

HW1.7. Choose Your Own Number Representation

For this question, all numbers will be represented in **8 bits**.

For each part below, you will be given a choice between unsigned, sign-magnitude, two's complement, biased notation with +128 bias, and biased notation with -128 bias. Select all number representations that would be appropriate for the given criteria or select none of the above.

Q1.1: You would like to represent the outdoor temperature in Chicago to the nearest degrees Celsius. *(If you're not sure about the temperature ranges in Chicago, feel free to search online)*

☐ (a) unsigned

☐ (b) sign-magnitude

☐ (c) two's complement

☐ (d) biased notation w/ bias +128

☐ (e) biased notation w/ bias -128

☐ (f) None of the above

Select all possible options that apply. ?

Q1.2: You would like to represent the outdoor temperature in Chicago to the nearest Kelvin.
Hint: $^{\circ}\text{K} \approx ^{\circ}\text{C} + 273$

☐ (a) unsigned

☐ (b) sign-magnitude

☐ (c) two's complement

☐ (d) biased notation w/ bias +128

☐ (e) biased notation w/ bias -128

☐ (f) None of the above

Select all possible options that apply. ?

Q1.3: You would like to maximize the range (distance between least representable number, and greatest representable number)

☐ (a) unsigned

☐ (b) sign-magnitude

☐ (c) two's complement

☐ (d) biased notation w/ bias +128

☐ (e) biased notation w/ bias -128

☐ (f) None of the above

Select all possible options that apply. ?

Q1.4: You have a system that can already do arithmetic operations (addition, subtraction, multiplication) with unsigned numbers, and want to implement a signed number system that requires the fewest changes to your system.

☐ (a) sign-magnitude

☐ (b) two's complement

☐ (c) biased notation w/ bias +128

☐ (d) biased notation w/ bias -128

☐ (e) None of the above

Select all possible options that apply. ?

Save & Grade 20 attempts left

Save only

Additional attempts available with new variants ?

Homework 1

Assessment overview

Total points:

100/100

Score:

100%

Question

Value:

8

History:

8

Awarded points:

8/8

Report an error in this question

Previous question

Next question

Attached files

No attached files

Attach a file

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