ICS Homework 1

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T1

1

$-114_{ten} = 1000\ 1110_{two}$
$+81_{ten} = 0101\ 0001_{two}$

2

$0011\ 0010_{two} = 50_{ten}$
$1111\ 1101_{two} = -3_{ten}$

T2

1

smallest: -128_{ten}
largest: 127_{ten}

2

range: -2^N to $2^N - 1$

T3

-64_{ten}

T4

1

While the value of $a - b$ exceeds the largest value of the data type int.

2

Then the program will give the right answer. That's because under the rules of 2's complement, when a - opeator is put before a, the computer will invert all bits of a and add 1. That gives $2^N - a$ in unsigned int representation.

T5

$4098\frac{1}{256}$

T6

smallest number: 1 11111111 11111111111111111111111

smallest positive number: 0 00000000 00000000000000000000000

T7

0

T8

1

```
1  void swap(int *a, int *b){
2    *c= *a ^ *b;
3    *a= *a ^ *c;
4    *b= *b ^ *c;
5  }
```

2

T9

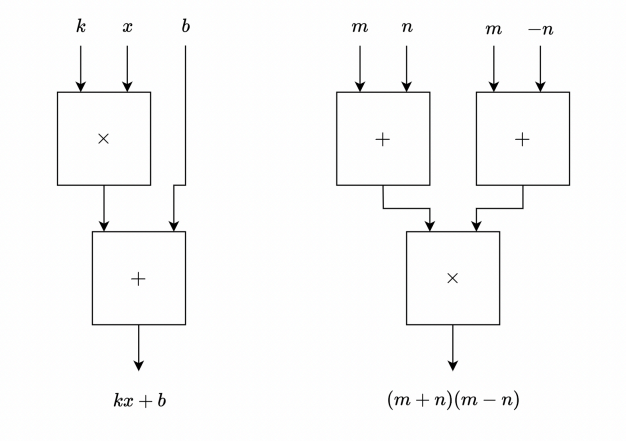

Figure 1: 9.1&9.2

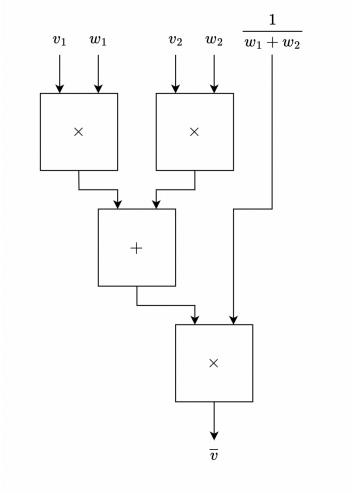

Figure 2: 9.4

T10

1

$2^6 = 64$

So we need 6 bits.

2

$6N$

3

000111 011101 100101 100101 101000 111111 010110 101000 101011 100101 011101 111110