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EE222 HW2

1. The output of the program is:

    a. 0xA40A
    This is outputted by the program because it used s, which is type short, which means the 1 will be omitted.

    b. -23542
    This will be outputted by the program because it is the floating representation of i.

    c. Nothing is printed
    Nothing is outputted by this except for the new line because there is no char to be printed

    d. 10
    This will be outputted by the program because it is the decimal representation.

2.

985 —> floating point

Step 1: 985 in binary is 1111011001
Step 2: Exponent is 9 so we have 1.111011001 x 2^9
Step 3: Sign is positive so we get a zero
Step 4: Bias is 127, 127 + 9 = 136
Step 5: 136 in binary is 10001000
Step 6: Mantissa is the numbers after the decimal point, we get 111011001
Step 7: Combine sign, exponent, and mantissa, we get: 0 10001000 111011001

985 in floating point representation is **0 10001000 11101100100000000000000**

3.
0x89AB0000 convert to binary, then decimal

Step 1: 0x89AB0000 in binary is **1000 1001 1010 1011 00000000000000000000000000000000**
Step 2: We now convert to decimal, ignoring the 32 ending zeros
Step 3: We get 2^16 + 2^12 + 2^9 + 2^8 + 2^6 + 2^4 + 2^2 + 2^1 = 70486

0x89AB0000 in binary is **1000 1001 1010 1011 00000000000000000000000000000000**
1000 1001 1010 1011 00000000000000000000000000000000 in decimal is **70486**

4. The output of the program is:

    i in hex: 0xAABBCCDD
    This is printed because it is already in hex, so it is just reprinted

    i in decimal: -1430532899
    This is printed because it is the decimal representation of 0xAABBCCDD

    i as unsigned: 286443497
    This is printed because it is the unsigned representation of 0xAABBCCDD

    s in hex: 0xCCDD
    This is printed because it is already in hex, so it is just reprinted, but only the last four hex digits are printed because the type of s is short

    s in decimal: -13091
    This is printed because it is the decimal representation of 0xCCDD

    s as unsigned: 52445
    This is printed because it is the unsigned representation of 0xCCDD

5. The output of the program is:

    f: -3.765625
    f: -3.765625e+00
    These are the outputs of the program because in it you converted i, an int to a float type, then printed the float type, in the following print line you print the same number, but as an exponent in exponent form.