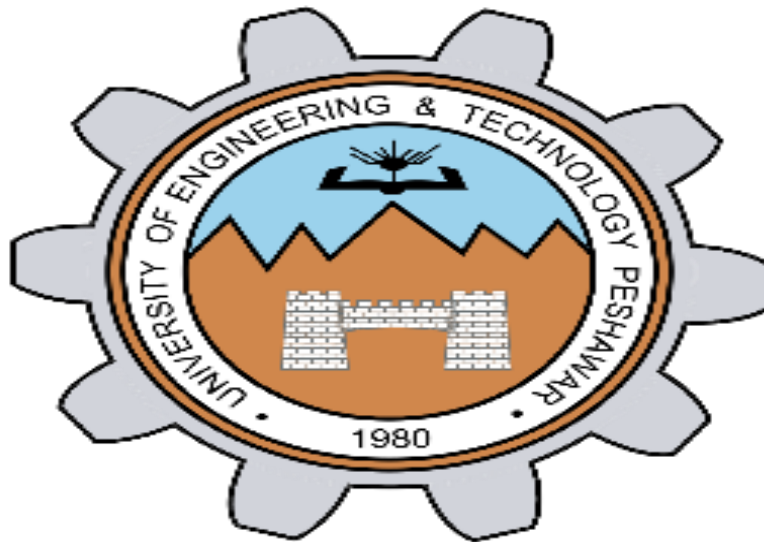


**University of Engineering & Technology,  
Peshawar**

**DEPARTMENT OF COMPUTER SYSTEM ENGINEERING**

**Fall 2021**



**LAB 03**

**(CSE-304L)**

**Computer Organization and Architecture Lab**

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**Reg NO: 19PWCSE1770**

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## 1.Addition of numbers and Display:

### Source code:

```
.data
str0: .asciiz"Anis Ahmad: \n 19PWCSE1770:\n "
str: .asciiz"Enter first number: "
str1: .asciiz"Enter second number: "
str2: .asciiz"Result After Addition: "
.text
main:
```

```
li $v0,4
```

```
la $a0,str0
```

```
syscall
```

```
li $v0,4
```

```
la $a0,str
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t0,$v0
```

```
li $v0,4  
la $a0,str2
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t1,$v0
```

```
add  
$t2,$t0,$t1
```

```
li $v0, 4  
la $a0,str2  
syscall
```

```
li $v0,1  
move  
$a0,$t2  
syscall
```

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

## Output:

Regs	Int Regs [10]	Data	Text
Int Regs [10]		Console	
PC	= 4194444	Anis Ahmad:	
EPC	= 0	19PWCSE1770:	
Cause	= 0	Enter first number: 76	
BadVAddr	= 0	Enter second number: 56	
Status	= 805371664	Result After Addition: 132	
HI	= 0		
LO	= 0		
R0	[r0] = 0		
R1	[at] = 268500992		
R2	[v0] = 10		
R3	[v1] = 0		
R4	[a0] = 132		
R5	[a1] = 2147482064		
R6	[a2] = 2147482076		
R7	[a3] = 0		
R8	[t0] = 76		
R9	[t1] = 56		
R10	[t2] = 132		
R11	[t3] = 0		
R12	[t4] = 0		
R13	[t5] = 0		
R14	[t6] = 0		

## 2.Display the Last digit of a Number:

### Source code:

```
.data
str: .asciiz"Anis Ahmad: \n 19PWCSE1770:\n "
str1: .asciiz"Enter number: "
str2: .asciiz"Last number: "
.text
main:
```

```
li $v0,4
```

```
la $a0,str
```

```
syscall
```

```
li $v0,4
```

```
la $a0,str
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t0,$v0
```

## Output:

```
div $t1,$t0,10
```

```
li $v0, 4
```

```
la $a0,str2
```

```
syscall
```

```
li $v0,1
```

```
mfhi $a0
```

```
syscall
```

```
li $v0,10
```

```
syscall
```

