Recitation 3

What’s coming up

- HW1 is due on Wednesday, **February 11th @ 8:00 pm**

Complement Example

- What is the 2's complement of –15?
- Same question as:
  - Use 2's complement to make –15
- Without a standard, there are no negative binary values
- So, we take 15, perform 2's complement to yield a negative (-15)
- 0b01111
  - Negate (flip) bits
- 0b10000
  - Add 0b00001
- 0b10001

Complement Practice

- What is 1's complement of −12?
  - How do we start?
- 0b01100
  - What next?
- Flip bits..
- 0b10011

Complement Practice cont..

- What is 2's complement of −12?
  - How do we start?
- 0b01100
  - What next?
- Flip bits..
- 0b10011
  - Then what?
- Add 1 (+) i.e., arithmetic
- 0b10100

-12 in 2's complement - Illustration

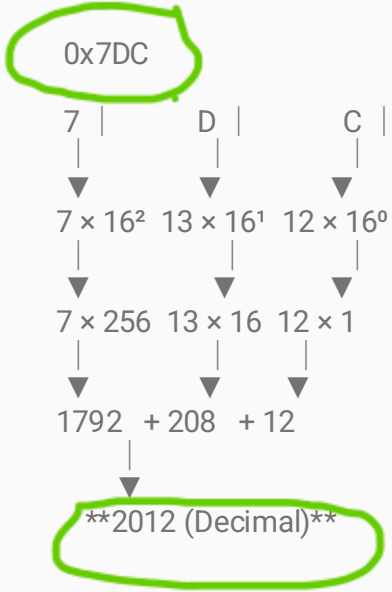
+12 in 5-bit Binary

One’s Complement (Invert Bits)

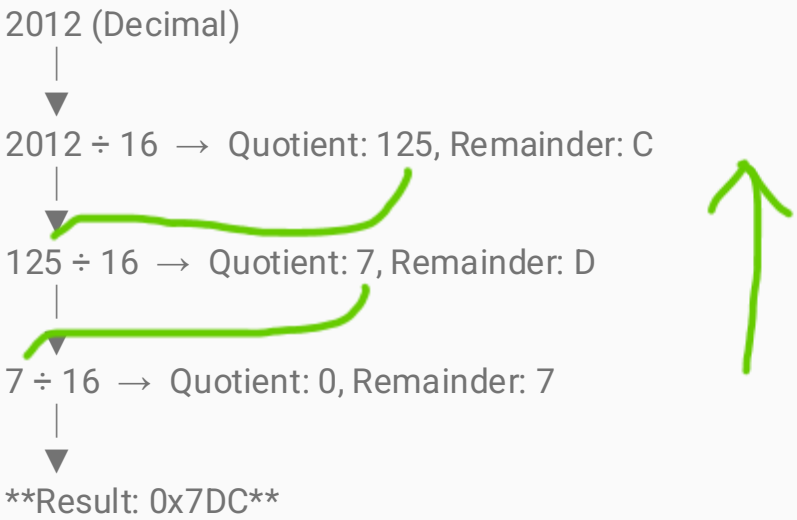
Add 1

Final Result: 10100

Hex to Decimal Example: **0x7DC** to Decimal



Decimal to Hex Example: 2012 to Hex



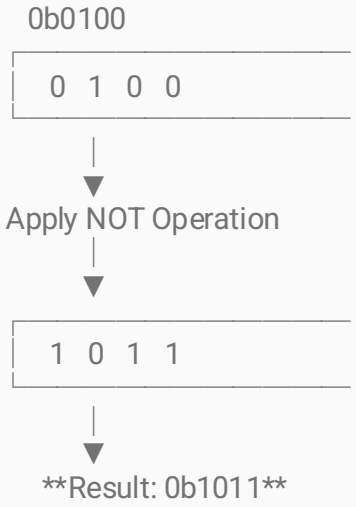
Logic Symbols

- ¬ means Not
- ∧ means And (Result is 1 only if **both** bits are 1.)
- ∨ means Or (Result is 1 if **either** bit (or both) is 1.)
- Order of operations
  - Not, And, Or

Logic Symbols cont..

- ¬ 0b0100 is..
- 0b1011

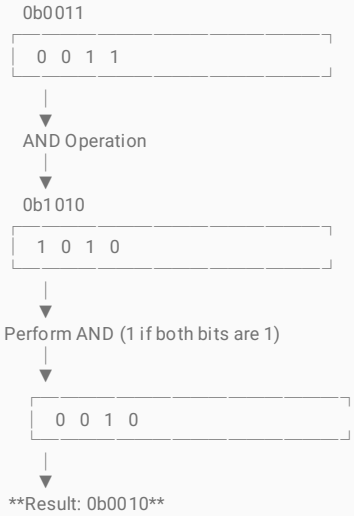
NOT operation (Illustrated)



Logic Symbols cont..

- 0b0011 ∧ 0b1010 is..
- 0b0010

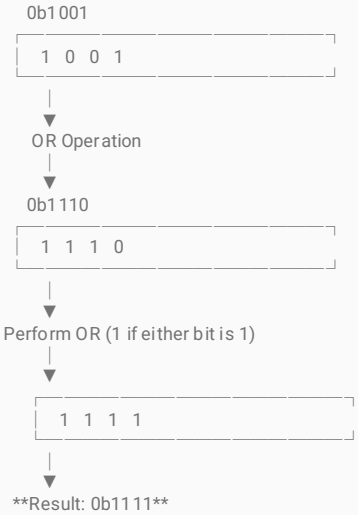
AND operation (Illustration)



Logic Symbols cont..

- 0b1001 v 0b1110 is..
- 0b1111

OR operation (Illustration)



Recitation 3

- Worksheet on canvas under the quizzes tab.
  - Covers Number Representation and Boolean Logic.
  - Please read the instructions included in the worksheet.
- Remaining time will be dedicated to programming questions (HW1 / using VSCode / etc.)