**CS501 Assignment#1**

**If you find any mistakes, kindly correct yourself.**

**Write the instructions for the 2-address machine and 3-address machine to evaluate the following expression.**

Z = 2(X + Y) - 4XY

Note: x, y and z represent memory locations.

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| 2 Address Machine. | 3 Address Machine. |
| load m,X | add m,x,y |
| add m,Y | mul t,m,2 |
| mul m,2 | mul p,4,x |
| load n,x | mul q,p,y |
| mul n,y | sub z,t,q |
| mul n,4 |  |
| sub m,n |  |
| load z, m |  |

**Question No 2 Solution:**

Consider the following Assembly code written for SRC machine where t, a and b are memory locations and their value are t = 5, a = 4 and b = 38.

ld R1, t :load t value = 5 into R1

addi R3, R1, 40 now R3 contain 45: R1 value + 40 and store in R3

addi R3, R3, 2 now r3 contains 47 : R3 value + 2 and store in R3

shl R1, R3, 2 now multiply R3 value 47 with 4 :4 (47) and store in R1 : 188

sub R2, R1, R3 188 - 47 = R2 value : 141

ld R4, a now load a value 4 into R4

shl R5, R4, 4 now multiply R4 value with 16 : 16(4) now R5 value is 64

sub R5, R4, R3 now subtract R3 value form r4 : 4 - 47 = -43

**Note:**Fill up the given table with the values computed at the end of the code.

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| **Registers** | **Contents** |
| R1 | 188 |
| R2 | 141 |
| R3 | 47 |
| R4 | 4 |
| R5 | -43 |