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CPE 301 section 1001

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HW 1

1.5 (a) $(0111010110100011001101110000)_2 \rightarrow (\quad)_{10}$

Handwritten work showing the conversion of the binary number $0111010110100011001101110000_2$ to decimal. The binary string is grouped into four 10-bit segments, each multiplied by a power of 2:

- 0111010110×2^{20}
- 1010001100×2^{10}
- 1101110000×2^0

The final result is $(1993448432)_{10}$.

1.5) a) $(1993448432)_{10}$

(b) $(011101101101000110011011111000)_2 \rightarrow (\quad)_{16}$

7 6 D 4 9 B F 0

$(111101101101000110011011111000)_2 = (76D19BF0)_{16}$

1.5 b) $(76D19BF0)_{16}$

1.6 (a) $(24687531)_{10} \rightarrow (\quad)_{16}$

$$= (2 \times 16^6) + (4 \times 16^5) + (6 \times 16^4) + (8 \times 16^3) + (7 \times 16^2) + (5 \times 16^1) + (3 \times 16^0) + (1 \times 16^0)$$

$$= (610825521)_{16}$$

(b)

2	4	6	8	7	5	3	1
0010	0100	0110	1000	0111	0101	0011	0001

$= (00100100011010000111010100110001)_2$

1.6 a) $(610825521)_{10}$

b) $(00100100011010000111010100110001)_2$

1.7 (a) $(24687531)_{10}$

$24687531 / 16 = 1542970$	$11 = B$
$1542970 / 16 = 96435$	$10 = A$
$96435 / 16 = 6027$	$3 = 3$
$6027 / 16 = 376$	$11 = B$
$376 / 16 = 23$	$6 = 6$
$23 / 16 = 1$	$7 = 7$
$1 / 16 = 0$	

(b) $(176B3AB)_{16}$

$= (0001\ 0111\ 1000\ 1100\ 0011\ 1011\ 1100)_2$

1.7 a) $(178B3AB)_{10}$

b) $(00010111110001100001110111100)_2$

1.8 (a) $(123)_{10} \rightarrow (01111011)_2$

$123 / 2 = 61$	1
$61 / 2 = 30$	1
$30 / 2 = 15$	0
$15 / 2 = 7$	1
$7 / 2 = 3$	1
$3 / 2 = 1$	1
$1 / 2 = 0$	0

(a) $(01111011)_{\text{unsigned}} = (7B)_{16}$

(b) 10000100

$+1$

10000100

signed = $(64)_{16}$

(c) $(123)_{10} \rightarrow (0001\ 0010\ 0011)_{BCD} = (123)_{16}$

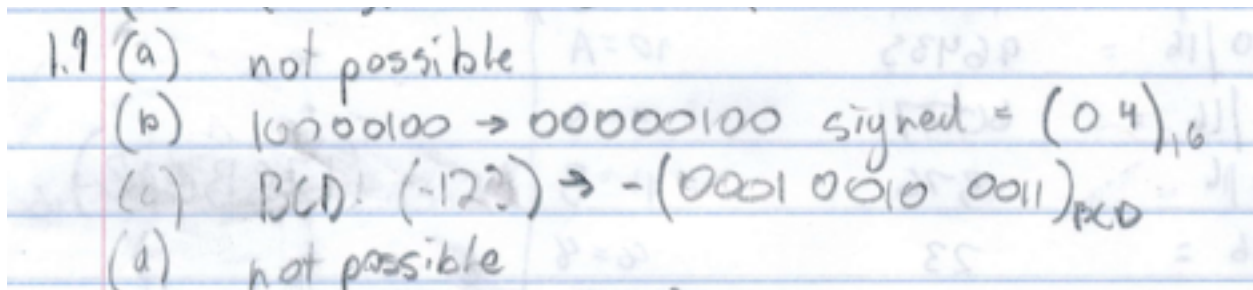
(d) $(123)_{16} \rightarrow \text{ASCII} = \{ 01001001\ 01101100\ 01100011 \}$

1.8 a) $(01111011)_2$

b) $(10000100)_2$

c) $(000100100011)_{BCD}$

d) $\{$

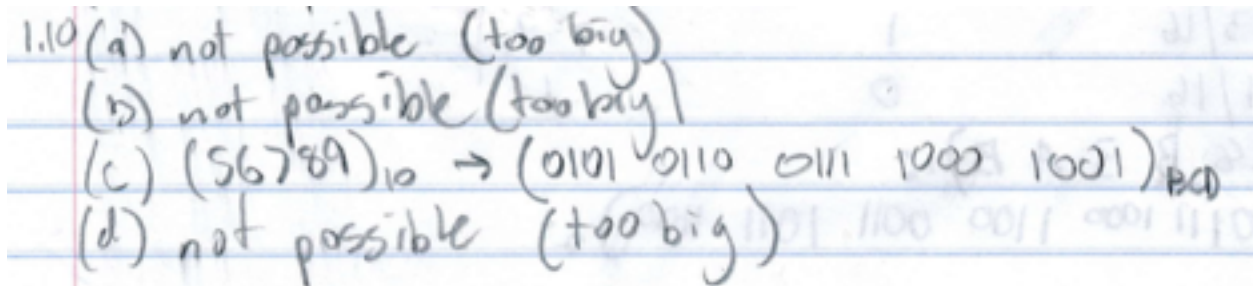


1.9) a) not possible

b) $(00000100)_2$

c) $-(000100100011)_{BCD}$ or impossible

d) not possible



1.10) a) not possible

b) not possible

c) $(01010110011110001001)_{BCD}$

d) not possible