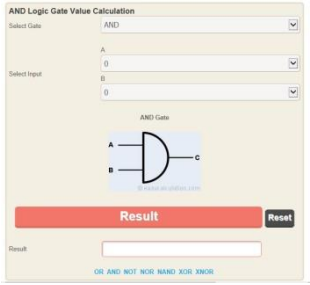
FUNDAMENTALS OF COMPUTING ACTIVITIES

ACTIVITY 1 – BINARY CALCULATIONS

- Write a series of 10 binary problems to share with one of your peers (Problems to convert from decimal to binary and vice-versa).
- Complete the Binary Math problems from the following link:
  http://www.binarymath.info/practice-exercises.php
- Use the Add or Subtract Binary calculator (link below) to check all your solutions:
  http://www.calculator.net/binary-calculator.html?number1=10101010&c2op=%2B&number2=11001100&calctype=op&x=93&y=9

ACTIVITY 2 - LOGIC GATES

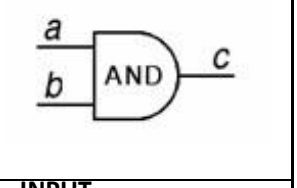


- Students to use the logic gate calculator to fill in the output tables for each of the following devices using the following links:

  http://easycalculation.com/engineering/electrical/and-gate-value-calculator.html

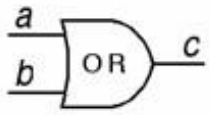
  http://ba.net/util/logic/

AND GATE



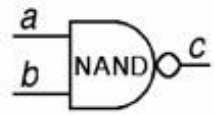
INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

OR GATE



INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

NAND GATE

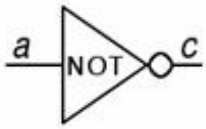


INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

NOR GATE

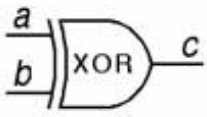
INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

NOT GATE



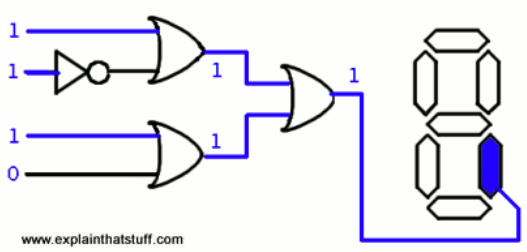
INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

XOR GATE



INPUT A	INPUT B	OUTPUT
0	0	
0	1	
1	0	
1	1	

ACTIVITY 3 - LOGIC GATE CALCULATORS



The following link can be used to describe how calculators work:

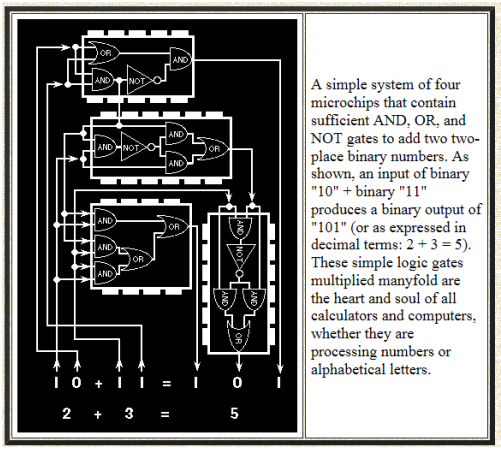
http://www.explainthatstuff.com/calculators.html

Students to use the following website to learn about how to use logic gates to add 2+3:

http://online.sfsu.edu/hl/zbyte.lg.html

Students to mathematically to prove the calculation from the previous link using flow chart calculations and then use the Logic Lab website to build their own calculator.

http://www.neuroproductions.be/logic-lab/



ACTIVITY 4 – ASCII CODE

- Students to use the following link and Binary Character table to convert the encoded ASCII code below:

  http://sticksandstones.kstrom.com/appen.html

Code A:
01100001011011100110010 0

Code B:
0100001001101001011011100110000101110010011111001

Code C:
011011000110111101100111011010010110001100100000011001110110000101110100011001 01

- Use the text to binary encoder/decoder (link below) to check your solutions:

  http://www.roubaixinteractive.com/PlayGround/Binary_Conversion/Binary_To_Text.asp

- Create a unique code using the link above and share this with another student to decode. Ensure that the code is no more than 20 characters long.