January 8th, 2024

Exercises.

Bit wise operators.

1.- 4 & 7 = 0 1 0 0 & 0 0 1 1 1

```
           =   0 1 0 0
AND  →     &   0 1 1 1
             ---------
               0 1 0 0  = 4
```

2.- 16 | 7 = 0 0 0 1 0 0 0 0 | 0 1 1 1

```
               0 0 0 1 0 0 0 0
OR  →  |               0 1 1 1
             -----------------
               0 0 0 1 0 1 1 1  = 23
```

3.- 2 & (~13) = 0 0 1 0 & ~(1 1 0 1)

```
                              0 0 1 0
               0 0 1 0 & 0 0 1 0 =
```

```
               0 0 1 0
AND  →     &   0 0 1 0
             ---------
               0 0 1 0  = 2
```

4.- 5 ^ 8 = 0 1 0 1 ^ 1 0 0 0

```
               0 1 0 1
XOR        ^   1 0 0 0
             ---------
               1 1 0 1  = 13
```

January 8th, 2024

5:- 7 >> 2 = 0 1 1 1 >>
. .
Right shifting. 0 0 0 1 1 1

= 0 0 0 1 = 1

6:- 84 >> 4

0 1 0 1 0 1 0 0 >>
. . . .
0 0 0 0 0 1 0 1 0 1 0 0

= 0 1 0 1 = 5

7:- 15 << 5

1 1 1 1 << 1 1 1 1
. . . . .
0 0 0 1 1 1 1 0 0 0 0 0 =

8:- 4 & (2<<3)

4 = 0 1 0 0

2<<3 = 0 0 1 0
. . .
0 0 0 1 0 0 0 0 = 16

AND
& 0 0 0 0 0 1 0 0
0 0 0 1 0 0 0 0
0 0 0 0 0 0 0 0 = 0

January 8th, 2024

9.- 2 | (19 >> 1)

00010 | 0001001 1 >> 1

•

00001001

OR =00001001 = 9

↓

| 00000010

00001001

00001011 = 11 ✗

10.- 0XFF & (0x13 << 0x2)

11111111 & 0001 0011 << 2

•••

01000 1100 = 76

AND

↓

& 1111 1111

0100 1100

0100 1100 = 76 ✗