UVa Email ID (no aliases please): __sa7cx_____

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Lab 4 - Radix Conversion Worksheet

Convert:

1. 0x4F45 into octal

Hexadecimal to decimal:
16^3 *4 + 16^2 *F + 16^1 *4 + 16^0 *5
= 16^3 *4 + 16^2 *15 + 16^1 *4 + 16^0 *5
= 16384 + 3840 + 64 + 5
= 20293

Decimal to octal:

8^4 = 4096	20293- 4096(**4**) = 3909
8^3 = 512	3909- 512(**7**) = 325
8^2 = 64	325- 64(**5**) = 5
8^1 = 8	5- 8(**0**) = 5
8^0 = 1	5- 1(**5**) = 0

Answer: 47505

2. 269_{10} into radix 7

7^3 = 343	too large
7^2 = 49	269- 49(**5**)= 24
7^1 = 7	24- 7(**3**)=3
7^0 = 1	3-1(**3**)=0

Answer: 533

3. 110011011110_2 into decimal

2^{11} *1 + 2^{10} *1 + 2^9 *0 + 2^8 *0 + 2^7 *1 + 2^6 *1 + 2^5 *0 + 2^4 *1 + 2^3 *1 + 2^2 *1 + 2^1 *1 + 2^0 *0
= 2048 + 1024 + 128 + 64 + 16 + 8 + 4 + 2
= 3294

4. $2BD_{19}$ into decimal

$19^2 * 2 + 19^1 * B + 19^0 * D$
$= 19^2 * 2 + 19^1 * 11 + 19^0 * 13$
$= 722 + 209 + 13$
= 944

5. Given the following positive binary integer in two's complement: 0101001101011101

    a) Convert the number to hexadecimal:

0: positive
0101: $2^2 + 2^0 = 4 + 1 = 5$
0011: $2^1 + 2^0 = 2 + 1 = 3$
0101: $2^2 + 2^0 = 4 + 1 = 5$
1101: $2^3 + 2^2 + 2^0 = 8 + 4 + 1 = 13 = d$

Answer: 535d

    b) Negate the number.

Flip the bits: 1010110010100010
Add 1: **1010110010100011**