Regs	Int Regs [10]	Data	Text
Int Regs [10]		Console	
PC	= 4194424	Anis Ahmad:	
EPC	= 0	19PWCSE1770:	
Cause	= 0	Enter number: 768	
BadVAddr	= 0	Last number: 8	
Status	= 805371664		
HI	= 8		
LO	= 76		
R0 [r0]	= 0		
R1 [at]	= 268500992		
R2 [v0]	= 10		
R3 [v1]	= 0		
R4 [a0]	= 8		
R5 [a1]	= 2147482064		
R6 [a2]	= 2147482076		
R7 [a3]	= 0		
R8 [t0]	= 768		
R9 [t1]	= 76		
R10 [t2]	= 0		
R11 [t3]	= 0		
R12 [t4]	= 0		

### 3.Finding the Number is Greater then Zero:

#### Source code:

```
.data

str: .asciiz"Anis Ahmad: \n 19PWCSE1770:\n "

str1: .asciiz"Enter number: "

str2: .asciiz"Not grearter then zero: "

str3: .asciiz"Number grearter then zero "

.text

main:
```

```
li $v0,4

la $a0,str

syscall
```

```
li $v0,4

la $a0,str1

syscall

li $v0,5

syscall

move $t0,$v0
```

```
bgt $t0,$t1 label
```

```
li $v0,4
```

```
la $a0,str2
```

```
syscall
```

```
b end
```

```
label:
```

```
li $v0,4
```

```
la $a0,str3
```

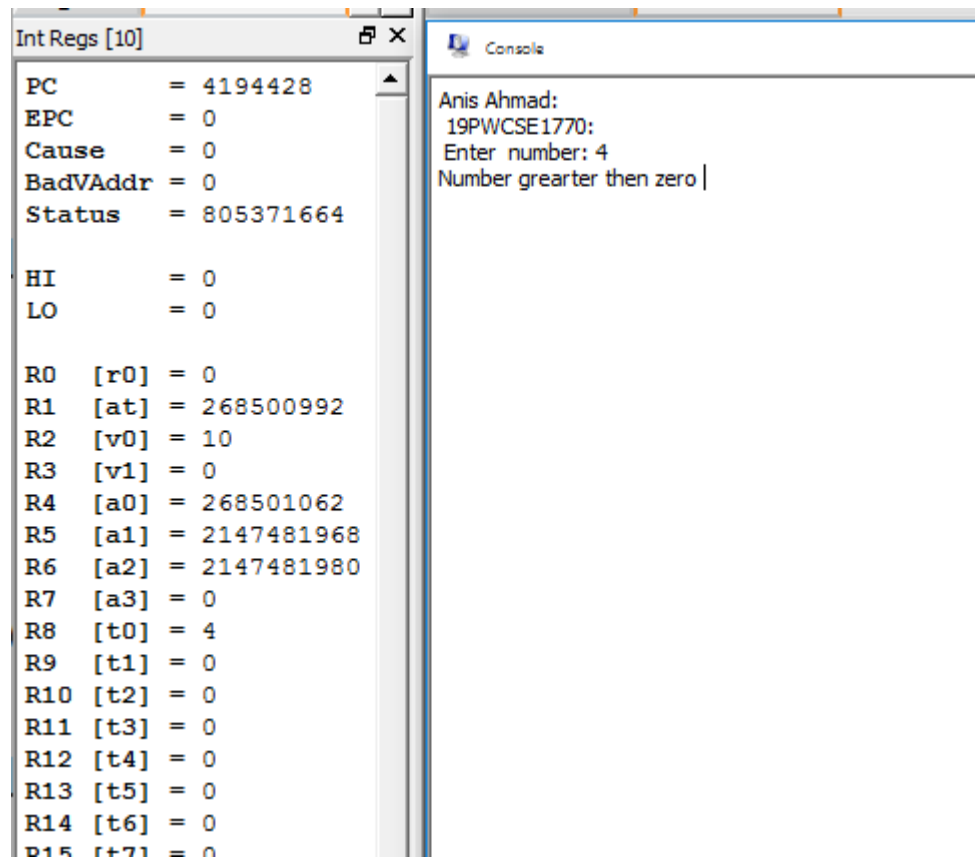
```
syscall
```

```
end:
```

```
li $v0,10
```

```
syscall
```

## Output:



The screenshot displays a MIPS simulator interface. On the left, the 'Int Regs [10]' window shows the state of the processor's registers. On the right, the 'Console' window shows the program's output.

