**CS224 / 2**

**Fall 2016**

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**1) Receives a pointer to an asciiz string that contains a decimal number in the form of a string, like "123", and returns its numeric equivalent in register $v0.**

parseInt:

li $t6,48 # '0' in ascii

li $t7,57 # '9' in ascii

move $t0,$a0 # $t0=a0 is the stirng pointer takes as parameter or argument

move $v0,$0 # v0=0

lb $t1,($t0) # t1 gets the first int of the stirng

while:

blt $t1,$t6,error #check if it is smaller than '0' in ascii

bgt $t1,$t6,error #check if it is smaller than '9' in ascii

sub $t1,$t1,$t6 #convert to decimal

mul $v0,$v0,10 # multiply by 10

add $v0,$v0,$t1 # add the readed int to v0

addiu $t0,$t0,1 #increment the pointer

lb $t1,($t0) #load incremented pointer's char into the register t1

bne $t1,$0,while #if t1 is equal to zero which means the end of the string, we finished the string

jr $ra #return address

error:

li $v0,-1 # set -1 to v0 for error representation

jr $ra # return address

**2) Receives an integer value in $a0 and returns it binary equivalent in an array whose address is provided in $a1.**

li $t0, 1 #sets t0 as 1

move $t1, $a1 # set $t1 as a1

move $t3,$a0 # moves the value of a0(given integer) to t3

binary\_loop: # loop to convert the int to binary

beq $t3, $0, done # if t3==0, which means we finished the given integer, execute done

and $t2, $t3, $t0 #checking the last bit of the input int with 0 and pass the result to t2

srl $t3, $t3, 1 # mod2 division, by shifting to left by 1 position the given integer

sb $t2,($t1) # set t1’s giving byte as t2

addi $t1, $t1,4 # iterating by 1 word

j binary\_loop # loop

done:

jal $ra # return adress

**3) Receives a pointer to an asciiz string and converts all of the smal case letters to their uppercase equivalents and returns the number of such conversions done in $v0.**

move $v0, $0 result

move $t0, $a0# where a0 is str arg setted to t0

Loop:

lb $t1,($t0) # t1 is the current char of the string a0

beqz $t1, return #if t1 =0 “.\n” we finished the string

bge $t1, 97, small\_Case # if current char is greater than 97(a in ascii) we make it uppercase

addi $t0, $t0, 1 # increment the string’s char pointer by 1

j loop

small\_Case:

addi $v0, $v0, 1

addi $t1, $t1, -32# since A-a is 32 in ascii table

sb $t1, ($t0) # replace the upper case char with its coefficient in early string

addi $t0, $t0, 1 # increment the string’s char pointer by 1

j loop

return:

ja $ra