BRAC University (Department of Computer Science and Engineering)
CSE 330 (Numerical Methods) for Spring 2024 Semester

Quiz 1 [CO1]

Student ID:

Name:

Section: 08

Full Marks: 10
Duration:15 minutes

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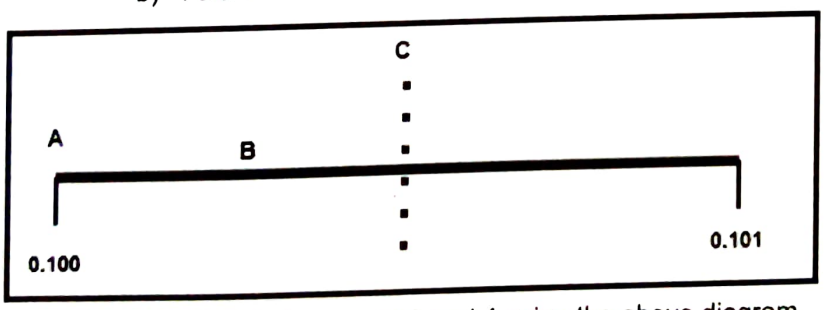
1. The lowest value is **equal** to the highest negative value for any system.

   a) True
   b) False

2. A point will be mapped to the closest **EVEN** floating point, if it is **exactly at the midpoint**:

   a) True
   b) False



Here C is the midpoint. Answer qs 3 and 4 using the above diagram

3. The Error is **maximum** if my value, x is at:

   a) A
   b) B
   c) C

4. The value x at B, is mapped to:

   a) A
   b) B
   c) C

5. Let say we have β=2, m=3, using **Denormalized convention**. Find the absolute rounding error of x = (0.110011). [2]

$(0.110011)_2 \rightarrow 0.796875$

$|0.796875 - 0.8125|$

when m=3: $(0.1101)_2$ (m=3)

$= 0.015625$

0.1101

$(0.1100)_2$ $(0.75)_{10}$ | 0.78125 | $(0.1101)_2$ $(0.8125)_{10}$

6. Let say we have β=2, m=4, $-3 \leq e \leq 3$ using the **Normalized convention (convention 02)** of the floating point representation, Find: [4]

(i) Highest Positive Number
(ii) Lowest Positive Number
(iii) Lowest Negative Number
(iv) Highest Negative Number

(i) $(1.1111)_2 \times 2^3$

(ii) $(1.0000)_2 \times 2^{-3}$

(iii) $-(1.0000)_2 \times 2^{-3}$

(iv) $-(1.1111)_2 \times 2^3$