

Practical 3

Number Representation

NOTE: Use of internet is not permitted (apart from committing submission to Github, GitLab or BitBucket), calculators are permitted, and your answers must include worked solutions. If you require extra sheet(s) please write your name and student number at the top of each additional sheet. All work should be stored in source control.

Objective

Complete sample exam questions d, e, and f below

- (d) Detail the computations for subtracting the numbers below in binary utilising 8-bit complimentary addition
 $32 - 16_{10}$

(8 marks)

- (e) Convert hexadecimal number which is a hexadecimal representation of an IEEE Single Precision Floating Point number.
 $C0\ 48\ 00\ 00_{16} \equiv \text{Decimal}_{10}$

(8 marks)

- (f) Given that the ASCII value for 'A' is 41_{16} , Space is 20_{16} and 'a' is 61_{16} convert the hexadecimal string below into a string
 $48\ 61\ 6E\ 20\ 53\ 6F\ 6C\ 6F \equiv \text{string}_{char}$

(6 marks)

Commit this practical report at the end of session and ensure it has been checked

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Date	12/09/22	Checked	
Group	A		

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1) $0010\ 0000 \xrightarrow{+1111} 1110\ 1111$
 $0001\ 0000 \xrightarrow{+1110\ 1111} 1111\ 1111$

$1110\ 1111 \rightarrow 0010\ 0000$
 $1111\ 1111 \rightarrow 0001\ 0000$

$0001\ 0000 \rightarrow \text{base 10} \rightarrow 16_{10}$

2) $0\ 4\ 8\ 0\ 0\ 0\ 0$

$1100\ 0000\ 0100\ 1000\ 1000\ 1000\ 1000\ 1000$

$1100\ 0000\ 1000\ 1000\ 0000\ 0000\ 0000\ 0000$

$-1 \times 2^4 (0,5625)$
 $-8 - 0,28125$

Rough Work

3) $49\ 61\ 6E\ 20\ 53\ 6F\ 6C\ 6F =$

ASCII table

A = 41	a = 61
B = 42	b = 62
C = 43	c = 63
D = 44	d = 64
E = 45	e = 65
F = 46	f = 66
G = 47	g = 67
H = 48	h = 68
I = 49	i = 69
J = 4A	j = 6A
K = 4B	k = 6B
L = 4C	l = 6C
M = 4D	m = 6D
N = 4E	n = 6E
O = 4F	o = 6F
P = 50	p = 70
Q = 51	q = 71
R = 52	r = 72
S = 53	s = 73
T = 54	t = 74
U = 55	u = 75
V = 56	v = 76
W = 57	w = 77
X = 58	x = 78
Y = 59	y = 79
Z = 5A	z = 7A

$48 = H$
 $61 = a$
 $6E = n$
 $20 = \text{space}$
 $53 = S$
 $6F = o$
 $6C = l$
 $6F = o$

$= \text{Han Solo}$