Add
   A. Without Overflow

      1.
      

   **B. With Overflow (0h7FFFFFFF + 0h01 = -2 million something in bin)**

| /alu/prop_delay | -No Data- | 15 ns | |
| --- | --- | --- | --- |
| /alu/operand1 | -No Data- | 0000007F | 7FFFFFFF |
| /alu/operand2 | -No Data- | 00000001 | |
| /alu/operation | -No Data- | 0010 | |
| /alu/result | -No Data- | 00000080 | 80000000 |
| /alu/error | -No Data- | 0000 | 0001 |

1.

IV.   Sub

| /alu/prop_delay | -No Data- | 15 ns |
| --- | --- | --- |
| /alu/operand1 | -No Data- | 0000000C |
| /alu/operand2 | -No Data- | 00000003 |
| /alu/operation | -No Data- | 0011 |
| /alu/result | -No Data- | 00000009 |
| /alu/error | -No Data- | 0000 |

A.

V.   Multiply

| /alu/prop_delay | -No Data- | 15 ns |
| --- | --- | --- |
| /alu/operand1 | -No Data- | 00000005 |
| /alu/operand2 | -No Data- | 00000003 |
| /alu/operation | -No Data- | 0100 |
| /alu/result | -No Data- | 0000000F |
| /alu/error | -No Data- | 0000 |

A.

VI.   Divide

A.   Without Div by Zero

| /alu/prop_delay | -No Data- | 15 ns |
| --- | --- | --- |
| /alu/operand1 | -No Data- | 00000009 |
| /alu/operand2 | -No Data- | 00000003 |
| /alu/operation | -No Data- | 0101 |
| /alu/result | -No Data- | 00000003 |
| /alu/error | -No Data- | 0000 |

1.

B.   With Div by Zero (9/0)

| /alu/prop_delay | -No Data- | 15 ns | |
| --- | --- | --- | --- |
| /alu/operand1 | -No Data- | 00000009 | |
| /alu/operand2 | -No Data- | 00000003 | 00000000 |
| /alu/operation | -No Data- | 0101 | |
| /alu/result | -No Data- | 00000003 | 00000000 |
| /alu/error | -No Data- | 0000 | 0010 |

1.

VII.   AND

| /alu/prop_delay | 15 ns | 15 ns |
| --- | --- | --- |
| /alu/operand1 | 00000000000010... | 0000000000001010101101010100111000 |
| /alu/operand2 | 00000000000010... | 0000000000001010101101010001110010 |
| /alu/operation | 0111 | 0111 |
| /alu/result | 00000000000010... | 0000000000001010101101010000110000 |
| /alu/error | 0000 | 0000 |

A.

VIII.    OR

| /alu/prop_delay | 15 ns | 15 ns |
|---|---|---|
| /alu/operand1 | 00000000000010... | 00000000000010101011010100111000 |
| /alu/operand2 | 00000000000010... | 00000000000010101011010001110110 |
| /alu/operation | 1001 | 1001 |
| /alu/result | 00000000000010... | 00000000000010101011010101111110 |
| /alu/error | 0000 | 0000 |

   A.

IX.    NOT (Op1)

| /alu/prop_delay | 15 ns | 15 ns |
|---|---|---|
| /alu/operand1 | 00000000000010... | 00000000000010101011010100111000 |
| /alu/operand2 | 00000000000000... | 00000000000000000000000000000000 |
| /alu/operation | 1011 | 1011 |
| /alu/result | 11111111111101... | 11111111111101010100101011000111 |
| /alu/error | 0000 | 0000 |

   A.

X.    Op1

| /alu/prop_delay | 15 ns | 15 ns |
|---|---|---|
| /alu/operand1 | 00000000101010... | 00000000101010111100110111101111 |
| /alu/operand2 | 00000000000000... | 00000000000000000000000000000000 |
| /alu/operation | 1100 | 1100 |
| /alu/result | 00000000101010... | 00000000101010111100110111101111 |
| /alu/error | 0000 | 0000 |

   A.

XI.    Op2

| /alu/prop_delay | 15 ns | 15 ns |
|---|---|---|
| /alu/operand1 | 00000000101010... | 00000000000000000000000000000000 |
| /alu/operand2 | 00000000000000... | 00000000101010111100110111101111 |
| /alu/operation | 1101 | 1101 |
| /alu/result | 00000000000000... | 00000000101010111100110111101111 |
| /alu/error | 0000 | 0000 |

   A.

XII.    All zeroes

| /alu/prop_delay | 15 ns | 15 ns |
|---|---|---|
| /alu/operand1 | 00000000000000... | 00000000000000000001001101001101010010 |
| /alu/operand2 | 00010001000100... | 00010001000100100011010000100001 |
| /alu/operation | 1110 | 1110 |
| /alu/result | 00000000000000... | 00000000000000000000000000000000 |
| /alu/error | 0000 | 0000 |

   A.

XIII.    All ones

| | | | |
|---|---|---|---|
| /alu/prop_delay | 15 ns | 15 ns | |
| /alu/operand1 | 00000000000000... | 000000000000000000001101111101101 | |
| /alu/operand2 | 00000000000000... | 000000000000000000001111111111111 | |
| /alu/operation | 1111 | 1111 | |
| /alu/result | 00000000000000... | 1111111111111111111111111111111111 | |
| /alu/error | 0000 | 0000 | |

A.