

Objective of the Lab/Program

The program will first print an unsorted array, then arrange them in descending order and finally print the assorted array

Assembly Source Codes

```
.data
array: .word 10, 22, 45, 80, 60, 82, 77, 63, 25, 93
arraysort: .word
size: .word 10
unsort: .asciiz "Unsorted array: "
sort: .asciiz "\nSorted array: "
space: .asciiz " "
.text

#defining variables
move $t4, $0          #printing counter
la $t0, array          #Contains the array
lw $t1, 0($t0)         #temp 1
lw $t2, 4($t0)         #temp2
li $t3, 0              #inside counter
li $t5, 0              #outside counter

#printing the unsorted array
la $a0, unsort
li $v0, 4
syscall

fake_print:
beq $t4, 10, start     #check if all numbers in the array are printed

lw $a0, ($t0)          #pointer pointing to a specific index of an array
li $v0, 1
syscall

la $a0, space
li $v0, 4
syscall

addi $t4, $t4, 1
addi $t0, $t0, 4
```

j fake_print

start:
subi \$t0, \$t0, 40
move \$t4, \$0

loop:
beq \$t3, 10, iterdone
 blt \$t1, \$t2, swap
 addi \$t0, \$t0, 4
 lw \$t1, 0(\$t0)
 lw \$t2, 4(\$t0)
 addi \$t3, \$t3, 1
 j loop

swap:
sw \$t1, 4(\$t0)
\$t1
sw \$t2, 0(\$t0)
\$t2
addi \$t0, \$t0, 4
index of array by 1
lw \$t1, 0(\$t0)
array[counter]
lw \$t2, 4(\$t0)
 #\$t1=array[counter+1]
addi \$t3, \$t3, 1
counter.

j loop

#Excute after an entire 10 loops occur

iterdone:
subi \$t0, \$t0, 40
to index 0
lw \$t1, 0(\$t0)
to array[1]
lw \$t2, 4(\$t0)
to array[2]
move \$t3, \$0
counter to 0
beq \$t5, 10, printing_loop
prints array if it had looped 10 times
addi \$t5, \$t5, 1
outer coutner

#array[x+1] =

#array[x] =

#increase

#\$t1=

#add 1 to the

#Reset array

#set \$t1 back

#set \$t2 back

#set inner

#stops looping and

#add 1 to

j loop

```
#print string
printing_loop:
la $a0, sort
li $v0, 4
syscall
```

```
real_print:
beq $t4, 10, exit      #check if all numbers in the array are printed

lw $a0, ($t0)          #pointer pointing to a specific index of an array
li $v0, 1
syscall

la $a0, space
li $v0, 4
syscall

addi $t4, $t4, 1
addi $t0, $t0, 4
j real_print
```

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

Screen shot of the results



```
-- program is finished running --
Unsorted array: 10 22 45 80 60 82 77 63 25 93
Sorted array: 93 82 80 77 63 60 45 25 22 10
-- program is finished running --
```

Conclusion and References

The program uses the code created from lab 4 to print the array and then utilizes bubble sorting to sort the array.