Part 1

|  |  |
| --- | --- |
| ADDITION  c x y Z C  - - - - -  0 0 0 0 0  0 0 1 1 0  0 1 0 1 0  0 1 1 0 1  1 0 0 1 0  1 0 1 0 1  1 1 0 0 1  1 1 1 1 1 | SUBTRACTION  c x y Z C  - - - - -  0 0 0 0 0  0 0 1 1 1  0 1 0 1 1  0 1 1 0 1  1 0 0 1 0  1 0 1 0 0  1 1 0 0 0  1 1 1 1 1 |
| Logical expression: Z = (x XOR y) XOR c  C = (x AND y) OR (c AND (x XOR y) | (A XOR B) XOR Bin |

Part 2

I used the node js to get the user input which I split into an array using the .split() method. After which I used a for loop to loop through the users string from back to forth then did the relevant calculation. After doing so I added the result to the results array which is created based on the size of the users X and Y array.

Add was done using the following format

0 + 0 = 0

0 + 1 = 1

1 + 0 = 1

1 + 1 = 0 (with carry)

Carry + 0 + 0 = 1 (remove carry)

Carry + 0 + 1 = 0 (with carry)

Carry + 1 + 0 = 0 (with carry)

Carry + 1 + 1 = 1 (with carry)

part 3

Choose operation [+, -, q]: +

1101011000

+ 1011010100

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11000101100

• 1101110000 – 110101010 = ?  
• 111000110 – 1101110000 = ?

Choose operation [+, -, q]: +

1111100000111110000011111000001111100000111110000011111000001111100000

+ 11111000001111100000111110000011111000001111100000111110000011111

------------------------------------------------------------------------------• 1111100000111110000011111000001111100000111110000011111000001111100000  
– 11111000001111100000111110000011111000001111100000111110000011111 = ?