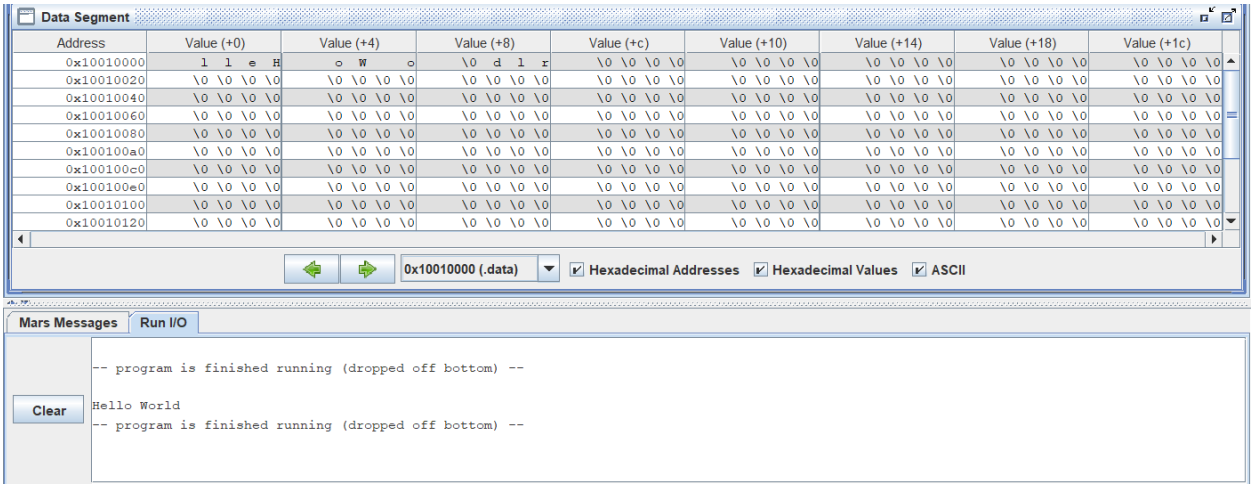
Báo cáo thực hành Kĩ thuật máy tính

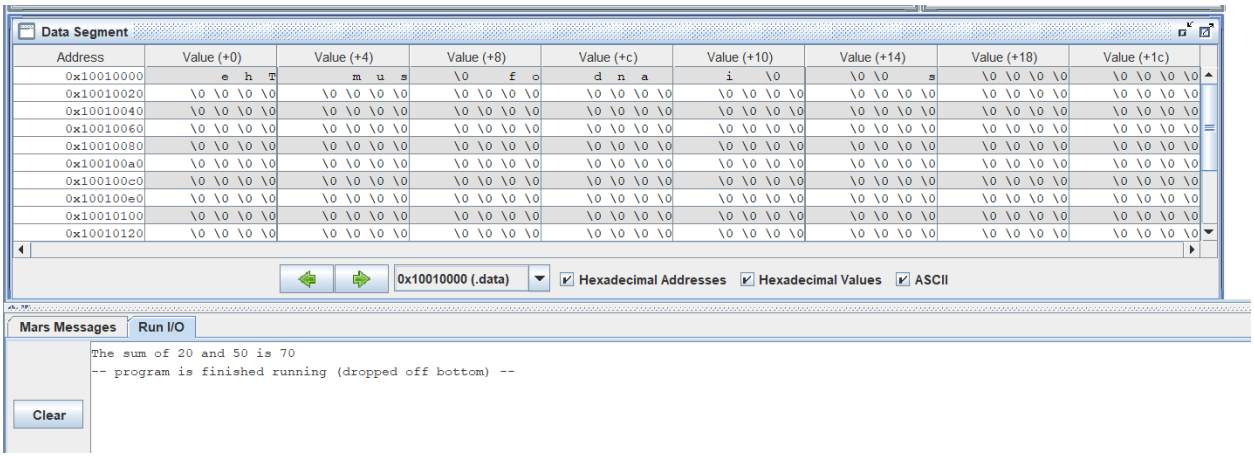
Assignment 1:

```
#Laboratory Exercise 5, Home Assignment 1
.data
test: .asciiz "Hello World"
.text
        li $v0, 4
        la $a0, test
        syscall
```



