
BITCA3111

COMPUTER ARCHITECTURE

MODULE DETAILS

Course Location	:	Swaziland
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1. Explain signed twos compliment subtraction, with an example.

2. A 16-bit instruction representation system consist of only two fields: a 4-bit opcode field and an operand field.
   a. How many operations can be represented by this system?
   b. How many operands can be represented by this system?

3. Represent the number $(+37.8)_{10}$ as a floating-point binary number with normalized fraction mantissa 23 bits and exponent 8 bits

4. Represent the following numbers in packed-decimal format
   a. 478
   b. 5303

5. Perform the subtraction of following using 2's complement.
   a. $110010_2 - 10010_2$
   b. $100010_2 - 1000010_2$

6. Assume numbers are represented in 8-bit twos complement representation. Show the calculation of the following:
   a. 6 + 15
   b. -6 + 15

7. Represent the following twos complement values in decimal:
   a. 1101011
   b. 0101101.

8. Consider a floating-point format with 8 bits for the biased exponent and 23 bits for the significand. Show the bit pattern for the following numbers in this format
    a. -721
    b. 2.6455

9. Explain how to determine if a number is negative in the following representations
    a. sign magnitude
    b. twos complement
    c. biased.

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