Exercise Assignment 4

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3.4 c)

Convert $[1011]_2$ from binary to decimal, assuming unsigned binary.
$1011_2 = 11_{10}$

3.4 e)

Convert $[11111]_2$ from binary to decimal, assuming unsigned binary.
$11111_2 = 31_{10}$

3.13 a)

Write the polynomial representation of 29.458_{10}
$(2)10^1 + (9)10^0 + (4)10^{-1} + (5)10^{-2} + (8)10^{-2}$

3.13 c)

What is the decimal value of 1011.100101_2
$1011.100101_2 = 11.65625_{10}$

3.16 a)

Convert $[51]_{10}$ to binary using nine-bit two's compliment.
$51_{10} = 000110011_2$

3.16 e)

Convert $[-256]_{10}$ to binary using nine-bit two's compliment.
$-256_{10} = 100000000_2$

3.20 c)

Perform a binary addition, assuming nine-bit two's compliment. Show the effect on the status bits:

1 0001 1011
ADD 1 0101 0100
0 0110 1111
N = 1
Z = 0
V = 1
C = 1

3.20 e)

Perform a binary addition, assuming nine-bit two's compliment. Show the effect on the status bits:

0 0011 0100
ADD 0 1101 0010
1 0000 0110
N = 0
Z = 0
V = 1
C = 0

3.21 c)

With two's complement binary representation what is the range of numbers in binary and decimal notation for: a four-bit cell

A four bit cell has:
$range_2 = 1000$ to 0111
$range_{10} = -8$ to 7

3.21 d)

With two's complement binary representation what is the range of numbers in binary and decimal notation for: a five-bit cell

A five-bit cell has:
$range_2 = 10000$ to 01111
$range_{10} = -16$ to 15

References

Warford, J. (2009). *Computer systems* (4th ed.). Jones and Bartlett.