Homework #2

Due at Wednesday midnight, April 1, 2019

1. Practice Problem

2.23

2.30

2.31

2.36

2.37

1. Answer to following equation to TRUE or FALSE. Justify your answers.
2. int x = foo();
3. int y = bar();
4. unsigned ux = (unsigned) x;
5. unsigned uy = (unsigned) y

* 𝒙<𝟎⇒(𝒙∙𝟐)<𝟎
* 𝒖𝒙≥𝟎
* (𝒙 & 𝟕)[[1]](#footnote-1)==𝟕⇒(𝒙≪𝟑𝟎)<𝟎
* 𝒖𝒙≻−𝟏
* 𝒙>𝒚⇒−𝒙<−𝒚
* 𝒙∙𝒙≥𝟎
* 𝒙>𝟎 && 𝒚>𝟎⇒𝒙+𝒚>𝟎
* 𝒙≥𝟎⇒−𝒙≤𝟎
* 𝒙≤𝟎⇒−𝒙≥𝟎
* (𝒙 |−𝒙)≫𝟑𝟏==−𝟏
* 𝒖𝒙≫𝟑==𝒖𝒙∕𝟖
* 𝒙≫𝟑==𝒙∕𝟖
* (𝒙 & (𝒙−𝟏)) !=𝟎

1. In the following questions assume the variables **a** and **b** are signed integers and that the machine uses two’s complement representation. Also assume the MAX\_INT is the maximum integer, MIN\_INT is the minimum integer, and W is one less than the word length (e.g., W = 31 for 32-bit integers).

Match each of the descriptions on the left with a line of code on the right (write in the number). Justify your answer.

* 1. One’s complement of a
  2. a
  3. a & b
  4. a \* 7
  5. a / 4
  6. (a < 0) ? 1 : -1

1. ((a^b) & ~b)|(~(a^b) & b)
2. 1+(a<<3) + ~a
3. (a<<4)+(a<<2)+(a<<1)
4. ((a<0)?(a+3): a)>>2
5. a^(MIN\_INT + MAX\_INT)
6. ~((a|(~a+1))>>W)& 1
7. ~((a>>W)<<1)
8. a>>2
9. ~(~a | (b ^ (MIN\_INT | MAX\_INT)))

# Deliverables

Work your report with a word processor at your preference. Name you file to yourSchoolId.[doc|hwp] and upload your report to iCampus. Please do not zip your file or your will get no points for the homework.

1. ‘==’ has a higher precedence than ‘&’ [↑](#footnote-ref-1)