**BPDC, Dubai - First Semester, 2021-2022**

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| **Course No: CS F342**  **Date: Week #04**  **Id No:** | **TUTORIAL 4** | **Course Title: Computer Architecture**  **Name:** |

1. Give the machines instructions corresponding to the pseudo instructions

1. li $t0, 64
2. move $a0, $t0
3. mul $a0, $t0, $t1
4. bgt $a0, $t0, L1

**Answer:**

**ori $8, $0, 64**

**addu $4, $0, $8 (OR) add $4, $8, $0 (OR) addi $4, $8, 0**

**mult $t0,$t1**

**mflo $a0**

**slt $1, $8, $4**

**bne $1, $0, L1**

2. Write MIPS equivalent code to the following if statement

if(i==j)

if (k != l)

f=g + h

else

f=g-h

Assume that f, g, h, i, j, k and l are in $s0 to $s6

**Answer:**

bne $s3, $s4, else #if i!=j then branch to else

beq $s5, $s6, out #if k = l then branch to out

add $s0, Ss1, $s2 #f = g + h

j out # branch to out

else:

sub $s0, Ss1, $s2 #f = g - h

out:

3**.** For the following C statement, what is the corresponding MIPS assembly code? Assume that the variables f, g, h, i, and j are assigned to registers $s0, $s1, $s2, $s3, and $s4, respectively. Assume that the base address of the arrays A and B are in registers $s6 and $s7, respectively.

B[8] = A[i−j];

**Answer**

sub $t0, $s3, $s4 #i-j

mul $t0, $t0, 4 #offset = index\*4

add $t0, $s6, $t0 #offset + base

lw $t1, 0($t0) #$t1 = word @ A[i-j]

sw $t1, 32($s7) #B[8] = A[i-j]

4. Show how the value 0xabcdef12 would be arranged in memory of a little-endian and a big-endian machine. Assume the data is stored starting at address 0.

