13 May 2023

Some imp tricks:

① Divide by 2 : $x >>= 1$ means $x = x >> 1$

$x = 10$ i.e. 1010

$x >> 1$ 0101 i.e. 5

② Multiply by 2: $x << = 1$

$x = 7$ i.e. 0111

$x << 1$ 1110 i.e. 14

③ Find rightmost digit of a no. : $x \& 1$

④ Clear the lowest set bit for x : $x \& (x-1)$

⑤ Extracting the lowest set bit of x. : $x \& \sim(x-1)$

⑥ Clearing all the bits from LSB to ith bit

bitmask = $\sim((1 << i+1)-1)$; $x \&= mask$

⑦ Clearing all bits from MSB to ith bit

bitmask = $(1<<i)-1$; $x \&= mask$

⑧ A number x with lowest cleared bit set.

$x \mid (x+1)$

⑨ Extract the lowest cleared bit of x

$x \mid \sim(x+1)$

(10) Checking if a no x is a power of 2 or not

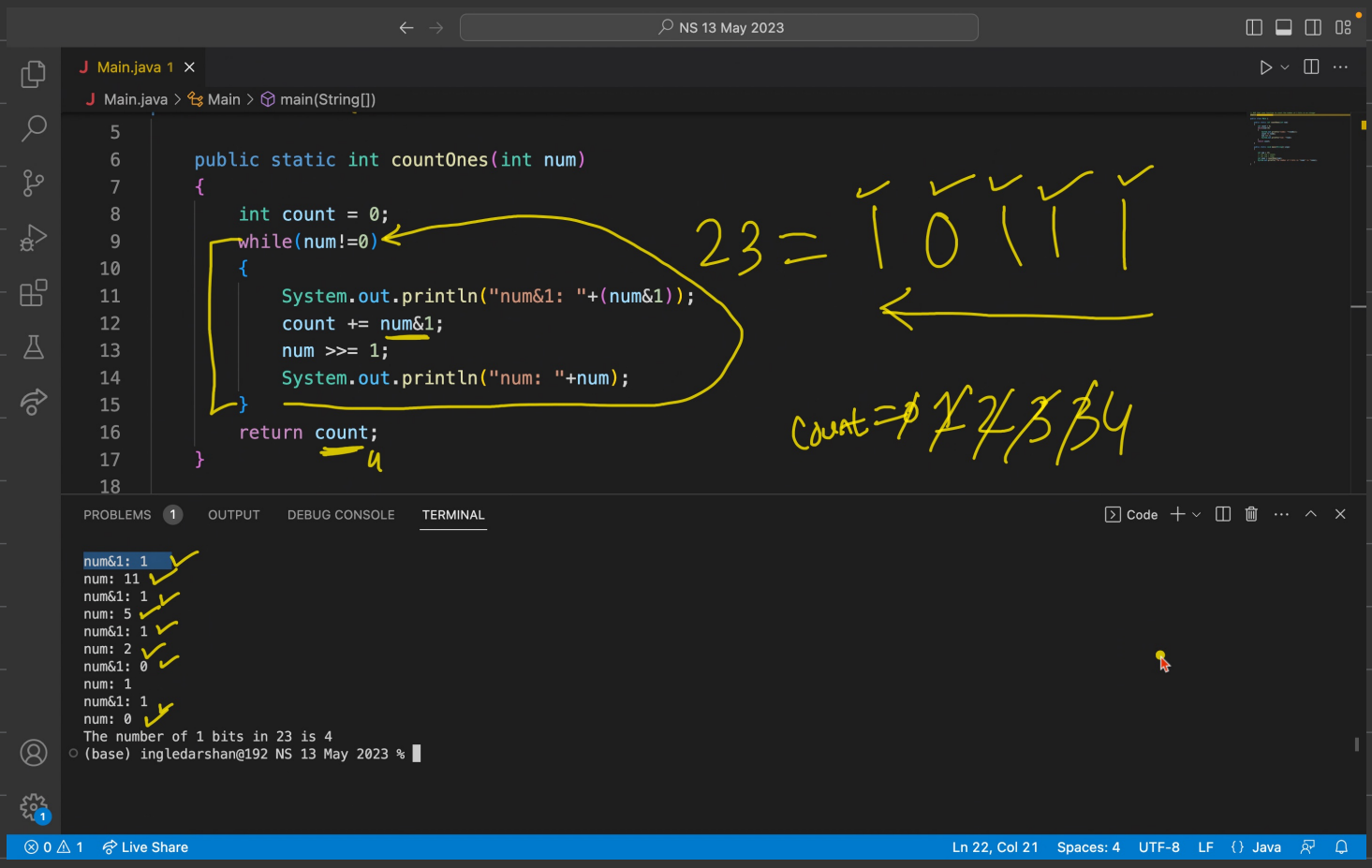
if (x && !(x & (x-1))) == 1 then x is a power of 2.

