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**CS 305 C Assembly Language Fall 2015**

**Due Date:** 10/30/15

**Exercise #1:**

**Source Code of Exercise #10 of Chapter 6:**

TITLE Parity Checking (ParCheck.asm)

; This program checks the EAX regitster and returns a value of True in the

; EAX register if the bytes in an array, passed through EAX, contain an

; even parity. The procedure that checks the array will be called twice.

; 1 is True and 0 is false.

INCLUDE Irvine32.inc

.data

evenarray BYTE 40H,63H,0F0H,0FFH,0ABH,01H,01H,02H,65H,00H

oddarray BYTE 01H,00H,00h,48h,24h,12h,06h,10h,20h,01h

evensize BYTE ($-(OFFSET evenarray))

oddsize BYTE ($-(OFFSET oddarray))

.code

main PROC

;Nothing major is done in the main procedure. Both Procedures are called.

call EvenParityChecker

call OddParityChecker

exit

main ENDP

EvenParityChecker PROC

;Checks the parity of evenarray and returns a in EAX a 1 if it is even and

;0 if it is odd.

movzx esi,evenarray

movzx ecx,evensize

mov al,evenarray[esi]

dec ecx

add esi,TYPE evenarray

mov ah,evenarray[esi]

dec ecx

;Each value in the array is put through the xor operation and stored in al

L1: xor al,ah

add esi,TYPE evenarray

mov al,evenarray[esi]

Loop L1

JP L2

JNP L3

;Assigns a true value of 1 if the array has even parity

L2: mov eax,1

call WriteDec

call WriteChar

ret

;Assigns a false value of 0 if the array has odd parity

L3: mov eax,0

call WriteDec

call WriteChar

ret

EvenParityChecker ENDP

OddParityChecker PROC

;Checks the parity of evenarray and returns a in EAX a 1 if it is even and

;0 if it is odd.

movzx esi,oddarray

movzx ecx,oddsize

mov al,oddarray[esi]

dec ecx

add esi,TYPE evenarray

mov ah,oddarray[esi]

dec ecx

;Each value in the array is put through the xor operation and stored in al

L4: xor al,ah

add esi,TYPE oddarray

mov al,oddarray[esi]

Loop L4

JP L5

JNP L6

;Assigns a true value of 1 if the array has even parity

L5: mov eax,1

call WriteDec

call WriteChar

ret

;Assigns a false value of 0 if the array has odd parity

L6: mov eax,0

call WriteDec

call WriteChar

ret

OddParityChecker ENDP

END main

**Here is the output:**

1☺0 Press any key to continue . . .