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| --- | --- | --- | --- |
| **MIPS Assembly Code Line** | **Explanation of the Line** | **Modified Registers** | **Values of the Modified Registers** |
| addi $s0,$0,256 | |  | | --- | | Initialize $s0 with 256 (sets a = 256). |  |  | | --- | |  | | $s0 | $s0 = 256 |
| addi $t1,$0,1 | Initialize $t1 with 1 (sets the value for comparison). | $t1 | $t1 = 1 |
| while: | Label for the loop start. |  |  |
| beq $s0,$t1,exit | Check if $s0 == $t1. If true, jump to exit label. |  |  |
| |  | | --- | | sra $s0,$s0,1 |  |  | | --- | |  | | Shift $s0 right by 1 bit (divide a by 2). | $s0 | $s0 = $s0 / 2 |
| addi $s1,$s1,1 | |  | | --- | |  |  |  | | --- | | Increment $s1 by 1 (increment b by 1). | | $s1 | $s1 = $s1 + 1 |
| j while | Jump to the while label to repeat the loop. |  |  |
| exit: | Label for exiting the loop once the condition is met. |  |  |
| li $v0, 10 | Load immediate value 10 into $v0 to prepare for exit. | $v0 | $v0 = 10 |
| syscall | Perform a syscall to exit the program. |  |  |

**LAB2.2**

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