## Bitwise Operators

Bitwise operators in C perform operations on bit level.

There are:

- logic bitwise operators: & (bitwise AND), | (bitwise

 shift bitwise operators: << (bitwise left shift) and >> (bitwise right shift).

OR) and ~ (bitwise NOT).

• Logical shifts (zeros are shifted in) or arithmetic shifts (sign bit is shifted in).

## ...in selfie

- The semantics of the bitwise operators << and >> on the uint64\_t type is that of a logical shift.
- In selfie there are library functions that perform shift operations (see <a href="here">here</a>):
  - -leftshift():  $n \ll b = n * 2b$
  - rightshift():  $n \gg b = n / 2^b$

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- Logical shifts (zeros are shifted in) or <u>arithmetic shifts</u> (sign bit is shifted in).