Computer Systems and Programming In C (RCS-101)

Assignment 1.2

PART A:

1. Convert the following:
   a. $(11111000)_2 = (?)_{10}$ Ans. $(248)_{10}$
   b. $(110111.11001)_2 = (?)_{10}$ Ans. $(55.78125)_{10}$
   c. $(212)_{10} = (?)_2$ Ans. $(11010100)_2$
   d. $(121.124)_{10} = (?)_2$ Ans. $(1111001.000111)_2$
   e. $(7214)_8 = (?)_{10}$ Ans. $(3724)_{10}$
   f. $(5632.471)_8 = (?)_{10}$ Ans. $(2970.611328125)_{10}$
   g. $(355.91)_{10} = (?)_8$ Ans. $(543.72172)_{10}$
   h. $(235.321)_8 = (?)_2$ Ans. $(10011101.011010001)_2$
   i. $(10110.11)_2 = (?)_8$ Ans. $(26.6)_8$
   j. $(11110001100.10011)_2 = (?)_{16}$ Ans. $(78C.98)_{16}$
   k. $(FFE)_{16} = (?)_2$ Ans. $(111111111110)_2$
   l. $(12345.48)_{10} = (?)_{16}$ Ans. $(3039.7AE1)_{16}$
   m. $(336.217)_8 = (?)_{16}$ Ans. $(DE.478)_{16}$
   n. $(FF.AB)_{16} = (?)_8$ Ans. $(377.526)_8$
   o. $(3102.12)_4 = (?)_{10}$ Ans. $(210.375)_{10}$
   p. $(45.125)_{10} = (?)_5$ Ans. $(140.0303)_5$
2. Perform following binary arithmetic operations:
   a. 1010101 + 101110 Ans. 10000011
   b. 101101 – 100111 Ans. 110
   c. 1011 * 1001 Ans. 1100011
   d. 11101110 / 101 Ans. Quotient: 101111 , Remainder:11
3. What do you mean by complement of a number? Find one's and two's complement of 1100100. And write their value in decimal as well. [Ans. 0011011, 0011100, 27, 28]
4. How will you represent (-29) in a computer? [Hint: represent 29 in binary then take its 2's complement]

PART B (Not for CT1):

5. What is an Algorithm. What are different types of algorithm? Write its characteristics.
6. Write an algorithm to find largest of 3 numbers.
7. Explain flowchart. What are the various symbols used in flowcharts?
8. Design a flowchart and write an algorithm for:
   a. Calculating the simple interest and compound interest
   b. Finding the factorial of a number
   c. Finding sum of digits of a number
   d. Finding prime number
   e. Calculating HCF and LCM of 2 numbers

Note: The answers of above questions may be wrong. Students must discuss with me in case of any discrepancy.

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