Assignment # 1

Question #1: The set of a floating-point numbers is defined by

$$F = \pm \left(0.1d_1d_2d_3.....d_m\right)_\beta \cdot \beta^e, \text{ with } \beta = 2, \ -2 \le e \le 5, m = 4 .$$

1. [2 mark] What is the maximum number that can be stored in this system?
2. [2 mark] What is the minimum number that can be stored in this system?
3. [2 mark] How many different sets of numbers can we store in this System?
4. [2 mark] What would be the maximum number of the system if there is no support for negative numbers?
5. [2 mark] What would be the minimum number of the system if there is no support for negative numbers?
6. [2 mark] Calculate all the decimal numbers for $e = 5$ and plot them on a real line.

Question # 2 : Let $\beta = 2, m = 4, e_{\min} = -1$ and $e_{\max} = 2$. Now answer the following questions:

1. [2 marks] Compute the minimum of $|x|$ for denormalized form.

2. [2 mark] Compute the Machine Epsilon value for the denormalized form.
3. [2 mark] State what you can see about the relation between Machine Epsilon value and the exponent.
4. [2 mark] Compute the Machine Epsilon value for the Normalized form.

Follow the Submission instruction below:

- Solve all the problems above in orderly fashion.
- Prepare a title page including: Your Name, Your BracU ID#, Theory Section # and the Assignemnt #.
- Preparea single .pdf or .jpg file containing the tile page and the solution pages.
- To submit your assignment solution, visit the Submission Link (Click here). This will take you to a Google Form link.
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