

Assignment 4 – Binary and Hexadecimal Bases

1. Complete the table below by counting upward in binary and hexadecimal

Decimal	Binary	Hexadecimal
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

2. Complete the table below by doubling

n	2 ⁿ
0	
1	
2	
3	
4	
5	
6	
7	
8	

3. Convert each given binary value to hexadecimal and decimal

- a) 0b 0100 0011
 0x _____ (convert to hexadecimal)
 _____ (convert to decimal)
- b) 0b 1110 1010
 0x _____ (convert to hexadecimal)
 _____ (convert to decimal)
- c) 0b 1001 1000
 0x _____ (convert to hexadecimal)
 _____ (convert to decimal)

4. Convert each given hexadecimal value to binary and decimal

- a) 0x 49
 0b _____ (convert to binary)
 _____ (convert to decimal)
- b) 0x 2F
 0b _____ (convert to binary)
 _____ (convert to decimal)
- c) 0x AA
 0b _____ (convert to binary)
 _____ (convert to decimal)

5. Convert each given decimal value to binary and hexadecimal

- a) 219
 0b _____ (convert to binary)
 0x _____ (convert to hexadecimal)
- b) 96
 0b _____ (convert to binary)
 0x _____ (convert to hexadecimal)
- c) 125
 0b _____ (convert to binary)
 0x _____ (convert to hexadecimal)

6. Find the sums of the following binary values. Convert each binary value to decimal to verify that the arithmetic was valid.

a. 0b 101 → (convert to decimal)

 + 0b 111 → (convert to decimal)

(add) 0b → (convert to decimal)

b. 0b 110 → (convert to decimal)

 + 0b 11 → (convert to decimal)

(add) 0b → (convert to decimal)

c. 0b 1111 → (convert to decimal)

 + 0b 100001 → (convert to decimal)

(add) 0b → (convert to decimal)

7. Find the differences of the following binary values. Convert each binary value to decimal to verify that the arithmetic was valid.

a. 0b 10100 → (convert to decimal)

 - 0b 1010 → (convert to decimal)

(subtract) 0b → (convert to decimal)

b. 0b 111100 → (convert to decimal)

 - 0b 11101 → (convert to decimal)

(subtract) 0b → (convert to decimal)

c. 0b 101111 → (convert to decimal)

 - 0b 1111 → (convert to decimal)

(subtract) 0b → (convert to decimal)