**CSCI240 – Computer Organization and Assembly Language Programming**

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**Assignment:** Homework 2

1. 2.1) Given *n* bits, there are 2 to the *n*th power combinations of bits
2. 2.2) You would need 5 bits to represent every letter, as that would allow 32 possible combinations. In order to represent both lower and upper case letters, you would need 6 bits (64 combinations), as you would need 52 different combinations.
3. 2.4) You could represent any unsigned integer with *n* bits, with a range of [0,∞)
4. 2.6) The 6 bit2’s complement representation of – 32 is 10 0000.

* 10 0000 Unsigned representation of 32
* 01 1111 Flip bits
* 01 1111 + 1 Add one
* 10 0000 Answer

1. 2.7)

|  |  |
| --- | --- |
| Decimal | 2’s Complement |
| 4 | 0100 |
| 3 | 0011 |
| 2 | 0010 |
| 1 | 0001 |
| 0 | 0000 |
| -1 | 1111 |
| -2 | 1110 |
| -3 | 1101 |
| -4 | 1100 |

1. 2.8)
2. The largest positive number you could represent in 2’s complement code with 8 bits is 0111 1111, which is 127.
3. The greatest magnitude negative number you could represent in 8 bits with 2’s complement is

1111 1111, which is -127

1. 2.10)
2. 1010 =