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Section:	BCE – 5A
Subject:	Computer Organization & Architecture
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Lab Report:	1

Lab 1 Introduction to MIPS Assembly

Objectives

- Writing simple MIPS assembly programs
- Using Syscall

In Lab Tasks

1. Write a program that takes marks of 10 students and then displays the average.

Code

```
.data
msg: .asciiz "Enter the number: \n"
remsg: .asciiz "The combined number is: "

.text
main:
li $t0, 0
li $t1, 0

read_inputs:
li $v0, 4
la $a0, msg
syscall

li $v0, 5
syscall

mul $t1, $t1, 10
add $t1, $t1, $v0

addi $t0, $t0, 1

blt $t0, 3, read_inputs

li $v0, 4
la $a0, remsg
syscall

li $v0, 1
move $a0, $t1
syscall

li $v0, 10
syscall
```

```
Enter mark: 45
Enter mark: 33
Enter mark: 44

Average = 48
```

Output

2. Write a program that inputs three 1-digit numbers and combines them to form a 3 digit number. For example input 4, 8 ,7, output = 487.

Code

```
.data
msg: .asciiz "Enter the number: \n"
remsg: .asciiz "The combined number is: "

.text
main:
li $t0, 0
li $t1, 0

read_inputs:
li $v0, 4
la $a0, msg
syscall

li $v0, 5
syscall

mul $t1, $t1, 10
add $t1, $t1, $v0

addi $t0, $t0, 1

blt $t0, 3, read_inputs

li $v0, 4
la $a0, remsg
syscall

li $v0, 1
move $a0, $t1
syscall

li $v0, 10
syscall
```

```
Enter a digit: 4
Enter a digit: 8
Enter a digit: 7

The combined number is: 487
```

Output

3. Write a program that inputs marks of four quizzes and four assignments, each out of 10, and the calculates total marks out of 25. Total quiz marks 15/25 and Assignment marks = 10/25.

```
.data
quiz_message: .asciiz "ENTER QUIZ MARK: \n"
assignment_message: .asciiz "ENRTER ASSIGNMENT MARK: \n"
result: .asciiz "TOTAL MARKS: \n"

.text
main:
li $t0, 0 # QUIZ
li $t1, 0 # ASSIGNMENT
li $t2, 0 # COUNTER

quiz:

li $v0, 4
la $a0, quiz_message
syscall

li $v0, 5
syscall

add $t0, $t0, $v0

addi $t2, $t2, 1

blt $t2, 4, quiz

li $t2, 0

assignment:

li $v0, 4
la $a0, assignment_message
syscall

li $v0, 5
syscall

add $t1, $t1, $v0

addi $t2, $t2, 1

blt $t2, 4, assignment
```

```
li $t3, 15
mul $t4, $t3, $t0
li $t5, 40
div $t4, $t5
mflo $t6

li $t3, 10
mul $t4, $t3, $t1
li $t5, 40
div $t4, $t5
mflo $t7

li $v0, 4
la $a0, result
syscall

add $t8, $t6, $t7
move $a0, $t8

li $v0, 1
syscall
li $v0, 10
syscall
```

Output

```
Enter quiz mark (out of 10): 5
Enter quiz mark (out of 10): 7
Enter quiz mark (out of 10): 2
Enter quiz mark (out of 10): 3

Enter assignment mark (out of 10): 10
Enter assignment mark (out of 10): 10
Enter assignment mark (out of 10): 10
Enter assignment mark (out of 10): 10

Total marks (out of 25) = 16
```

Critical Analysis / Conclusion

This lab was a great hands-on start to MIPS assembly. I got practice with core concepts like loops, syscall, and register management. The main challenge was keeping track of all the temporary registers to avoid errors. Figuring out how to mathematically combine digits into one number was a good puzzle. It taught me that assembly requires careful, logical thinking and organization.

Lab Assessment		
Pre Lab	**/5**	**/25**
Performance	**/5**	
Results	**/5**	
Viva	**/5**	
Critical Analysis	**/5**	
Instructor Signature and Comments		