Vanessa Cushenbury   HW 1   CPE 201

1 a) $2^{10}-1 = 1023$

b) $2^{18}-1 = 262,143$

2a) $\underset{1}{\underline{0001}},\underset{7}{\underline{0111}},\underset{9}{\underline{1001}}_2 = 179$

b) $\underset{C}{\underline{1100}},\underset{A}{\underline{1010}},\underset{9}{\underline{1001}} = CA9$

c) $646_8 \rightarrow 110\ 100\ 110 \rightarrow 1A6$

d) $7452_8 \rightarrow 111\ 100\ 10\ 1010 \rightarrow F2A$

e) $1023_{10} \rightarrow$

f) $743_{10} \rightarrow$

3 a) 101011101_2

$\underset{2^8}{}\underset{2^7}{}\underset{2^6}{}\underset{2^5}{}\underset{2^4}{}\underset{2^3}{}\underset{2^2}{}\underset{2^1}{}\underset{2^0}{}$

256 128 64 32 16 8 4 2 1

$256+64+16+8+4+1$

$= 349_{10}$

b) 110110100_2

512/256/128/64/32/16/8/4/2/1

$512+256+64+32+8+1$

$= 873_{10}$

c) 534_8

$8^2\ 8^1\ 8^0$

$(64 \cdot 5) + (8 \cdot 3) + (4)$

$= 348_{10}$

d) $A6C_{16} \rightarrow 1010\ 0110\ 1100$

$2,048\ 1024\ 512\ 256\ 128\ 64\ 32\ 16\ 8\ 4\ 2\ 1 = 2668_{10}$

4. a) $\begin{array}{r} 1101 \\ +\ 10111 \\ \hline 100100 \end{array}$

b) $\begin{array}{r} 1001 \\ \times\ 101 \\ \hline 101101 \end{array}$

c) $\begin{array}{r} 11010 \\ -\ 10101 \\ \hline 0101 \end{array}$

+1

5a) 00000000 → 11111111 → 100000000

b) 00011101 → 11100010 → 11100011

c) 10101101 → 01010010 → 01010011

$2/2 = 0$

6 a) 64_{10} → $64/2 = 0$, $32/2 = 0$, $16/2 = 0$ $8/2 = 0$ $4/2 = 0$

     -42_{10} → $-42/2 = 0$, $21/2 = 1$, $10/2 = 0$ $5/2 = 1$ $2/2 = 0$ $2/1 = 0$

   100000

  − 101010