

ICS Homework Week 3

September 25, 2020

1. Suppose that A and B have 2-byte values 0xABCD and 0x5E2F, respectively. Fill in the following table indicating the 2-byte values of the different C expressions:

Expression	Value	Expression	Value
$A \& B$	0x0A0D	$A B$	0xFFEF
$A \& \& B$	0x0001	$A B$	0x0001
$\sim A \& \sim B$	0x0010	$!A !B$	0x0000
$A \& !B$	0x0000	$A \wedge B << 3$	0x5AB5

2. Using $|$, $\&$ and $\sim$, write a C expression that is equivalent to $A \wedge B$.

1 `(A|B) - (A&B)`

3. Suppose we number the bytes in a 4-byte word from 0 (least significant) to 3 (most significant). Design a C expression, which will return a 4-byte word in which byte i of word X has been replaced by byte i of word Y .
For example, $X=0x12345678$, $Y=0xABCDEF09$, and $i=2$, it will generate $0x12CD5678$

1 `(X&~(0xFF<<8*i)) | (Y&0xFF<<8*i)`