Conversion Integer

$123_{10} \rightarrow 2, 8, 16$

$123 \bmod 16 = 11$

$\text{int}(123/16 = 7) \bmod 16 = 7$

So, $123_{10} = 7B_{16}$

7 B

0111 $1011_2 \rightarrow 1111011_2$

For Base 8 every 3 places Base 2

1 111 011

1 7 3 $\rightarrow 173_8$

Convert back as a check

$1 \times 8^2 + 7 \times 8^1 + 3 \times 8^0$

$64 + 56 + 3 = 123_{10}$

Since 123_{10} is what we started with then we are assured the intermediate results are correct.

MCL

$10101_2 \rightarrow 8, 10, 16$

$010 \quad 101_2$

$2 \quad 5_8 \rightarrow 2\times 8 + 5 = 21_{10}$

$0001 \quad 0101_2$

$1 \quad 5_{16} \rightarrow 1\times 16 + 5 = 21_{10}$

$10101 \rightarrow 1\times 2^4 + 0\times 2^3 + 1\times 2^2 + 0\times 2^1 + 1\times 2^0$

$= 16 + 4 + 1$

$= 21_{10}$

$123_8 \rightarrow 2, 10, 16$

$1 \quad 2 \quad 3_8$

$001 \quad 010 \quad 011_2 \rightarrow 1\times 2^6 + 1\times 2^4 + 1\times 2^1 + 1\times 2^0$

$= 64 + 16 + 2 + 1 = 83_{10}$

$0101 \quad 0011_2$

$5 \quad 3_{16} \rightarrow 5\times 16^1 + 3\times 16^0$

$80 + 3 = 83_{10}$

$1\times 8^2 + 2\times 8^1 + 3\times 8^0 = 64 + 16 + 3$

$= 83_{10}$

123_{16}

1	2	3
0001	0010	0011_2

100	100	011_2
4	4	3_8

$1 \times 16^2 + 2 \times 16^1 + 3 \times 16^0 = 256 + 32 + 3 = 291_{10}$

$4 \times 8^2 + 4 \times 8^1 + 3 \times 8^0 = 256 + 32 + 3 = 291_{10}$

Checks