Assignment 2

```
.data
        mess1: .asciiz      "The sum of "
        mess2: .asciiz      " and "
        mess3: .asciiz      " is "

.text
        li      $s0, 30             # s0 = 20
        li      $s1, 20             # s1 = 30
        add     $s2, $s0, $s1       # s2 = s0 + s1

        li $v0, 4
        la $a0, mess1               #print "The sum of "
        syscall

        li $v0, 1
        add $a0, $zero, $s1         # $a0 = $s1
        syscall

        li $v0, 4
        la $a0, mess2               #print "and "
        syscall

        li $v0, 1
        add $a0, $zero, $s2         # $a0 = $s2
        syscall

    li $v0, 4
    la $a0, mess3               #print "is "
    syscall

    li $v0, 1
    add $a0, $s1, $s2           # a0 = s1 + s2
    syscall
```

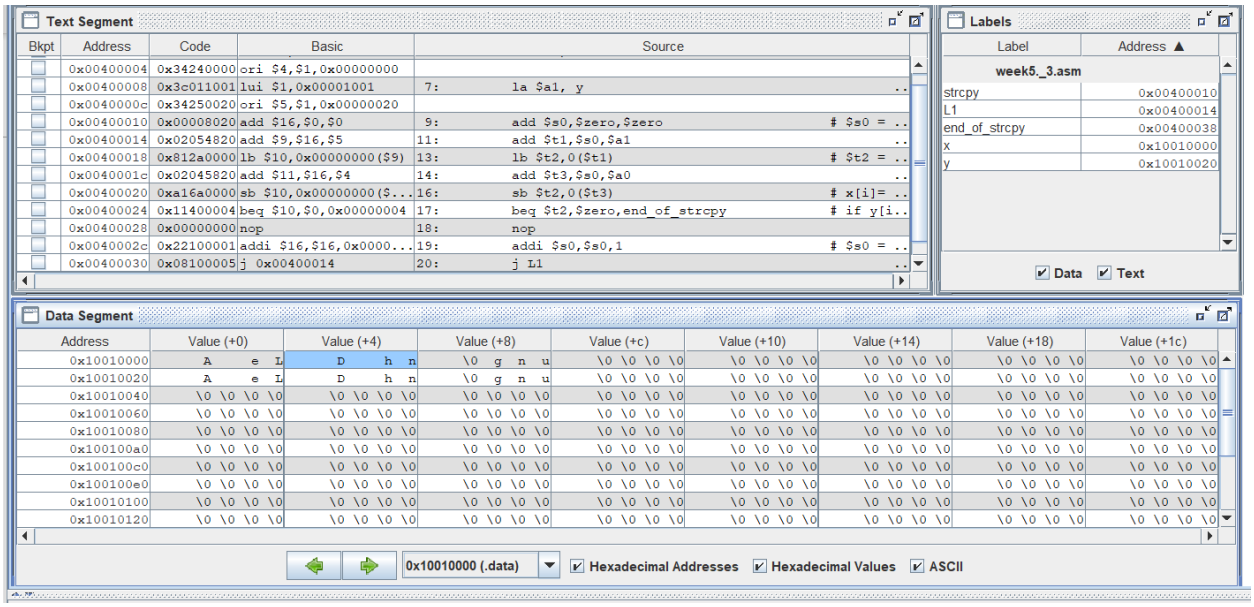



```
.data
        mess1: .asciiz "The sum of "
        mess2: .asciiz " and "
        mess3: .asciiz " is "

.text
        li      $s0, 30         # s0 = 20
        li      $s1, 20         # s1 = 30
        add     $s2, $s0, $s1   # s2 = s0 + s1
        li $v0, 4
        la $a0, mess1           #print "The sum of "
        syscall

        li $v0, 1
        add $a0, $zero, $s1     # $a0 = $s1
        syscall

        li $v0, 4
        la $a0, mess2           #print "and "
        syscall
```

```
li $v0, 1
add $a0, $zero, $s2     # $a0 = $s2
syscall

li $v0, 4
la $a0, mess3           #print "is "
syscall

li $v0, 1
add $a0, $s1, $s2               # a0 = s1 + s2
syscall
```

