**Bahria University, Lahore Campus**

Department of Computer Sciences

Lab Journal 07

**(Spring 2023)**

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| Course: | **Computer Architecture & Organization Lab** |  |
| Course Code: | CEL 221 | Max Marks: 15 |
| Faculty’s Name: | Maryam Munawar | Lab Engineer: |

Name: AFFAN AHMAD \_\_\_ Enroll No: \_03-134221-003\_\_\_\_

## Lab Tasks:

### Task1: 5 Marks

Write programs to evaluate the following expressions. The user should enter the variables, and the program should print back an answer. x3 + 2y2 + 3z + 4

.data

x:.asciiz"enter x value :"

y:.asciiz"enter y value :"

z:.asciiz"enter z value :"

r:.asciiz"your result is :"

.text

main :

li $v0,4

la $a0,x

syscall

li $v0,5

syscall

move $t0,$v0

mul $t1,$t0,$t0

mul $t1,$t1,$t0

li $v0,4

la $a0,y

syscall

li $v0,5

syscall

move $t2,$v0

mul $t2 ,$t2,$t2

mul $t2,$t2,2

li $v0,4

la $a0,z

syscall

li $v0,5

syscall

move $t3,$v0

mul $t3,$t3,3

add $t1,$t1,$t2

add $t1,$t1,$t3

add $t1,$t1,4

li $v0,4

la $a0,r

syscall

li $v0,1

move $a0,$t1

syscall

li $v0, 10

syscall





**Task 2: 5 Marks**

Write a program to enter the basic salary of an employee. If the basic salary is greater than 5,000 the employee gets 10% of basic salary as medical allowance and 5% as home allowance. For employees with salary less than 5,000 these allowances are 5% and 10% respectively. Given the salary of an employee, compute the gross salary use branches.

**.data**

**s:.asciiz"enter your basic salary :"**

**m:.asciiz"your medical allowance is :"**

**h:.asciiz"your home allowance is :"**

**#r:.asciiz"your result is :"**

**.text**

**main :**

**li $v0,4**

**la $a0,s**

**syscall**

**li $v0,5**

**syscall**

**move $t0,$v0**

**bgt $t0,5000,val1**

**blt $t0,5000,val2**

**val1:**

**li $v0,4**

**la $a0,m**

**syscall**

**div $t1,$t0,100**

**mul $t1,$t1,10**

**li $v0,1**

**move $a0,$t1**

**syscall**

**li $v0,4**

**la $a0,h**

**syscall**

**div $t2,$t0,100**

**mul $t2,$t2,5**

**li $v0,1**

**move $a0,$t2**

**syscall**

**li $v0,10**

**syscall**

**val2:**

**li $v0,4**

**la $a0,m**

**syscall**

**div $t1,$t0,100**

**mul $t1,$t1,5**

**li $v0,1**

**move $a0,$t1**

**syscall**

**li $v0,4**

**la $a0,h**

**syscall**

**div $t2,$t0,100**

**mul $t2,$t2,10**

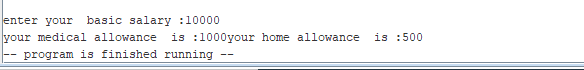
**li $v0,1**

**move $a0,$t2**

**syscall**

**li $v0,10**

**syscall**



**Task 3:**

**5 Marks**

Convert the following Pseudo code to the assembly language code.

n = prompt("enter the value to calculate the sum up to: ")

total = 0; # Initial the total variable for sum

for (i = 0; i < n; i++)

{

total = total + i

}

print("Total = " + total);

.data

s:.asciiz"enter the value to calculate the sum :"

r:.asciiz"your total is :"

.text

main :

addi $t1,$zero,0

addi $t3,$zero,0

addi $t2,$zero,0

li $v0,4

la $a0,s

syscall

li $v0,5

syscall

move $t0,$v0

beq $t3,0,for

for:

blt $t1,$t0,val

li $v0,4

la $a0,r

syscall

li $v0 ,1

move $a0,$t2

syscall

li $v0,10

syscall

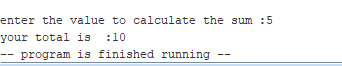
val:

add $t2,$t2,$t1

add $t1,$t1,1

b for

s



**Lab Grading Sheet :**

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Max Marks** | **Obtained Marks** | **Comments(*if any*)** |
| a. | 5 |  |  |
| b. | 5 |  |  |
| c. | 5 |  |  |
|  |  |  |  |
| **Total** | **15** |  | **Signature** |

**Note : Attempt all tasks and get them checked by your Instructor**