Wyatt Kormick

4932481

Discussion Section 12

1. Indicates Carry Out Bit

Problem 1

Q1.

1. 14214
2. 7117

Q2. & 0x01FF

Q3.

1. 390
2. 461

Problem 2

Q1. 0xEAE

Q2. 4015

Problem 3

(x << 2) + (x >> 1)

Problem 4

|  |  |  |  |
| --- | --- | --- | --- |
| Format A | | Format B | |
| Bits | Value | Bits | Value |
| 1 10110 111 | -240 | 1 1110 0111 | -240 |
| 0 01101 100 | 3/8 | 0 0101 0100 | 3/8 |
| 1 00000 000 | -1/2048 | N/A | N/A |
| 0 00000 000 | 0 | 0 0000 0000 | 0 |
| 0 11000 101 | 832 | 0 (1)0000 0101 | 832 |

Problem 5

starting x 4

starting y 3

a 0x500

b 0x510

c 4

d 0x500

e 35

f 35

g 35

h 120

Problem 6

Q1. 0111 1111

Q2. 255

Q3.

1. (1)00101101
2. 301 (If using all 9 bits) 45 (If only using original 8 bits)
3. No, the addition results in a 9-bit positive integer, but that works

Q4.

1. 11000110
2. -58
3. Yes, the addition results in the unintentional flipping of the sign bit to become a negative value

Q5.

1. (1)10111110
2. -66
3. No, the addition of these two negatives results correctly in a negative with a carry out

Problem 7

Q1. 0 0000 0 00

Q2. 1 0000 1 00

Q3. 0 0011 0 01

Q4. 0 0010 1 01

Q5. 0 0001 1 10

Problem 8

|  |  |  |
| --- | --- | --- |
| Q | TRUE/FALSE | Counter Example |
| If x < 0 then x – 1 < 0 | True |  |
| If x > 0 then x \* x > 0 | False | 216\*216 = 232 = 100…00 < 0 |
| (~u <= 0) == FALSE | True |  |
| If x < 0 then u > x | True |  |
| If x > -y then -x < y | False | 011…11 > 100…00, 111…11 !> 111…1110 |
| (x << m) >> m == x | False | 100…00 << m (m>=1) = 00….000  00…000 >> m = 00…000 |
| U & 0 == 0 | True |  |
| If x >= 0 then ~x <= -x - 1 | True |  |