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CS210 PS 1 Part B

Task 1

2.61 A) `x || 0`

B) `x && 0`

C) `(x << (w - 8)) || 0`

D) `(x >> (w - 8))  && 0`

2.68)
```
int lower_one_mask(int n) {
    return ~(-1 << n)
}
```

2.71 A) It doesn't return negative values correctly

B)
```
int xbyte(packed_t, int bytenum) {
    return (word << ((3 - bytenum) << 3)) >> 24
}
```

2.76 A) x * 17 == x * 16 + x == `(x << 4) + x`

B) x * -7 == x - x * 8 == `x - (x << 3)`

C) x * 60 == x * 64 - x * 4 == `(x << 6) - (x << 2)`

D) x* -112 == x * 16 - x * 128 == `(x << 4) - (x << 7)`

Task 2

C Expression	Hexadeximal
x	0xFFFFFFFF
y	0xFEEDFACE
z	0x7FFFFFFF
i	0x000000004
z << 3	0xFFFFFFF8
z << ((i >> 1) - 1)	0x00FFFFFE
~0 == (z + INT MIN)	0x00000000
y & 0xffff	0x0000FACE
y >> 16	0xFFFFFEED
(y >> 16) ll 0xffff	0xFFFFFFFF
(~(0x10>>2)+1) == (x*i)	0x00000001

C Expression	Hexadeximal
(~z+1) + -1	0x80000000
(~((~x) << 1)) & y	0xFEEDFACE
((y<<3)+INT_MIN)^((y<<3)+INT_MIN)	0x00000000

Task 3

1. 21
2. Decimal: 28
   Hex: 0x1C
3. [110110.001]
4. Binary: [01010010] . [00000011]
   Hex: 52 . 3
   0x52.3
5. -1
6.
   A. Result: [1111011] (Overflow) -> [111011]: 59
   B. Result: [1101110] (Overflow) -> [101110]: 46
   C. Result: [1001010] (Overflow) -> [001010]: 10
7.

Value	Decimal	Binary
Largest Positive Number	15	[01111]
Most Negative Number	-16	[10000]
Number of distinct Numbers	32	[00000]