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# Name: Emily Miller
# Description: Calculates the sum, mean, min, and max of a series of
numbers
# Date: October 14th, 2022
# Assignment 5

.data
    msg1: .asciiz "Enter integer values, one per line, terminated by a
negative value.\n"
    msg2: .asciiz "\nSum is: "
    msg3: .asciiz "\nMin is: "
    msg4: .asciiz "\nMax is: "
    msg5: .asciiz "\nMean is: "
    .align 2
    array: .space 400 # set array size between 0 and 100
    .align 2 # full word alignment
    .text
    .globl main
main:
    li $v0, 4
    la $a0, msg1
    syscall

    lui $s4, 0x7fff # load upper immediate
    ori $s4, $s4, 0xffff # load lower immediate
    move $s1, $zero
    move $s3, $zero # sum = 0
    move $s5, $zero # max = 0
    la $s6, array
    li $v0, 5 # read in user input
    syscall

loop:
    move $s2, $v0 # move the number into s2
    bltz $s2, complete
    sw $s2, 0($s6) # places the number into an array
    addi $s6, $s6, 4
    add $s1, $s1, $s2 # adds the numbers to the sum
    addi $s3, $s3, 1
    slt $t1, $s2, $s4
    beq $t1, $zero, checkmi # error checking
    move $s4, $s2
    checkmi:
        slt $t1, $s5, $s2
        beq $t1, $zero, checkma # if min is greater than the new number
then change it
        move $s5, $s2
    checkma:
        li $v0, 5
        syscall # reads the next number into the array
    j loop

complete:
    li $v0, 4

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    la $a0, msg2 # prints out the message and the sum of the numbers
entered
    syscall

    li $v0, 1
    move $a0, $s1
    syscall

    li $v0, 4
    la $a0, msg3 # prints out the min message
    syscall

    li $v0, 1
    move $a0, $s4 # print out the min number
    syscall

    li $v0, 4
    la $a0, msg4 # prints out the max message
    syscall

    li $v0, 1
    move $a0, $s5 # loads and prints the max number
    syscall

    li $v0, 4
    la $a0, msg5 # prints out the average message
    syscall

    mtc1 $s1, $f1 # moves sum to FP
    cvt.s.w $f1, $f1
    mtc1 $s3, $f3 # move the count to FP
    cvt.s.w $f3, $f3
    div.s $f1, $f1, $f3 # this gets the average by dividing the count by
the sum
    li $v0, 2
    mov.s $f12, $f1 # get ready to print the average
    syscall # prints average

jr $ra # end program

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