**Question 1:**   (5 points)

Consider a 2 GHz processor that has the following CPIs for different instructions:

| Instruction | Type | CPI |
|---|---|---|
| Arithmetic | addition and subtraction | 3 |
| Control | branches and jumps | 4 |
| Memory | loads and stores | 5 |

If the initial value of $a1 = 3, what is the CPU time for the following fragment of MIPS assembly language code that will run on this processor?

```
bzero: beq $a1, $zero, end
loop:  sb $zero, 0($a0)
       addi $a0, $a0, 1
       addi $a1, $a1, -1
       bne $a1, $zero, loop
end:   jr $ra
```