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Python Assignment 2

How CPU work:

Boolean Logic

Brought to you by Robotics Team - VRC 99909A Rising Phoenix

Class Recap

- Computer can only process binary data in the form of digital signals (stream of binary bits)
- A major part of what CPU does is binary calculation, in other words, doing math. All 4 basic mathematical operations can be done through addition:
    - Addition
    - Subtraction (addition of negation)
    - Multiplication (multiple additions)
    - Division (multiple subtractions)
- Binary addition requires boolean algebra (logic)
    - Add
    - Carry
- Basic Boolean logic: AND, OR, NOT and truth table/venn diagram
- More logic gates can be made by combining these 3 basic boolean logic gates: NAND, NOR, and XOR

- Binary addition requires boolean algebra (logic)
    - Add -> XOR
    - Carry -> AND
- Half Adder -> without carry in
- Full Adder -> with carry in

Assignment 1:

What is the truth table for all boolean logic gates:

AND, OR, NOT, NAND, XOR, NOR

Assignment 2:

How do you make the following logic gates with the 3 basic ones (AND, OR and NOT)

- XOR
- NOR
- NAND

Assignment 3:

Draw diagram of a half adder

Assignment 4:

Draw diagram of a full adder

Assignment 5:

How to add the following 2 binary values with boolean logic?

```
    1101110
+   1000100
_____________
```