

Bitwise Operators:

- AND ✓
- OR ✓
- XOR ✓
- NOT

Shift left LSL
Shift right LSR

A: 65
B: 66
C: 190

LDD A
AND B
STD C

LDD A
NOT
STD C

ACC

01000001
01000000

01000001
10111110
128 64 32 16 8 4 2 1 → 255
65

AND

| | | | | | | | |
|-------|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| <hr/> | | | | | | | |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

- Set (OR) 0 → 1
- Clear (AND) 1 → 0
- Inverse (XOR) 1 → 0, 0 → 1

A = 65 =
a = 97 =

| | | | | | | | |
|-----|----|----|----|---|---|---|---|
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

32

A: ~~65~~ 97 65

LDD A
OR #32
STD A

ACC

01000001
00100000
01100001

OR #32
#B 00100000
8 4 0

AND

| | | | | | | | |
|-------|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| <hr/> | | | | | | | |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |

LDD A
AND #223
STD A

+8 00001000
-8 11111000

+8 00001000
11111011 Inverse
+00000001 INC
-8 11111000

2's Complement
1's Complement

| | |
|----|----|
| X: | +8 |
| Y: | -8 |

LDD X
XOR #255
INC
STD Y

ACC

00001000
11110111
11111000

XOR

| | | | | | | | |
|-------|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| <hr/> | | | | | | | |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |