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## [Midterm] Past Exams - 2022 #633

**J** **Jero Wang** STAFF 228  
3 months ago in Exam - Midterm VIEWS

You can find the past exams here: <https://cs61c.org/su22/resources/exams/>

When posting questions, please reference the semester, exam, and question in this format so it's easier for students and staff to search for similar questions:

### Semester-Exam-Question Number

For example: **SP22-Final-Q1**, or **SP22-MT2-Q3**

**Anonymous Mongoose** 3mth #633ea ✓ Resolved

For this spring 22 midterm, I wonder why line 9 and 10, it isn't `*f(self->x)` since `f` is a pointer in this code.

...

**P** **Peyrin Kao** STAFF 3mth #633ec

`f` is a function pointer, which you can dereference without the star operator (just like you did in Project 1).

...

**Anonymous Mongoose** 3mth #633ef

Is that to say `(*f)(self->x)` is also correct?

According to this slide:

...

**P** **Peyrin Kao** STAFF 3mth #633fa

← Replying to Anonymous Mongoose

Yes, that's fine too.

...

**Anonymous Caribou** 3mth #633de ✓ Resolved

### SP22-MT2-Q2.5

As the exponent = all 0s, is this supposed to be a **denorm**?

But if it was a denorm, then it should have the form of  $0.B \times 2^{-n}$  right? What do I get wrong?

...

P **Peyrin Kao** STAFF 3mth #633ed  
Yes, it's a denorm, which is why we added 1 to the exponent.

...

**Anonymous Caribou** 3mth #633fb  
Do you mean it was actually  $0.1 \times 2^{-7}$  but you made it  $1 \times 2^{-6}$ ? If this is correct can I ask why?

...

P **Peyrin Kao** STAFF 3mth #633fc  
← Replying to Anonymous Caribou  
The exponent would have been -3, but because it's a denorm, we added 1 to make the exponent -2. Then in the last line, we didn't use a leading 1.

...

**Anonymous Caribou** 3mth #633db ✓ Resolved

### SP22-MT2-Q2 (Q2.3~2.5)

How do you determine when to **ADD** or **SUBTRACT** bias?

...

**Anonymous Cat** 3mth #633dd  
For me, a good rule of thumb is that when we are converting from binary (floating point) to decimals we ADD the bias and when we are converting from decimals to binary we SUBTRACT the bias

...

**Anonymous Caribou** 3mth #633df

Thank you!!!

...

**Anonymous Meerkat** 3mth #633cd ✓ Resolved

### SP22-MT2-Q3

Are 3.4, 3.5, and 3.6 in scope?

...

P **Peyrin Kao** STAFF 3mth #633da  
Yes, define statements were briefly discussed in the C lectures.

...

**Anonymous Rook** 3mth #633cc ✓ Resolved

Is there a standard practice for commas in exams or can we just go with/without commas?

...

P **Peyrin Kao** STAFF 3mth #633ce

As long as your code is syntactically correct and readable, it's fine.

...

**Anonymous Pheasant** 3mth #633bf ✓ Resolved

Shouldn't C be 106 (we also have to account for clk-to-q of our output y so we add 4 to our sum)

...

**Anonymous Pheasant** 3mth #633cb

resolved: it doesn't ask for output of y's register, just y output, so we don't need to consider it's clock-to-q

...

P **Peyrin Kao** STAFF 3mth #633cf

Yep, this is correct.

...

**Anonymous Squirrel** 3mth #633bc ✓ Resolved

Why in the SP22-MT1-Q2.3 do you subtract the negative exponent bias in but 2.4 in 2b you add it?

...

P **Peyrin Kao** STAFF 3mth #633bd

Q2.3 is converting from decimal to floating-point. Q2.4 is converting floating-point to decimal.

...

**Anonymous Caribou** 3mth #633dc

Could you elaborate? I still don't get it. (If it's just a rule? Where can I find those rules?)

...

P **Peyrin Kao** STAFF 3mth #633ee

↩ Replying to Anonymous Caribou

This is what the question asked you to convert.

...

A **Alexander Ng** 3mth #633bb ✓ Resolved

Su22-MT1-Q2b.

Why is 63 bytes of memory not freed and not 62 bytes? Wouldn't  $4 * 12$  bytes for the nodes created + 13 bytes (for each character in \*r) + 1 byte (for null terminator) be 62?

...

P **Peyrin Kao** STAFF 3mth #633be

Are you sure this is the right semester?

...

Anonymous Kudu 3mth #633f ✓ Resolved

SP22-MT2-Q2.4

Why is the largest exponent 110 and not 111?

...

Anonymous Kudu 3mth #633aa

Similarly, for question 2.5, why do we add 1 when calculating the value of the exponent?

...

A Arda Akman STAFF 3mth #633ad

When you have all 0s for the exponent, that number will be in denormalized form. When in denormalized form, the bias is not -3, but -2. This is because to convert from normalized to denormalized form, you have to multiply the number by -2, and that makes the exponent to go up one. If you need more explanation on this, reply to this comment.

...

Anonymous Kudu 3mth #633ae

← Replying to Arda Akman

I'd like more explanation, please

...

A Arda Akman STAFF 3mth #633af

← Replying to Arda Akman

I think a similar question was homework 2, but imagine the number 1.5.

In normalized form, we would just have the exponent 0b011 (so  $3 - 3 = 0$ ) and mantissa 0b10000 (the number of bits here depends on the size of mantissa). But when we switch to denormalized, we have to have a 0 up front instead - so we multiply the number by  $2^{-1}$ , and add +1 to the exponent. Here, you will see that 1.5 is actually not possible to represent in denormalized, but the main point im trying to make is the multiplication by  $2^{-1}$  to get rid of the 1 in front of the decimal point.

...

A Arda Akman STAFF 3mth #633ac

When you have all 1's in the exponent portion, that has a special meaning (the number is infinite if mantissa is all 0's, or NaN if mantissa is non-zero)

...

X Xingyi Yang 3mth #633d ✓ Resolved

2021 spring, 21 fall and 22 spring does not have midterm 1, only midterm 2. So, do we only need to look at the midterm 2 paper for these three semesters?

...

S Shaurya Jain 3mth #633e 🔒 ENDORSED

These semesters only had 1 midterm, so they put it under midterm 2.

...

X Xingyi Yang 3mth #633c ✓ Resolved

do you have any walkthrough video for 2022 Spring midterm?

...

P Peyrin Kao STAFF 3mth #633eb

Sorry, probably not getting released in time for the midterm, but we'll make one before the final exam!

...

O Oliver Ye 3mth #633a ✓ Resolved

which of the previous exams will this midterm be most similar in format to? will it be more like the pre-covid tests from garcia and weaver, or the 2020-2022 exams?

...

P Peyrin Kao STAFF 3mth #633b

I think the most we can say about comparing this exam to older ones is that unlike some of the online semester exams, we don't allow outside resources like calculators or compilers, so some of the questions in those semesters may not be indicative of this semester's exam.

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