Noah Jones

Dr. Basikyar

COMP 3350

Homework 1

1. What is the decimal representation of each of the binary integers below: assume (1) and (2) are signed and (3) is unsigned?

    1. 1111 1011 … = 0000 0101 (by 2's complement) = -5

    2. 0110 0100 … 4 + 32 + 64 = 100

    3. 1001 1010 … 2 + 8 + 16 + 128 = 154

2. What is the minimum number of binary bits needed to represent each of the following decimal numbers?

    1. 65437 = 16 bits

    2. 10361 = 14 bits

    3. -4177 = 13 bits using a (-) or 14 bits using a {1,0} at MSB to denote {+,-}

3. What is the hexadecimal representation of each of the following binary numbers?

    1. 1011 1001 1001 1100 = 47,516 = 0xB99C

    2. 1101 0110 0111 0011 = 54,899 = 0xD673

    3. 0011 0110 0001 1001 = 13,849 = 0x3619

4. What is the decimal value of the following representation of each hex integer below—assume they use unsigned notation?1

    1. 4024 = 16420

2. FEE = 4078

3. 10F3 = 4339

5. What is the 16-bit hexadecimal representation of each decimal integer?

   1. –619 = 0xFD95

   2. –312 = 0xFEC8

   3. +1947 = 0x79B

6. What is the 8-bit binary (2's complement) representation of each of the decimal integers?

   1. –35 = 1101 1101

   2. +103 = 0110 0111

   3. –114 = 1000 1110

7. Write the ASCII code for the string "COVID". The answer should provide ASCII (in hexadecimal) corresponding to each letter in the string. The ASCII values can be found on the inner cover of the book.

0x34 F4 65 94 44

8. What is the range of decimal values that can be represented by:

1. 7-bit unsigned integer? -64 thru +63

2. 7-bit signed integer? -127 thru +127