CS150 - Computer Organization and Architecture
Homework #3 - Spring 2023

1. Convert the following binary numbers to equivalent decimal numbers.

- *(a)* $(11010.1)_2$

- *(b)* $(101011.101)_2$

- *(c)* $(10100.01)_2$

- *(d)* $(1001101.111)_2$

- *(e)* $(10110.010)_2$

2. Perform the following hexadecimal arithmetic.

```
a.   A2                    b.   8FF
   x  3                       + 301
     --                        ---




c.   E06                   d.   5CA
   -  4F                       - 1FF
     ---                        ---




e.    62                   f.   C8A
   x  12                       + 3F3
     ---                        ---
```
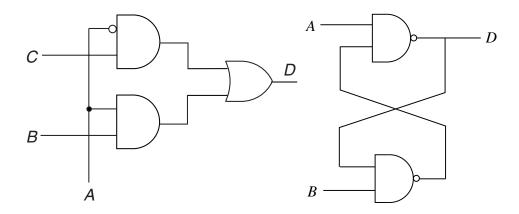
3. Convert the following decimal numbers into equivalent 16-bit two's complement binary numbers.

- $(211)_{10}$

- $(-211)_{10}$

- $(32765)_{10}$

- $(-9)_{10}$

- $(-2)_{10}$

4. One of the circuits below is combinational, whereas the other is sequential. Please label the circuits as such, and justify your answer.

Answer Here:

5. Generate a gate-level logic circuit diagram which satisfies the truth table shown below. Please use only AND, OR, and NOT gates and be sure to clearly denote wire junctions.

A	B	C	Z
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0