CIS-350 – INFRASTRUCTURE TECHNOLOGIES

SMALL GROUP ACTIVITY #1

Topics: Number systems and conversion between number bases

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Logistics

1. Get in touch with your group of 4 or 5 students. (See Groups folder on Blackboard.)
2. Discuss and complete the assignment together via E-mail, Discussion Forum, Blackboard Collaborate Ultra, and/or MS Teams.
3. Choose a recorder to prepare the final copy (one per group) and submit it via the Blackboard Assignments/Small Group Activities folder to the instructor.
4. Be sure all group members' names are on final copy. Do not add names of your group classmates who did not participate in the assignment.

Work the following problems for unsigned numbers. Show all steps of your solution in the blank space below each problem.

Convert numbers from one base to another:

Problem 1: $(465)_8 = (100110101)_2 = (135)_{16}$

Octal to binary

4 = 100, 6 = 110, 5 = 101

$(465)_8 = (100110101)_2$

Binary to hex

1 | 0011 | 0101 (pad 1 with 0's to the left to make a 4 tuple)

0001 = 1, 0011 = 3, 0101 = 5

$(100110101)_2 = (135)_{16}$

Problem 2: $(120)_{10} = (170)_8$

Decimal to octal

		IQ	R
120 : 8	=	15	0
15 : 8	=	1	7
1 : 8	=	0	1

$(120)_{10} = (170)_8$

Problem 3: $(AB)_{16} = 10*16^1 + 11*16^0 = (171)_{10}$

Problem 4: $(10110011)_2 = (179)_{10}$

$1*2^7 + 0*2^6 + 1*2^5 + 1*2^4 + 0*2^3 + 0*2^2 + 1*2^1 + 1*2^0 =$

$128 + 0 + 32 + 16 + 0 + 0 + 2 + 1 = 179$

Problem 5: $(673)_8 = (443)_{10}$

$6x8^2 + 7x8^1 + 3x8^0 = 384 + 56 + 8 = (443)_{10}$

Problem 6: $(AB.EC)_{16} = (1010\ 1011.\ 1110\ 1100\ )_2 = (253.853)_8$

$(010|10\ 1|011.\ 011|10\ 1|100)_2 = (253.853)_8$

Problem 7: $(63.57)_8 = (110\ 011.101\ 111)_2 = (33.2F)_{16}$

$(0011|0011.0010|1111)_2 = (33.2F)_{16}$

Use the chart for hexa to binary