Evan Smith

Homework 2 – Min/Max MIPS

.globl main

.text

#find min and max value of an array of ints

main:

# Initialize registers

li $s1, 10 # initialize total count of values

la $s2, array #load address of array

la $s3, array #load address of array

li $t1, 0 # initialize min counter

lw $t2, ($s2) # initialize min

li $t3, 0 # initialize max counter

lw $t4, ($s2) # initialize max

#iterate over loop to find min value

min\_loop:

bge $t1, $s1, max\_loop #check that loop is valid

lw $t5 ($s2) #load next element of array

bge $t5, $t2, endif\_min #if this is new min, update

move $t2, $t5

endif\_min:

addi $t1, $t1, 1 #increment counter

addi $s2, $s2, 4

j min\_loop

#iterate over loop to find max value

max\_loop:

bge $t3, $s1, exit #check that loop is valid

lw $t5 ($s3) #load next element of array

ble $t5, $t4, endif\_max #if this is new max, update

move $t4, $t5

endif\_max:

addi $t3, $t3, 1 #increment counter

addi $s3, $s3, 4

j max\_loop

#output the min and max value

exit:

# print\_string syscall code = 4

# print\_int syscall code = 1

# Print min

li $v0,4

la $a0, min\_msg

syscall

li $v0,1

move $a0, $t2

syscall

# Print max

li $v0,4

la $a0, max\_msg

syscall

li $v0,1

move $a0, $t4

syscall

#exit program

li $v0, 10

syscall

.data

#load in the array to be processed

array: .word 20, 0, 1, 2, 33, 4, 5, 6, 7, -1

#Hold message literals

min\_msg: .asciiz "Min = "

max\_msg: .asciiz "\nMax = "

nl: .asciiz "\n"

Graphical user interface

Description automatically generated with low confidence