Assignment 3

```
#Laboratory Exercise 5, Home Assignment 2
.data
        x:      .space      32              # destination string x, empty
        y:      .asciiz     "Le Anh Dung"           # source string y
.text
        la $a0, x                           #a0 = address x
        la $a1, y                           #a1 = address y
strcpy:
        add $s0,$zero,$zero                 # $s0 = i = 0
L1:
        add $t1,$s0,$a1                     # $t1 = $s0 + $a1 = i + y[0]
                                            # = address of y[i]
        lb $t2,0($t1)                       # $t2 = value at $t1 = y[i]
        add $t3,$s0,$a0                     # $t3 = $s0 + $a0 = i + x[0]
                                            # = address of x[i]
        sb $t2,0($t3)                       # x[i]= $t2 = y[i]
        beq $t2,$zero,end_of_strcpy         # if y[i] == 0, exit
        nop
        addi $s0,$s0,1                      # $s0 = $s0 + 1 <-> i = i + 1
        j L1                                # next character
        nop
end_of_strcpy:
```



#Laboratory Exercise 5, Home Assignment 2

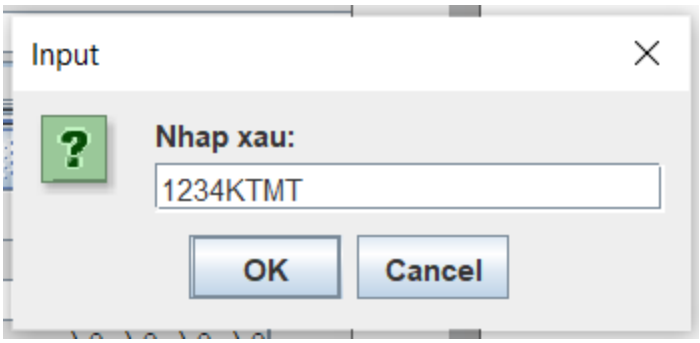
```
.data
        x:      .space  32              # destination string x, empty
        y:      .asciiz  "Le Anh Dung"          # source string y
.text
        la $a0, x                       #a0 = address x
        la $a1, y                       #a1 = address y
strcpy:
        add $s0,$zero,$zero             # $s0 = i = 0
L1:
        add $t1,$s0,$a1                 # $t1 = $s0 + $a1 = i + y[0]
                                        # = address of y[i]
        lb $t2,0($t1)                   # $t2 = value at $t1 = y[i]
        add $t3,$s0,$a0                 # $t3 = $s0 + $a0 = i + x[0]
                                        # = address of x[i]
        sb $t2,0($t3)                   # x[i]= $t2 = y[i]
        beq $t2,$zero,end_of_strcpy     # if y[i] == 0, exit
        nop
        addi $s0,$s0,1                  # $s0 = $s0 + 1 <-> i = i + 1
```

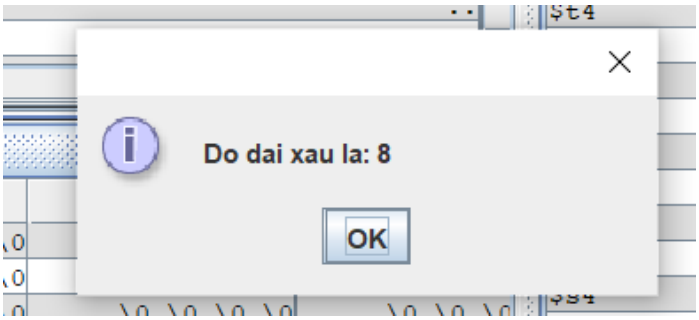
```
        j L1                                    # next character
        nop
end_of_strcpy:
```

