CSE 661 - Advanced Computer Architecture
Group #2 Question 1

1. Source Code

```
.data
array:      .word  30, -12, -50, 48, 7, 19, -1030, 400, -32, 76
array_size: .word   10
print_min:  .asciiz "minimum value: "
print_max:  .asciiz "\nmaximum value: "
.globl main
.text


main:
        la $a0, array                   # load the address of array into $a0
        lw $a1, array_size              # $a1 is initially set to array size (10) and used as a counter
        lw $t2, ($a0)                   # $t2 is the max value variable
        lw $t3, ($a0)                   # $t3 is the min value variable

      loop:
        beq $a1, $zero, printResults        # if the counter is now 0, entire array has been evaluated so jump to printResults
        lw $t0, ($a0)                   # $t0 initially points to array[0]
        bge $t0, $t3, checkIfMin        # if $t0 >= $t3, check if $t0 is minimum value
        move $t3, $t0

        checkIfMin:
        ble $t0, $t2, checkIfMax        # if $t0 <= $t2, check if $t0 is max value
        move $t2, $t0

        checkIfMax:
        subi $a1, $a1, 1                # decrease the array counter
        addi $a0, $a0, 4
        j loop                  # jump to the beginning of the loop

       printResults:
        li $v0, 4
        la $a0, print_min               # print "minimum value" string
        syscall

        li $v0, 1
        move $a0, $t3                   # print minimum value
        syscall

        li $v0, 4
        la $a0, print_max               # print "maximum value" string
        syscall

        li $v0, 1               # print maximum value
        move $a0, $t2
        syscall

        li $v0, 10              # exit program
        syscall
```

2. Assembly Output