Recitation#1: Number Conversion

CS232 Spring 2021

# When: January 29 at 2:00 pm

Assume we are dealing with 8 bit numbers for this task. Complete the following tables to practice encoding decimal values into unsigned and two’s complement. The first table is unsigned and the second table is two’s complement. The first row of each column has been filled out for you. If a decimal number can’t be encoded into binary and hexadecimal with the given scheme, write “NA” for both columns.

**Note**: the ‘0b’ and ‘0x’ prefixes denote the following numeral as binary or hexadecimal respectively.

**Unsigned**

|  |  |  |
| --- | --- | --- |
| **Decimal** | **Binary** | **Hexadecimal** |
| 10 | 0b0000 1010 | 0x0A |
| 241 | 0b1111 0001 | 0XF1 |
| 15 | 0b0000 1111 | 0x0F |
| 162 | 0b1010 0010 | 0xA2 |
| 250 | 0b1111 1010 | 0xFA |
| 255 | 0b1111 1111 | 0xFF |
| 204 | 0b1100 1100 | 0xCC |
| -35 | 0b1101 1101 | 0xDD |
| 128 | 0b1000 0000 | 80 |
| 105 | 0b0110 1001 | 0x69 |

**Two's Complement**

|  |  |  |
| --- | --- | --- |
| **Decimal** | **Binary** | **Hexadecimal** |
| -10 | 0b1111 0110 | 0xF6 |
| -15 | 0b1111 0001 | 0xF1 |
| 15 | 0b0000 1111 | 0x0F |
| -94 | 0b1010 0010 | 0xA2 |
| 250 | 0b1111 1010 | 0xFA |
| 255 | 0b1111 1111 | 0xFF |
| -52 | 0b1100 1100 | 0xCC |
| -35 | 0b1101 1101 | 0xDD |
| 128 | 0b1000 0000 | 0x80 |
| 105 | 0b0110 1001 | 0x69 |