**Int Regs [10]:**

Register	Value
PC	4194428
EPC	0
Cause	0
BadVAddr	0
Status	805371664
HI	0
LO	0
R0 [r0]	0
R1 [at]	268500992
R2 [v0]	10
R3 [v1]	0
R4 [a0]	268501062
R5 [a1]	2147481968
R6 [a2]	2147481980
R7 [a3]	0
R8 [t0]	4
R9 [t1]	0
R10 [t2]	0
R11 [t3]	0
R12 [t4]	0
R13 [t5]	0
R14 [t6]	0
R15 [t7]	0

**Console:**

```
Anis Ahmad:  
19PWCSE1770:  
Enter number: 4  
Number greater than zero |
```

## 4.Finding the Numbers are Equal or Not:

### Source code:

```
.data

str: .ascii"Anis Ahmad: \n 19PWCSE1770:\n "

str1: .ascii"Enter number: "

str2: .ascii"Numbers are not Equal: "

str3: .ascii"Numbers are equal:"

.text

main:
```

```
li $v0,4

la $a0,str

syscall
```

```
li $v0,4

la $a0,str1

syscall

li $v0,5

syscall

move $t0,$v0
```



```
li $v0,4
la $a0,str1
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t1,$v0
```

```
beq $t0,$t1 label
```

```
li $v0,4
```

```
la $a0,str2
```

```
syscall
```

```
b end
```

```
label:
```

```
li $v0,4
```

```
la $a0,str3
```

```
syscall
```

```
end:
```

```
li $v0,10
```

```
syscall
```

## Output:

Regs	Int Regs [10]	Data	Text
Int Regs [10]		Console	
PC	= 4194452	Anis Ahmad: 19PWCSE1770: Enter number: 6 Enter number: 6 Numbers are equal:	
EPC	= 0		
Cause	= 0		
BadVAddr	= 0		
Status	= 805371664		
HI	= 0		
LO	= 0		
R0 [r0]	= 0		
R1 [at]	= 268500992		
R2 [v0]	= 10		
R3 [v1]	= 0		
R4 [a0]	= 268501061		
R5 [a1]	= 2147481968		
R6 [a2]	= 2147481980		
R7 [a3]	= 0		
R8 [t0]	= 6		
R9 [t1]	= 6		
R10 [t2]	= 0		
R11 [t3]	= 0		
R12 [t4]	= 0		
R13 [t5]	= 0		
R14 [t6]	= 0		
R15 [t7]	= 0		

## 5.Finding the Small number between 2:

### Source code:

```
.data
str0: .asciiz"Anis Ahmad: \n 19PWCSE1770:\n "
str: .asciiz"Enter first number: "
str1: .asciiz"Enter second number: "
str2: .asciiz"The register have: "
.text
main:
```

```
li $v0,4
```

```
la $a0,str0
```

```
syscall
```

```
li $v0,4
```

```
la $a0,str
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t0,$v0
```

```
li $v0,4  
la $a0,str1
```

```
syscall
```

```
li $v0,5
```

```
syscall
```

```
move $t1,$v0
```

```
slt $t2,$t0,$t1
```

```
li $v0,4  
la $a0,str2  
syscall
```

```
move  
$a0,$t2  
li $v0,1  
syscall
```

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

## Output:

Regs	Int Regs [10]	Data	Text
Int Regs [10]			
PC	= 4194444	<div>Console</div> Anis Ahmad: 19PWCSE1770: Enter first number: 4 Enter second number: 6 The register have: 1	
EPC	= 0		
Cause	= 0		
BadVAddr	= 0		
Status	= 805371664		
HI	= 0		
LO	= 0		
R0	[r0] = 0		
R1	[at] = 268500992		
R2	[v0] = 10		
R3	[v1] = 0		
R4	[a0] = 1		
R5	[a1] = 2147481968		
R6	[a2] = 2147481980		
R7	[a3] = 0		
R8	[t0] = 4		
R9	[t1] = 6		
R10	[t2] = 1		
R11	[t3] = 0		
R12	[t4] = 0		
R13	[t5] = 0		
R14	[t6] = 0		
R15	[t7] = 0		