ICS Homework Week 6

October 22, 2021

1. **Value Comparison** Assume int value is encoded using **16 bits**. Please fill in the following table with "$<$","$>$" or "$=$". U means the constant is unsigned.

Constant A	Constant B	A ? B
-2U	-1U	$<$
-1	1	$<$
-1	100U	$>$
-1	65535U	$=$
-32767	32768U	$>$

$$2^{16} = 2^{10} \cdot 2^{6}$$
$$= 1024 \times 64$$
$$= 65536$$

2. **Arithmetic Operations** Assume x and y are both 4 bit signed integers. Fill the following table. Truncate all the results to 4 bits with 2's complement and write their value in decimal.

	$x + y$	$x - y$	$x * y$	$-y$
$x = 4, y = 7$	-5	-3	-4	-7
$x = -6, y = -8$	2	2	0	-8
$x = 5, y = -1$	4	6	-5	1
$x = -3, y = 6$	3	7	-2	-6