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CS 264

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**Lab 4**

**Code:**

.data

array: .space 480

prompt1: .asciiz "Please enter name of employee: "

prompt2: .asciiz "Please enter age of employee: "

prompt3: .asciiz "Please enter salary of employee to the nearest dollar: " #nearest dollar for int

prompt4: .asciiz "\nPlease enter a record number to be swapped (0-9): "

prompt5: .asciiz "Please enter a record number to swap with the previous record (0-9): "

prompt6: .asciiz "Invalid index. Please re-enter both indices."

name: .asciiz "\n\nEmployee name: "

age: .asciiz "Employee age: "

salary: .asciiz "\nEmployee salary: "

.text

.globl main

main: li $t0, 10 #counter

la $t1, array #address of array in $t1

readloop: la $a0, prompt1 #enter name prompt

li $v0, 4

syscall

move $a0, $t1

li $a1, 40

li $v0, 8

syscall

la $a0, prompt2 #enter age prompt

li $v0, 4

syscall

li $v0, 5 #read age

syscall

sw $v0, 40($t1) #offset 40 for after string

la $a0, prompt3 #enter salary prompt

li $v0, 4

syscall

li $v0, 5 #read salary

syscall

sw $v0, 44($t1) #offset 44 for after string and integer

addi $t0, $t0, -1 #decrement counter

addi $t1, $t1, 48 #increment to next employee posision

bnez $t0, readloop

print: li $t0, 10 #reset counter

la $t1, array #hold address of array

printloop: la $a0, name

li $v0, 4

syscall

move $a0, $t1 #print name

li $v0, 4

syscall

la $a0, age

li $v0, 4

syscall

lw $a0, 40($t1) #print age (offset 40 for after string)

li $v0, 1

syscall

la $a0, salary

li $v0, 4

syscall

lw $a0, 44($t1) #print salary (offset 44 for after string and age)

li $v0, 1

syscall

addi $t0, $t0, -1 #decrement counter

addi $t1, $t1, 48 #increment to next employee

bnez $t0, printloop

swap: la $a0, prompt4 #enter first index

li $v0, 4

syscall

li $v0, 5

syscall

blt $v0, 0, outofbounds

bgt $v0, 9, outofbounds

move $t0, $v0 #save value of first index

la $a0, prompt5 #enter second index

li $v0, 4

syscall

li $v0, 5

syscall

blt $v0, 0, outofbounds

bgt $v0, 9, outofbounds

#value of second index is in $v0

la $t1, array

mul $t0, $t0, 48 #multiply to location of employee $t0

mul $v0, $v0, 48 #multiply to location of employee $v0

add $t2, $t1, $t0

add $t3, $t1, $v0

li $t4, 12

swapLoop: lw $t5, 0($t2)

lw $t6, 0($t3)

sw $t5, 0($t3)

sw $t6, 0($t2)

addi $t4, $t4, -1

addi $t2, $t2, 4

addi $t3, $t3, 4

bnez $t4, swapLoop

li $t0, 10

la $t1, array

printafterswap:la $a0, name

li $v0, 4

syscall

move $a0, $t1 #print name

li $v0, 4

syscall

la $a0, age

li $v0, 4

syscall

lw $a0, 40($t1) #print age (offset 40 for after string)

li $v0, 1

syscall

la $a0, salary

li $v0, 4

syscall

lw $a0, 44($t1) #print salary (offset 44 for after string and age)

li $v0, 1

syscall

addi $t0, $t0, -1 #decrement counter

addi $t1, $t1, 48 #increment to next employee

bnez $t0, printafterswap

b end

outofbounds: la $a0, prompt6

li $v0, 4

syscall

b swap

end: li $v0, 10

syscall

**Output:**

Please enter name of employee: Taako

Please enter age of employee: 100

Please enter salary of employee to the nearest dollar: 4875

Please enter name of employee: Magnus

Please enter age of employee: 54

Please enter salary of employee to the nearest dollar: 4875

Please enter name of employee: Merle

Please enter age of employee: 73

Please enter salary of employee to the nearest dollar: 4875

Please enter name of employee: Angus

Please enter age of employee: 10

Please enter salary of employee to the nearest dollar: 53

Please enter name of employee: Roswell

Please enter age of employee: 789

Please enter salary of employee to the nearest dollar: 9875

Please enter name of employee: Jenkins

Please enter age of employee: 38

Please enter salary of employee to the nearest dollar: 6548

Please enter name of employee: Hurley

Please enter age of employee: 24

Please enter salary of employee to the nearest dollar: 3394

Please enter name of employee: Sloane

Please enter age of employee: 26

Please enter salary of employee to the nearest dollar: 1427

Please enter name of employee: Jereeeeee

Please enter age of employee: 30

Please enter salary of employee to the nearest dollar: 4

Please enter name of employee: Klarg

Please enter age of employee: 94

Please enter salary of employee to the nearest dollar: 1256

Employee name: Taako

Employee age: 100

Employee salary: 4875

Employee name: Magnus

Employee age: 54

Employee salary: 4875

Employee name: Merle

Employee age: 73

Employee salary: 4875

Employee name: Angus

Employee age: 10

Employee salary: 53

Employee name: Roswell

Employee age: 789

Employee salary: 9875

Employee name: Jenkins

Employee age: 38

Employee salary: 6548

Employee name: Hurley

Employee age: 24

Employee salary: 3394

Employee name: Sloane

Employee age: 26

Employee salary: 1427

Employee name: Jereeeeee

Employee age: 30

Employee salary: 4

Employee name: Klarg

Employee age: 94

Employee salary: 1256

Please enter a record number to be swapped (0-9): 1

Please enter a record number to swap with the previous record (0-9): 45

Invalid index. Please re-enter both indices.

Please enter a record number to be swapped (0-9): 3

Please enter a record number to swap with the previous record (0-9): 9

Employee name: Taako

Employee age: 100

Employee salary: 4875

Employee name: Magnus

Employee age: 54

Employee salary: 4875

Employee name: Merle

Employee age: 73

Employee salary: 4875

Employee name: Klarg

Employee age: 94

Employee salary: 1256

Employee name: Roswell

Employee age: 789

Employee salary: 9875

Employee name: Jenkins

Employee age: 38

Employee salary: 6548

Employee name: Hurley

Employee age: 24

Employee salary: 3394

Employee name: Sloane

Employee age: 26

Employee salary: 1427

Employee name: Jereeeeee

Employee age: 30

Employee salary: 4

Employee name: Angus

Employee age: 10

Employee salary: 53