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Assignment 1

Question 1: Convert the following numbers to their decimal representation:

a) $10011011(\text{base}2) =$
 $2^7 + 2^4 + 2^3 + 2^1 + 2^0$
 $128 + 16 + 8 + 2 + 1 =$
155

b) $1101101(\text{base}2) =$
 $2^6 + 2^5 + 2^3 + 2^2 + 2^0$
 $64 + 32 + 8 + 4 + 1 =$
109

c) $3A81(\text{base}16) =$
 $(16^3 \times 3) + (16^2 \times 10) + (16 \times 8) + 1$
14977

d) $2214(\text{base}5) =$
 $(2 \times 5^3) + (2 \times 5^2) + (1 \times 5) + 4$
 $= 250 + 50 + 5 + 4$
= 309

Question 2: Convert the following numbers to their binary representation:

a) $69(\text{base}10) =$
 $2^6 = 64$
 $2^2 = 4$
 $2^0 = 1$
Binary : 1000101

b) $485(\text{base}10) =$
 $2^8 = 256$
 $2^7 = 128$
 $2^6 = 64$
 $2^5 = 32$
 $2^2 = 4$
 $2^0 = 1$

Binary : 111100101

c) $6D1A(\text{base}16) =$
 $(6 \times 16^3) + (13 \times 16^2) + (1 \times 16) + 10 = 27930$
 $2^{14} = 16384$ $2^4 = 16$
 $2^{13} = 8192$ $2^3 = 8$
 $2^{11} = 2048$ $2^1 = 2$
 $2^{10} = 1024$ **Binary : 11011010001101**
 $2^8 = 256$

