9/15/15 Pre-Class Work

* Required

Harvard email address: *

Please indicate which course you are taking. *

- CS61 (College)
- CSCIE-61 (Extension)

Signed and Unsigned Arithmetic

Without using a computer, based only on what you saw in Slide 3 of the arithmetic video, how do you suppose -5 is represented? *

0xFFFFFFFB 5 = 0101 ~5 = 1010 ~5+1 = 1011

We did not explicitly discuss subtracting binary numbers because: *

- [x] A - B is the same as A + (-B) and we learned both how to negate a number and how to add numbers
- [ ] Computers do not implement subtraction
- [ ] Subtraction is unimportant
- [ ] Subtraction doesn't work with 2's complement representation

What signed number would 0xDEADBEEF represent? *

- [ ] 0x21524110
- [ ] 0x21524107
- [ ] 0x21524111
- [ ] - 0x21524107
- [x] - 0x21524111

1101 1110 1010 1101 1011 1110 1110 1111

-2 1 5 2 4 1 1 1

Consider a variable of type signed char. *

What is the maximum value it can hold?

- [ ] 256
- [ ] 255
- [ ] 128
- [x] 127

0000 0000 = 127

-128

Still considering a signed char. *

What is the minimum value it can hold?

- -256
- -255
- [x] -128
- -127

/usr/include/limits.h

Which of the following is equal to -3? *

- 0x80000003
- 0xFFFFFFFF
- 0xFFFFFFFC
- [x] 0xFFFFFFFD

You have a function that takes an unsigned number; you call it with a small negative value (e.g., -2). *

- Crash
- Return an error
- Operate on signed numbers regardless of what the prototype says
- [x] Treat the number as a large unsigned number

Dynamic memory, alignment and fragmentation

Fragmentation is fundamentally: *

- A good thing
- [x] A bad thing

sizeof (type T) OP alignof (type T) *

OP is:

>=

- <
- <=
- ==
- [x] >=
- >

Which statement is true? *

- Dynamically allocated variables have lifetimes longer than global variables.
- Dynamically allocated variables always have lifetimes longer than local variables
- Dynamically allocated variables never have lifetimes longer than local variables
- [x] Dynamically allocate variables may have lifetimes longer than local variables

A fixed size allocator will produce less fragmentation than a variable sized one. *

- [ ] True
- [x] False

You are running on a 64 bit machine and wish to allocate space to hold an integer. *

Mark all the choices below that would be valid alignments.

- [ ] 4
- [x] 8
- [ ] 12
- [x] 16

Although only a 8-byte alignment is necessary, 16 would be OK.

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