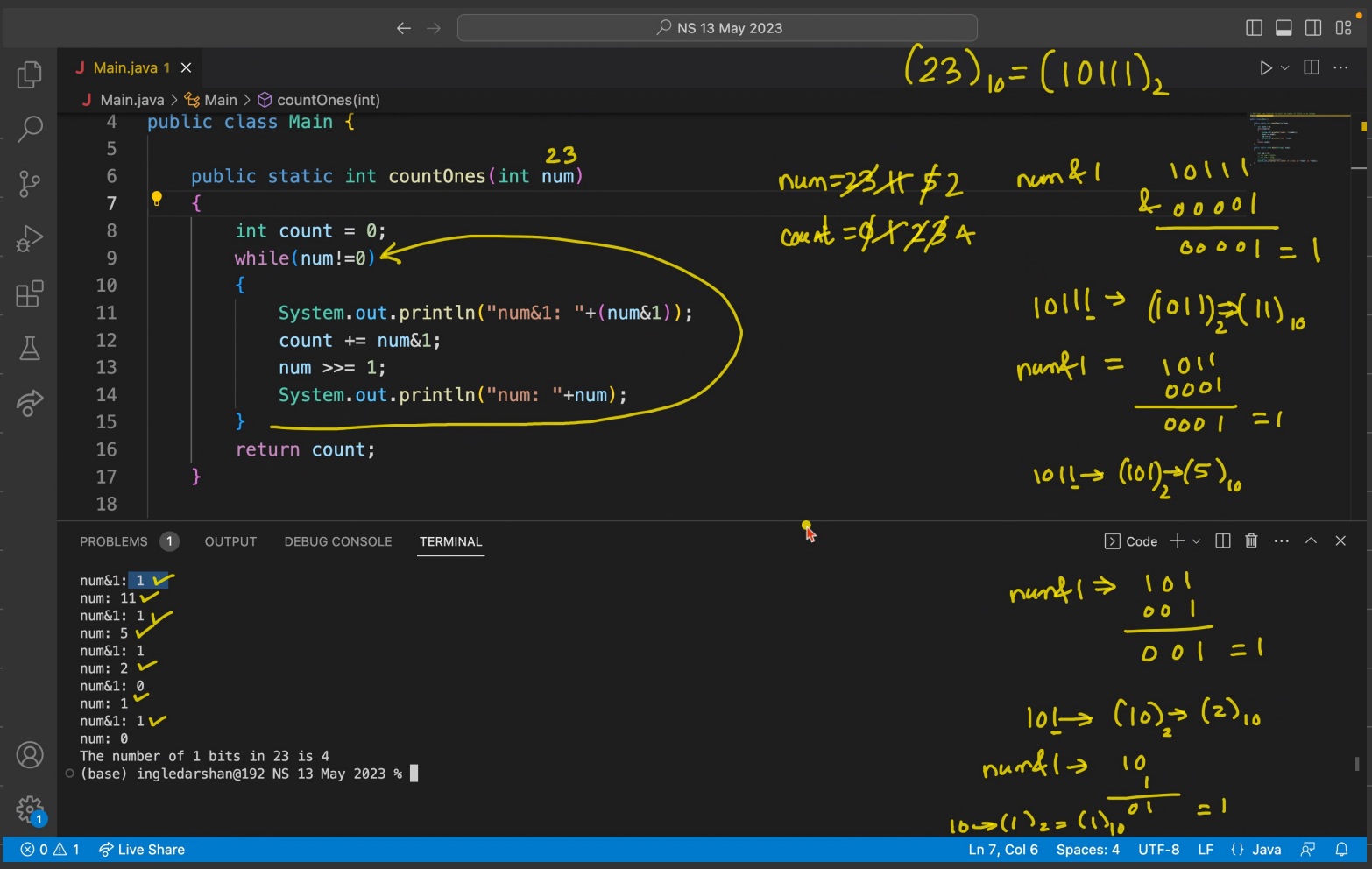
Bitwise & Logical operators:

2 | 1 = 3
2 & 1 = 0

2 || 1 = true
2 && 1 = true

// WAP that uses function to count the number of 1 bits in an integer





// WAP that finds the pair of integers in an array with minimum XOR value.

{3, 6, 9, 2, 7, 1}

Pair	XOR
3, 6	5
3, 9	10
3, 2	1
3, 7	4
3, 1	2
6, 9	15
6, 2	4
6, 7	1
6, 1	7
9, 2	11
9, 7	14
9, 1	8
2, 7	5
2, 1	3
7, 1	6

Min = 1