

Complement

| ~ | bit a | ~a |
|---|-------|----|
| | 0 | 1 |
| | 1 | 0 |

AND

| & | a | b | a & b |
|---|---|---|-------|
| | 1 | 1 | 1 |
| | 1 | 0 | 0 |
| | 0 | 1 | 0 |
| | 0 | 0 | 0 |

OR

| | a | b | a b |
|--|---|---|-------|
| | 1 | 1 | 1 |
| | 1 | 0 | 1 |
| | 0 | 1 | 1 |
| | 0 | 0 | 0 |

XOR
(eXclusive OR)

| ^ | a | b | a ^ b |
|---|---|---|-------|
| | 1 | 1 | 0 |
| | 1 | 0 | 1 |
| | 0 | 1 | 1 |
| | 0 | 0 | 0 |

| Hex ₁₆ | Binary ₂ | Dec ₁₀ |
|-------------------|---------------------|-------------------|
| 0 | 0000 | 00 |
| 1 | 0001 | 01 |
| 2 | 0010 | 02 |
| 3 | 0011 | 03 |
| 4 | 0100 | 04 |
| 5 | 0101 | 05 |
| 6 | 0110 | 06 |
| 7 | 0111 | 07 |
| 8 | 1000 | 08 |
| 9 | 1001 | 09 |
| A | 1010 | 10 |
| B | 1011 | 11 |
| C | 1100 | 12 |
| D | 1101 | 13 |
| E | 1110 | 14 |
| F | 1111 | 15 |

Left Shift <<

| a | m | a << m |
|------|---|--------|
| 0101 | 1 | 1010 |
| 0101 | 2 | 0100 |
| 0101 | 3 | 1000 |
| 0101 | 4 | 0000 |

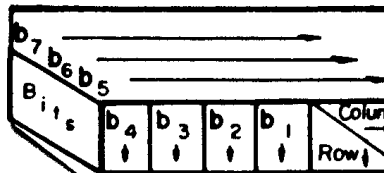
Right Shift >>
0 sign extended

| a | m | a >> m |
|------|---|--------|
| 0101 | 1 | 0010 |
| 0101 | 2 | 0001 |
| 0101 | 3 | 0000 |

Right Shift >>
1 sign extended

| a | m | a >> m |
|------|---|--------|
| 1010 | 1 | 1101 |
| 1010 | 2 | 1110 |
| 1010 | 3 | 1111 |

USASCII code chart



| Row \ Column | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------|-----|-----|----|---|---|---|---|-----|
| 0 | NUL | DLE | SP | 0 | @ | P | \ | p |
| 1 | SOH | DC1 | ! | 1 | A | Q | a | q |
| 2 | STX | DC2 | " | 2 | B | R | b | r |
| 3 | ETX | DC3 | # | 3 | C | S | c | s |
| 4 | EOT | DC4 | \$ | 4 | D | T | d | t |
| 5 | ENQ | NAK | % | 5 | E | U | e | u |
| 6 | ACK | SYN | & | 6 | F | V | f | v |
| 7 | BEL | ETB | ' | 7 | G | W | g | w |
| 8 | BS | CAN | (| 8 | H | X | h | x |
| 9 | HT | EM |) | 9 | I | Y | i | y |
| 10 | LF | SUB | * | : | J | Z | j | z |
| 11 | VT | ESC | + | ; | K | [| k | { |
| 12 | FF | FS | , | < | L | \ | l | |
| 13 | CR | GS | - | = | M |] | m | } |
| 14 | SO | RS | . | > | N | ^ | n | ~ |
| 15 | SI | US | / | ? | O | _ | o | DEL |