Assignment 1

Submission Link Section 01: Here
Submission Link Section 02: Here

1. Convert the following decimal number to equivalent binary numbers:
   (a) $(4693.23450)_{10}$
   (b) $(4976.250363)_{10}$
   [**for infinite fractional part, just do 4-5 steps and use dots for the rest**]
2. Convert the following base 9 number to equivalent base 5 numbers:
   (a) $(8712)_9$
   (b) $(234.256)_9$
3. Convert the following binary numbers to equivalent hexadecimal numbers:
   (a) $(101010101010)_2$
   (b) $(110101110111.11101010101111)_2$
4. Convert the following binary numbers to equivalent octal numbers:
   (q) $(101010101010)_2$
   (b) $(110101110111.11101010101111)_2$
5. Perform the following base conversions
   (a) $(38A)_{13} = (?)_7$
   (b) $(10110111)_7 = (?)_4$
   (c) $(0011)_{BCD} = (?)_5$
   (d) $(0011)_{10} = (?)_{Excess3}$
   (e) $(110\ 0011)_{10} = (?)_{Excess5}$
6. Perform **addition**, **subtraction, multiplication** and **division** for the pair of following base-8 numbers. Verify your results by converting the problem into decimal.
   Note: For division, 513 as dividend and 335 as divisor.
   513
   335

7. Perform **addition**, **subtraction, multiplication** and **division** for the pair of following base-6 numbers. Verify your results by converting the problem into decimal.
   Note: For division, 214 as dividend and 115 as divisor.

214

115

8. $(010010101011111)_{2s} = (?)_{10}$
9. $(101010101000011)_{2s} = (?)_{10}$
10. $(010010101011111)_{1s} = (?)_{10}$
11. $(101010101000011)_{1s} = (?)_{10}$
12. Subtract 13 from 27 in 7 bits using 2's complement number system and justify whether there is an overflow or not.
13. Subtract 45 from 98 in 12 bits using 2's complement number system and justify whether there is an overflow or not.
14. Add 13 with 27 in 6 bits using 2's complement number system and justify whether there is an overflow or not.
15. Perform the following arithmetic operations using 13-bit two's complement and one's complement systems. State if there is an overflow in each case.
    a) 91- 499
    b) 379 + 98