

CSCI 2330 – Integer Logic Exercises

Let **ux** be an arbitrary unsigned int and let **x** and **y** be arbitrary signed ints (in 32 bits). Assume that all constants are signed. For each expression below, decide whether the expression is **true** for all variable values or potentially **false**. If the latter, find a **counterexample** to demonstrate (i.e., give specific value(s) of the variable(s) for which the expression is false).

Hint: `INT_MIN/Tmin` often causes surprising results.

1. **ux** >= 0

2. **ux** > -1

3. **if** **x** > 0 && **y** > 0 **then** (**x** + **y**) > 0

4. **if** **x** >= 0 **then** -**x** <= 0

5. **if** **x** <= 0 **then** -**x** >= 0

6. **if** **x** > **y** **then** -**x** < -**y**

7. **if** **x** & 7 == 7 **then** (**x** << 30) < 0

8. (**x** | -**x**) >> 31 == -1