Assignment 4

```
#Laboratory Exercise 5, Home Assignment 3
.data
        string:     .space      50
        Message1:   .asciiz     "Nhap xau: "
        Message2:   .asciiz     "Do dai xau la: "
.text
main:
get_string:                             # TODO
        li $v0, 54
        la $a0, Message1                # Message1 = "Nhap xau"
        la $a1, string                  # input String
        la $a2, 100
        syscall
get_length:
        la $a0,string                   # $a0 = address(string[0])
        add $t0,$zero,$zero             # $t0 = i = 0
check_char:
        add $t1,$a0,$t0                 # $t1 = $a0 + $t0
                                        # = address(string[i])
        lb $t2, 0($t1)                  # $t2 = string[i]
        beq $t2, $zero, end_of_str      # is null char?
        addi $t0, $t0, 1                # $t0 = $t0 + 1 -> i = i + 1
        j check_char

end_of_str:
```

```
end_of_get_length:
        addi $a1,$t0,-1                 # a1 = length
print_length:                           # TODO
        li $v0, 56
        la $a0, Message2                #Message2 = "Do dai xau la:"
        add $a1, $a1, $zero             # the interger to be printed
        syscall                         # execute
```






```
#Laboratory Exercise 5, Home Assignment 3
.data
        string: .space  50
        Message1:       .asciiz  "Nhap xau: "
        Message2:       .asciiz  "Do dai xau la: "
.text
main:
get_string:                                     # TODO
        li $v0, 54
        la $a0, Message1                        # Message1 = "Nhap xau"
        la $a1, string                  # input String
        la $a2, 100
        syscall
get_length:
        la $a0,string                   # $a0 = address(string[0])
        add $t0,$zero,$zero             # $t0 = i = 0
check_char:
        add $t1,$a0,$t0                         # $t1 = $a0 + $t0
```

```
                                        # = address(string[i])
        lb $t2, 0($t1)                  # $t2 = string[i]
        beq $t2, $zero, end_of_str      # is null char?
        addi $t0, $t0, 1                # $t0 = $t0 + 1 -> i = i + 1
        j check_char

end_of_str:

end_of_get_length:
        addi $a1,$t0,-1                 # a1 = length
print_length:                           # TODO
        li $v0, 56
        la $a0, Message2                #Message2 = "Do dai xau la:"
        add $a1, $a1, $zero             # the interger to be printed
        syscall                         # execute
```

Assignment 5

```
.data
	Message: .asciiz "\nChuoi nguoc: "
	buffer:  .space 50
.text
	la $s0, buffer			# Load address buffer
	li $s1, 0			# index = 0
	li $s2, 0			# i = 0
	li $t1, 20			# Max length
	li $t2, 10			#ASCII code '\n'
start_read_char:
	li	$v0, 12
	syscall
	add	$s1, $s0, $s2		# Load new address buffer

	addi	$s2, $s2, 1		# i++
	sb	$v0,   0($s1)		# save byte v0 to address s1
	beq	$s2, $t1, end_read_char		# exit when max length
	beq	$v0, $t2, end_read_char		# exit when enter

	j start_read_char

end_read_char:
	li $v0, 4
	la $a0, Message			#  Message: "\nChuoi nguoc: "
	syscall
Reverse_string:
	li	$v0, 11			# Print charecter
	lb	$a0, 0($s1)
	syscall

	beq	$s1, $s0, exit
	addi	$s1, $s1, -1
	j Reverse_string
exit:
```

Khi enter:

```
abcdef

Chuoi nguoc:
fedcba
```

Khi nhập quá 12 kí tự:

```
123456789abcdefghjik
Chuoi nguoc: kijhgfedcba987654321
```

```
.data
        Message: .asciiz "\nChuoi nguoc: "
        buffer:  .space 50
.text
        la $s0, buffer          # Load address buffer
        li $s1, 0               # index = 0
        li $s2, 0               # i = 0
        li $t1, 20                      # Max length
        li $t2, 10                      #ASCII code '\n'
start_read_char:
        li      $v0, 12
        syscall
        add     $s1, $s0, $s2   # Load new address buffe
        addi    $s2, $s2, 1             # i++
        sb      $v0,   0($s1)   # save byte v0 to address s1
        beq     $s2, $t1, end_read_char                 # exit when max length
        beq     $v0, $t2, end_read_char                 # exit when enter
        j start_read_char


end_read_char:
        li $v0, 4
        la $a0, Message                 #  Message: "\nChuoi nguoc: "
        syscall
Reverse_string:
        li      $v0, 11         # Print charecter
        lb      $a0, 0($s1)
        syscall
        beq     $s1, $s0, exit
```

```
        addi    $s1, $s1, -1
        j Reverse_string:
exit:
```