**CIS 350 – INFRASTRUCTURE TECHNOLOGIES**

**HOMEWORK #2**

Group work (maximum 2 students)

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Do not use built-in conversion functions on your calculator! Use back page for calculations if you need. Assume unsigned numbers (≥0).

**Topics**: Number systems and conversion between number bases

Work the following problems:

1. Convert to Binary:

|  |  |  |  |
| --- | --- | --- | --- |
| decimal: (84)10 |  | binary: | (1010100)2 |
| octal: (562)8 |  | binary: | (101110010)2 |
| hexa: (CB4)16    2. Convert to Octal: |  | binary: | (110010110100)₂ |
| decimal: (182)10 |  | octal: | (266)₈ |
| binary: (11111110)2 |  | octal: | (376)₈ |
| hexa: (BF)16    3. Convert to Decimal: |  | octal: | (277)₈ |
| binary: (11101011)2 |  | decimal: | (235)₁₀ |
| octal: (535)8 |  | decimal: | (349)₁₀ |
| hexa: (B2A)16    4. Convert to Hexadecimal: |  | decimal: | (2858)₁₀ |
| binary: (110011111100)2 | | hexadecimal: | (CFC)₁₆ |
| octal: (476)8 | | hexadecimal: | (13E)₁₆ |
| decimal: (583)10 | | hexadecimal: | (247)₁₆ |
| 5. Convert Binary to Decimal, Octal, and Hexadecimal: | | |
| binary: (101111.11)2 decimal: | | | (47.75)₁₀ |
| binary: (111010.1110011)2 octal: | | | (72.714)₈ |
| binary: (111010.1110011)2 hexadecimal: | | | (3A.E6)₁₆ |

1. Convert from Decimal to Hexadecimal. If the answer is irrational, stop at four hexadecimal digits:

decimal: (0.66796875)10 hexadecimal: (0.AB0000)₁₆

1. How many bits will it take to represent the decimal number 2,050,735? How many bytes will it take to store this number?

2^21= 2,097,152

2,097,152-1 is > 2,050,735

Therefor it will take 21 bits / 3 bytes to store this number because the range of 21 bits is > than our number in question and 20 bits is < the number in question. Since we need to use 3 bytes to store 21+ bits we must use 3 bytes.

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