

CS/COE 0447 Fall 2009

Lab 3: Strings, Loops and Look up Tables

Solution

Part 1: Strings and Loops

1) .data
str: .asciiz "Hello World!"

```
.text
la $t0, str
w_s: lb $t1, 0($t0)
     beq $t1, $zero, w_e
     #if ($t1 >= 97 && $t1 <= 122){
     #   $t1 = $t1 - 32
     #}
     #if ($t1 > 96 && $t1 < 123){
     #   $t1 = $t1 - 32
     #}
     li $t2, 96
     slt $t3, $t2, $t1
     beq $t3, $zero, e_if
     li $t2, 123
     slt $t3, $t1, $t2
     beq $t3, $zero, e_if
     addi $t1, $t1, -32
     sb $t1, 0($t0)
e_if: addi $t0, $t0, 1
     j w_s
w_e: li $v0, 4
     la $a0, str
     syscall
```

2) .data
buf1: .space 50
buf2: .space 50

```
.text
li $v0, 8
la $a0, buf1
li $a1, 50
syscall
la $t0, buf1
```

```

        la $t1, buf2
w_s:   lb $t2, 0($t0)
        beq $t2, $zero, w_e
        #if ($t2 != 32){
        #   sb $t2, 0($t1)
        #   $t1++
        #}
        addi $t3, $zero, 32
        beq $t2, $t3, e_i
        sb $t2, 0($t1)
        addi $t1, $t1, 1
e_i:   addi $t0, $t0, 1
        j w_s
w_e:   sb $t2, 0($t1)
        li $v0, 4
        la $a0, buf2
        syscall

```

Part 2: Look up Tables

```

        .data
table:  .word    0x00, 0x80, 0xC0, 0xE0, 0xF0, 0xF8, 0xFC, 0xFE,
0xFF

        .text
        la $t5, table
        li $t6, 0xffff0000
w_s:   li $v0, 5
        syscall
        slt $t0, $v0, $zero
        bne $t0, $zero, w_e
        #if ($v0 >= 0 && $v0 <=8)
        li $t1, -1
        slt $t1, $v0, $t1
        bne $t1, $zero, e_if
        li $t1, 9
        slt $t1, $v0, $t1
        beq $t1, $zero, e_if
        sll $v0, $v0, 2
        add $t4, $v0, $t5
        lw $t3, 0($t4)
        sw $t3, 0($t6)
e_if:
        j w_s
w_e:

```