**Bahria University, Lahore Campus**

Department of Computer Sciences

Lab Journal 06

**(Spring 2023)**

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| Course: | **Computer Architecture & Organization Lab** |  |
| Course Code: | CEL 221 | Max Marks: 15 |
| Faculty’s Name: | Maryam Munawar | Lab Engineer: |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enroll No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Lab Tasks:

### Task1: 5 Minutes

Prompt the user for a number n, 0 < n < 100. Print out the smallest number of coins (quarters, dimes, nickels, and pennies) which will produce n. For example, if the user enters "66", your program should print out "2 quarters, 1 dime, 1 nickel, and 1 penny".

.data

prompt1: .asciiz "Please enter integer: "

c:.asciiz "your number must be in btween 0 to 100 :"

r: .asciiz "You median is : "

q: .asciiz"your quarter is :"

d: .asciiz"your dime is :"

n: .asciiz"your nickle is :"

p: .asciiz"your penny is :"

.text

addi $t0,$zero,1

li $v0,4

la $a0,prompt1

syscall

li $v0,5

syscall

move $s1,$v0

slti $s0,$s1,0

beq $s0,$t0,check1

sgt $s0,$s1,100

beq $s0,$t0,check1

div $t1,$s1,25

mfhi $t2

li $v0,4

la $a0,q

syscall

li $v0 ,1

move $a0,$t1

syscall

div $t1,$t2,10

mfhi $t2

li $v0,4

la $a0,d

syscall

li $v0 ,1

move $a0,$t1

syscall

div $t1,$t2,5

mfhi $t2

li $v0,4

la $a0,n

syscall

li $v0 ,1

move $a0,$t1

syscall

div $t1,$t2,1

mfhi $t2

li $v0,4

la $a0,p

syscall

li $v0 ,1

move $a0,$t1

syscall

li $v0,10

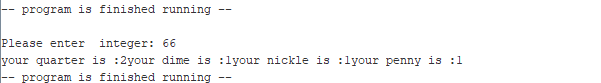
syscall

check1:

li $v0,4

la $a0,c

syscall



### Task2: 5 Minutes

## Implement a subprogram that prompt the user for 3 numbers, finds the median (middle value) of the 3, and returns that value to the calling program.

data

prompt1: .asciiz "Please enter an 1 integer: "

prompt2: .asciiz "Please enter an 2 integer: "

prompt3: .asciiz "Please enter an 3 integer: "

result: .asciiz "You median is : "

.text

.

li $v0,4

la $a0,prompt1

syscall

li $v0,5

syscall

move $s0, $v0

li $v0,4

la $a0,prompt2

syscall

li $v0,5

syscall

move $s1, $v0

li $v0,4

la $a0,prompt3

syscall

li $v0,5

move $s2, $v0

syscall

li $v0, 4

la $a0, result

syscall

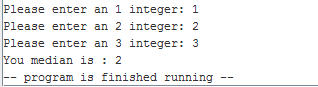
li $v0, 1

move $a0, $s1

syscall

li $v0, 10

Syscall



### Task3: 5 Minutes

Implement a subprogram that prompts a user to enter values from 0..100 until a sentinel value of -1 is entered. Return the average of the numbers to the calling program.

.data

prompt1: .asciiz "Please enter integer: "

c:.asciiz "your number must be in btween 0 to 100 :"

a: .asciiz "press 2 for result: \n "

q: .asciiz"your quarter is :"

d: .asciiz"your dime is :"

n: .asciiz"your nickle is :"

p: .asciiz"your penny is :"

.text

addi $t4,$zero,1

addi $t0,$zero,0

addi $t3,$zero,2

val:

add $t0,$t0,1

li $v0,4

la $a0,a

syscall

li $v0,4

la $a0,prompt1

syscall

li $v0,5

syscall

move $s1,$v0

slti $s0,$s1,0

beq $s0,$t0,check1

sgt $s0,$s1,100

beq $s0,$t0,check1

add $t2 ,$s1,$t2

beq $s1,$t3,r

b val

r :

sub $t0,$t0,$t4

div $t2,$t2,$t0

li $v0 ,1

move $a0,$t2

syscall

li $v0,10

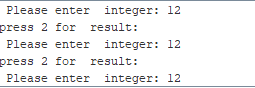
syscall

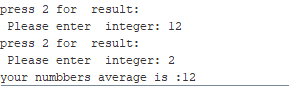
check1:

li $v0,4

la $a0,c

syscall





**Lab Grading Sheet :**

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| --- | --- | --- | --- |
| **Task** | **Max Marks** | **Obtained Marks** | **Comments(*if any*)** |
| a. | 5 |  |  |
| b. | 5 |  |  |
| c. | 5 |  |  |
|  |  |  |  |
| **Total** | **15** |  | **Signature** |

**Note : Attempt all tasks and get them checked by your Instructor**