Assignment 1

"I confirm that I will keep the content of this assignment confidential. I confirm that I have not received any unauthorized assistance in preparing for or writing this assignment. I acknowledge that a mark of 0 may be assigned for copied work."

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Section 1

Question 1:

1. What is meant by one-to-many relationship when comparing a high-level language to machine?
    - In HLL (High Level Language), One-to-many relationship refers to the difference in the operations from HLL to machine code. E.g., When we do a simple (Addition, Subtraction, Multiplication, Division) operations which is only one operation in HLL, that will convert to many operations into the machine language after compiling.
2. Briefly explain why does memory access take more machine cycles than register access?
    - As we know that register is placed withing the CPU and is hardwired, as memory is outside the CPU and takes more time to respond (e.g., accept requests) and is not hardwired.

Question 2:

1. Conversions:
a) 0011 0101 1101 1010 [convert into Hex, Dec]

0011	0101	1101	1010	(Binary)
= 3	= 5	= D	= A	= 35DA (Hex)
= 3 * 16^3	= 5 * 16^2	= 13 * 16^1	= 11 * 16^0	= 13786 (Dec)

b) A4693FBC [convert into Binary]

A	4	6	9	3	F	B	C	(Hex)
1010	0100	0110	1001	0011	1111	1011	1100	(Binary)

c) Represent decimal number "22" in unsigned binary and 2's complement!

22	(Dec)
10110	(Binary)
010110	(10110)Signed 2's Compliment

2. Calculate:

a) 10101111+11011011

				1	1	1	1	1	1	1	1	
0	0	0	0	1	0	1	0	1	1	1	1	
0	0	0	0	1	1	0	1	1	0	1	1	
0	0	0	1	1	0	0	0	1	0	1	0	

b) 00001101+00000111

								1	1	1	1	
0	0	0	0	0	0	0	0	1	1	0	1	
0	0	0	0	0	0	0	0	0	1	1	1	
0	0	0	0	0	0	0	1	0	1	0	0	

c) A49+6BD

		1	1	1	
0	0	0	A	4	9
0	0	0	6	B	D
0	0	1	1	0	6

Question 3:

1. Show the steps for loading and executing a program in a flowchart.
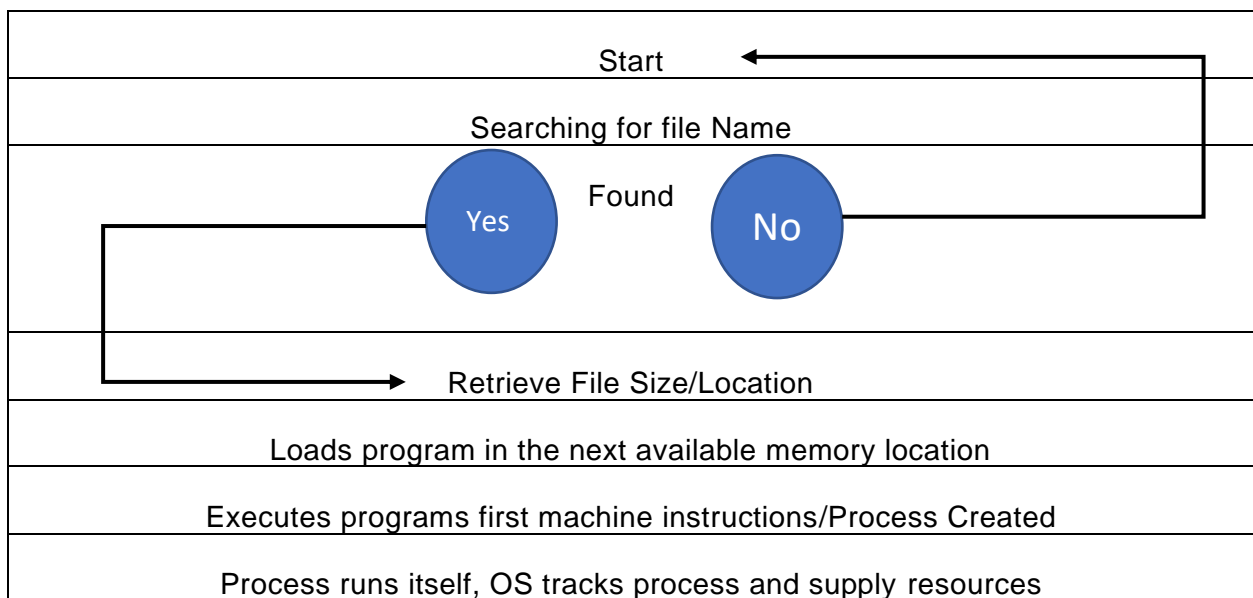
Process ends, Remove from memory location
End

2. Difference between:
a) Real and Protected mode
   - Difference between these two modes is that both have different access.
   - Real Mode can use BIOS and OS subroutines.
   - Protected mode only uses OS subroutines.
b) EDX, DX and DH registers
   - The main difference is the size of these registers.
   - EDX is 32-bit.
   - DX is 16-bit.
   - DH is 8-bit.