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1/23/24

CDA2108 Introduction to Computer Systems

SP2024 Homework # 1

**Answer the following six questions and show your steps.**

Question 1*(10 points)*: Express the following numbers in decimal.

1. (10110*.*0101)2

16+4+2+0.25+0.0625 = 22.3125

2. (16*.*5)16

1 \* 161 + 6 \* 160 + 5 \* 16-1 = 22.3125

3. (26*.*24)8

2 \* 81 + 6 \* 80 + 2 \* 8-1 + 4 \* 8-2 = 22.3125

4. (DADA.B)16

­ D = 13, A = 10, B = 11.  
 13 \* 163 + 10 \* 162 + 13 \* 161 + 10 \* 160 + 11 \* 16-1 = 56026.6875

5. (1010.1101)2  
  
 8+2+0.5+0.25+0.625 = 10.8125

Question 2*(10 points)*: Convert the following numbers to binary.

1. (2014)8 = 10000001100

2. (2014)16 = 10000000010100

Question 3*(10 points)*: Convert the following binary number 1000110110011.1 to

1. Octal = 001+000+110+110+011+.100 == 10663.6
2. Hexadecimal = 0001+0001+1011+0011+.1000 == 11B3.8

Question 4*(10 points)*: Perform the following binary arithmetic operations:

010111 + 011101

A yellow and blue line with numbers

Description automatically generated

11101 \* 101

A drawing of numbers and symbols

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Question 5*(10 points)*:

1. Represent the decimal number 873 in BCD.

8 = 1000, 7 = 0111, 3 = 0011. Answer: 100001110011

1. Find the binary representation for the following BCD number:

(1000 1001 0100)BCD1000 = 8, 1001 = 9, 0100 = 4. Answer: 894

Question 6*(10 points)*: Perform the following hexadecimal addition: 8A2C + F37B

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