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Homework 2 – Min/Max MIPS

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.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
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        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"
```