Assembly Lab 1 Report

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1. The “data” part

- .word: Store a listed value as 32-bit words

- .data: Store subsequent items in Data segment at next available address

- .text: Store items in Text segment

Use of data part: Notify the machine that it will create a memory for an array of 256 words

1. Content

- “li $t0, 16” and “li $t1, 16” assign that the two registers t0 and t1 will store the number of rows and columns

- 3 “move” commands assign the initial value of 3 corresponding registers to be 0( or $zero)

\* Loop:

- “mult $s0, $t1” assign the product of value of registers $s0 and $t1 to lo register(low-order 32 bits)

- “mflo $s2” set content of the lo register to the s2 register

- “add $s2, $s2, $s1”: s2 = s2 + s1. Store the addition of value of s2 and s1 into s2

- “sll $s2, $s2, 2” : shift left 2 bits of $s2( multiply 4 times of the value of register $s2). This command to get the exactly position of the memory of current index of current elements of array(16x16), because each index of element takes the length of 4 bits.

- “sw $t2, data($s2)” store the content of register s2 into the address of data($s2)

- “addi $s2, $t2, 1” increase the “position” on the register. We use addi bot not addiu to control the loop in the next command

- “addi $s1,$t1,1” increase the column to store the value

- “bne $s1,$t1, loop” do the loop if the 2 value of $s1 and $t1 is not equal

- “move $s1,$zero” set the value of register s1 to 0, so reset the column counter

- “addi $s0, $s0,1” add the value of register s0 by 1( go to the next row)

- “bne $s0, $t0, loop” do the loop if the 2 value of $s0 and $t0 is not equal

- “li $v0, 10” assign value of register v0 to 10. It’s the code to terminate the execution by syscall

Graphical user interface, application, table, Excel

Description automatically generated

Kết quả: in ra và duyệt ma trận trên 256 ô nhớ của vùng data