MTH 201: Calculus

Module 1B: Binary arithmetic

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GVSU

August 7, 2020

Agenda for today

- Review of Daily Prep assignment and Q+A

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- Polling activity: Binary arithmetic and negative integers

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- Review of Daily Prep assignment and Q+A
- Polling activity: Binary arithmetic and negative integers
- Practice with performing binary arithmetic

Q+A from Daily Prep

- Insert questions here

Polling activity: Binary arithmetic and negative integers

Go to `www.menti.com` and use the code `X YY ZZ`

Recapping the slides

- To **add** numbers in binary: Add the bits, carry the 1 when adding $1 + 1$

Now let's practice **multiplication** and **division**

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- To **negate** a binary number in 2's complement: Flip the bits then add 1

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Recapping the slides

- To **add** numbers in binary: Add the bits, carry the 1 when adding $1 + 1$
- To **negate** a binary number in 2's complement: Flip the bits then add 1
- To **subtract** two binary numbers: Negate the second one then add

Now let's practice **multiplication** and **division**

Multiplication

Practice

Multiply the numbers 0111 and 0011.
Spoiler: This is 7×3 so the answer should be 21 in binary.

More practice

Convert -4 and 3 into binary and then multiply. Do you get -12 in binary? (What *is* -12 in binary?)

Question

If you multiply two negative 4-bit binary numbers together, do you always get a positive 4-bit binary number?

Division

Practice

Divide 0111 by 0011.
Spoiler: This is $7 \div 3$ so the answer should be a quotient of 2, remainder 1 (in binary).

Question

If you divide any even 4-bit binary integer by 2 ($= 0010$), do you get a remainder of 0? (You should! Question: How do you tell if a binary integer is even?)

NEXT TIME...

- Start Module 2 next week
- **Complete Daily Prep 2A** by Sunday 11:59pm ET
- **Complete Startup Assignment** by **tonight** 11:59pm ET

Response form: https://bit.ly/2PuFN5A