

CIS365 - Homework 1

Instructor: Dr. Zahid Syed

Deadline: Jan 27, 2016 - At start of class

Instructions:

- If any questions require calculations, you must show them to receive full credit. Simply writing the answer in such cases will not suffice.
- You are permitted to discuss the following questions with others in the class. However, you must write up your own solutions to these questions.
- **Submission instructions:**
 - ✓ Submit a hardcopy before start of class
 - ✓ Late assignments will not be accepted.

1. Convert the following hexadecimal numbers to decimal:

- 4E
- 3D7
- 3D70

2. How many bits will it take to represent the decimal number 3,175,000? How many bytes will it take to store this number?

3. Add the following binary numbers

a.

$$\begin{array}{r} 101101101 \\ + 10011011 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 110111111 \\ + 110111111 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 11010011 \\ + 10001010 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 1101 \\ 1010 \\ 111 \\ + 101 \\ \hline \end{array}$$

4. Repeat the previous additions by converting each number to hexadecimal, adding, and converting the result back to binary

5. Multiply the following binary numbers together:

a.

$$\begin{array}{r} 1101 \\ \times 101 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 11011 \\ \times 1011 \\ \hline \end{array}$$

6. Using the division method, convert the following decimal numbers:

- a. 13750 to base 12
 - b. 6026 to hexadecimal
 - c. 3175 to base 5
7. Using the division method, convert the following decimal numbers to binary:
- a. 4098
 - b. 71269
 - c. 37
 - d. In each case, check your work by using the power of each digit to convert back to decimal
8. Convert the following binary numbers directly to hexadecimal:
- a. 101101110111010
 - b. 1111111111110001
 - c. 1111111101111
 - d. 110001100011001
9. Convert the following hexadecimal numbers to binary:
- a. 4F6A
 - b. 9902
 - c. A3AB
 - d. 1000
10. Convert the following numbers from decimal to hexadecimal. If the answer is irrational, stop at four hexadecimal digits:
- a. 0.6640625
 - b. 0.3333
 - c. $69/256$
11. Convert the following numbers from their given base to decimal:
- a. 0.10010012
 - b. 0.3A216
 - c. 0.2A112
12. Convert the following numbers from decimal to binary and then to hexadecimal:
- a. 27.625
 - b. 4192.37761
13. What is the decimal value of the following binary numbers?
- a. 1100101.1
 - b. 1110010.11
 - c. 11100101.1