No E-Mail submissions will be accepted.
Submission formats and file naming:
File name : Pts_firstName_lastName_lab_2
File format: pdf or MS Word format
e.g. Pts_Donald_Trump_lab_2.pdf

Reading materials

Use the following link and write a one page summary about the movie.

How a CPU is made

https://youtu.be/qm67wbB5GmI

1) Convert to decimal:

(a) 10011101_2 (b) $EFAA216_{16}$ (c) 670_8

a) 157 b) 251,306,518 c) 440

2) Convert to hexadecimal and then to binary:

(a) 186_{10} (b) 349_{10} (c) 908_{10} (d) 230_{10}

a) BA (10111010) b) 15D (0001 0101 1101) c) 38C (0011 1000 1100)

d) E6 (1110 0110)

3) Convert to hexadecimal:

(a) 10010_2 (b) 1110100_2 (c) 10000001001111_2

a) 12 b) 74 c) 204F

4) Convert to octal:

(a) 189_{10} (b) 298_{10} (c) 3080_{10}

a) 275 b) 452 c) 6010

5) Use two's complement representation and show that:

(You need to convert all numbers to binary format first. Use 10-bit representation for each number)

(a) $224_{10} - 345_{10} = -121_{10}$

(b) $200_{10} - 11_{10} = 189_{10}$

a) 0011100000 – (0101011001) = 0011100000 + (1010100110 + 1)

= 1110000111 (-121)
0001111000+1 = 0001111001 (121)

b) 0011001000 – 0000001011 = 0011001000 + (1111110100 + 1)

= 10010111101 ⇒ 0010111101 (189)

6) Complete the following table

Decimal	Binary	S	F	E
-3.125	-11.001	1	1001 9	1
0.84375	0.11011	0	1011 B	-1
10.625	1010.1010	0	0101010 54	3

2 x 0.125 = 0.25
0.25 x 2 = 0.5
0.5 x 2 = 1.0

7) Convert -81.0625 into 32-bit, IEEE-754 in binary.

Decimal	Binary	S	E_b	F
-81.0625	-1010001.0001	1	10000101 85	01000100010000000000000 444000

81 => 1010001
0.0625 x 2 = 0.125

2 x 0.125 = 0.25
0.25 x 2 = 0.5
0.5 x 2 = 1.0

1010001.0001 = 1.0100010001×2^6

E = 6 => E_b = E + 127 = 6 + 127 = 133 = 10000101