Lab Sheet 2

Date: - 24/08/2020

1. Accept two values from the user and display the sum of those two numbers on screen.

Code

*.data*

*msg1: .asciiz "\nEnter A: "*

*msg2: .asciiz "\nEnter B: "*

*msg3: .asciiz "\nA + B = "*

*cflf: .asciiz "\n"*

*.text*

*.globl main*

*main:*

*li $v0,4 # output msg1*

*la $a0, msg1*

*syscall*

*li $v0,5 # input A and save*

*syscall*

*move $t0,$v0*

*li $v0,4 # output msg2*

*la $a0, msg2*

*syscall*

*li $v0,5 # input B and save*

*syscall*

*move $t1,$v0*

*add $t0, $t0, $t1 # A = A + B*

*li $v0, 4 # output msg3*

*la $a0, msg3*

*syscall*

*li $v0,1 # output sum*

*move $a0, $t0*

*syscall*

*li $v0,4 # output lf*

*la $a0, cflf*

*syscall*

*li $v0,10 # exit*

*syscall*

Explanation

**li $v0,5 # input A and save**

Load the system register,*$v0*, with the input code.

**syscall**

System call to accept an *integer* from the keyboard and store it in register *$v0*.

**move $t0,$v0**

Macro to transfer the contents of system register *$v0* to temporary register *$t0*.

**add $t0, $t0, $t1 # A = A + B**

Add the contents of *$t0* to the contents of *$y1* and place the sum in *$t0*.

**li $v0,1 # output sum**

Load the system register *$v0* with the output *integer* code.

1. Write a MIPs program to find the sum of the first n numbers.

Code

*.data*

*msg1: .asciiz "\nNumber of integers (N)? "*

*msg2: .asciiz "\nSum = "*

*lf: .asciiz "\n"*

*.text*

*.globl main*

*main:*

*li $v0,4 # output msg1*

*la $a0, msg1*

*syscall*

*li $v0,5 # input N and save*

*syscall*

*move $t0,$v0*

*li $t1, 0 # initialize counter (i)*

*li $t2, 0 # initialize sum*

*loop: addi $t1, $t1, 1 # i = i + 1*

*add $t2, $t2, $t1 # sum = sum + i*

*beq $t0, $t1, exit # if i = N, continue*

*j loop*

*exit: li $v0, 4 # output msg2*

*la $a0, msg2*

*syscall*

*li $v0,1 # output sum*

*move $a0, $t2*

*syscall*

*li $v0,4 # output lf*

*la $a0, lf*

*syscall*

*li $v0,10 # exit*

*syscall*

**Explanation**

**li $t1, 0 # initialize counter (i)**

Temporary register *$t1* contains the count.

**li $t2, 0 # initialize sum**

Temporary register *$t2* contains the sum.

**loop: addi $t1, $t1, 1 # i = i + 1**

Increment the counter by one.

**add $t2, $t2, $t1 # sum = sum + i**

Add the counter to the sum.

**beq $t0, $t1, exit # if i != N, continue**

If the counter equals the number of integers, then exit the loop.

**j loop**

Else perform the summation again.

**exit: li $v0, 4 # output msg2**

Statement to execute upon leaving the loop.

1. **Program to multiply two numbers.**

*# Program to multiply two numbers.*

*.data*

*MSG1: .asciiz " The numbers 5 and 6 are multiplied together : "*

*.text*

*main:*

*li $t1,5 # loads the value 5 into $t1*

*li $t2,6 # loads the value 6 into $t2*

*mul $t1,$t1,$t2 # $t1=$t1\*$t2*

*li $v0,4 # Print out a string*

*la $a0,MSG1 # Get address of a string*

*syscall # Printing the string*

*li $v0,1 # Tell syscall to print a number*

*move $a0,$t1 # Move the number to $a0*

*syscall # display it*

*jr $ra # r*a holds the return address. Setting PC as $ra

**Exercise for evaluation**

1. Accept two values from user and find the product of those two numbers.
2. Write a program to find the product of first ‘n’ numbers and display it on screen.
3. Perform division operation on two numbers. **Hint : - instruction is div**

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