**Preliminary Work / Preliminary Design Report (50 points)**

CS224

Section No.: 05

Spring 2018

Lab No.: 06

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.data

space : .asciiz " "

boslul: .asciiz " \n"

Menu: .asciiz "Menu\n"

Menu1: .asciiz "1. enter the matrix size in terms of its dimensions (N) \n"

Menu2: .asciiz "Allocate an array with proper size using syscall code 9\n"

Menu3: .asciiz "3.Ask user the matrix element to be accessed and display the content\n"

Menu4: .asciiz "4.Obtain summation of matrix elements row-major (row by row) summation\n"

Menu5: .asciiz "5.Obtain summation of matrix elements column-major (column by column) summation\n"

Menu6: .asciiz "6.Display desired elements of the matrix by specifying its row and column member\n"

Menu7: .asciiz "QUİT"

Choose: .asciiz "7.Enter the option you want to execute \n"

.text

menu:

li $v0,4

la $a0, Menu

syscall

li $v0,4

la $a0, Menu1

syscall

li $v0,4

la $a0, Menu2

syscall

li $v0,4

la $a0, Menu3

syscall

li $v0,4

la $a0, Menu4

syscall

li $v0,4

la $a0, Menu5

syscall

li $v0,4

la $a0, Menu6

syscall

li $v0,4

la $a0, Choose

syscall

li $v0, 5

syscall

move $t5, $v0

beq $t5,1, menu1

beq $t5,3, display

beq $t5, 4, summation

beq $t5, 5, colSummation

beq $t5, 6, desiredDisplay

beq $t5, 7, quit

#number of row and column

menu1:

.text

li $v0, 4 # prompt for number

la $a0,Menu1

syscall

li $v0, 5 # read a integer number

syscall

#row

move $t1, $v0

mul $s1,$t1,$t1

move $a0, $s1

#memory allocation

li $v0, 9

#base address

move $a0, $s1

syscall

#yedekleme

move $s2, $v0

move $s7,$s2 #display

move $t6, $s2 #sum

move $t0, $s2 #colsum

#initiliaziton of array has two loops

li $t3, 0

li $s6, 1

arrayBeginning:

bge $t3, $t1, endX

li $t4, 0

arrayX:

bge $t4, $t1, end

sw $s6, 0($s2)

addi $s2, $s2, 4

addi $s6, $s6, 1

addi $t4, $t4, 1

b arrayX

end:

addi $t3,$t3, 1

b arrayBeginning

endX:

j menu

display:

li $t8, 0

display2:

#t1=size, t8=counter

bge $t8, $t1, endEnd

li $t9, 0#second loop counter

arrayX2:

bge $t9, $t1, doneDisplay

li $s5,0

lw $s5, 0($s7)

#li $v0,4

move $a0, $s5

li $v0,1

syscall

addi $t9, $t9, 1

addi $s7, $s7, 4

b arrayX2

doneDisplay:

li $v0, 4

la $a0,boslul

syscall

addi $t8, $t8, 1

b display2

endEnd:

j menu

summation:

li $t8, 0

li $t7, 0

summation2:

#t1=size, t8=counter

bge $t8, $t1, endSummation

li $t9, 0#second loop counter

firstloop:

bge $t9, $t1, sum

li $s5,0

lw $s5, 0($t6)

#li $v0,4

add $t7, $t7, $s5

addi $t9, $t9, 1

addi $t6, $t6, 4

b firstloop

sum:

move $a0, $t7

li $v0,1

syscall

li $v0, 4

la $a0,boslul

syscall

li $t7,0

addi $t8, $t8, 1

b summation2

endSummation:

j menu

colSummation:

li $t8, 0

li $t7, 0

move $s3, $t0

#t1=size, t8=counter

summationCol:

bge $t8, $t1, endSummation2

move $t5, $t1

li $t9, 0#second loop counter

firstloop2:

bge $t9, $t1, sum2

li $s5,0

lw $s5, 0($s3)

#li $v0,4

add $t7, $t7, $s5

mul $t5, $t5, 4 #size kadar jump

addi $t9, $t9, 1

add $s3, $s3, $t5

b firstloop2

sum2:

move $a0, $t7

li $v0,1

syscall

li $v0, 4

la $a0,boslul

syscall

li $t7,0

move $s3, $t0

add $s3, $s3, 4

addi $t8, $t8, 1

b summationCol

endSummation2:

j menu

desiredDisplay:

li $v0, 4 # prompt for number

la $a0,Menu1

syscall

li $v0, 5 # read a integer number

syscall

move $t4, $v0

li $t8,0

display3:

#t1=size, t8=counter

bge $t8, $t1, endloop

li $t9, 0#second loop counter

loop3:

bge $t9, $t1, doneDisplayDesired

li $s5,0

lw $s5, 0($s7)

#li $v0,4

beq $s5, $t4, displaycont

addi $t9, $t9, 1

addi $s7, $s7, 4

b arrayX2

doneDisplayDesired:

addi $t8, $t8, 1

b display2

displaycont:

li $v0,1

la $a0, $s5

syscall

li $v0, 4

la $a0,boslul

syscall

endloop:

j menu

quit:

li $v0,10

syscall