

Name: KEY

Id#

COE 205, Term 062
Computer Organization & Assembly Programming

Quiz# 3

Date: Wednesday, April 11, 2007

Q1. You are required to write a program to display a given row of a two dimensional array of unsigned integers, TARRAY. Assume that each integer is stored in a double word. To do that you need to do the following:

- (i) Ask the user to enter a row number.
- (ii) In a new line, print the selected row.

Use the procedure **WriteDec** for displaying the unsigned integers in the array. Note that this procedure writes the content of EAX in unsigned decimal format to standard output. The procedure **WriteString** writes a null-terminated string to standard output. String address should be passed in register EDX. The procedure **WriteChar** writes character in register AL to standard output. The procedure **Crlf** writes end of line sequence (CR, LF) to standard output. The procedure **ReadDec** reads a 32-bit unsigned integer and returns it in EAX. **You only need to show the data and code segments of the program.**

A sample execution of the program for the array given below is shown:

```
TARRAY    DWORD 1, 5, 300, 100, 5000
           DWORD 600, 0, 1110, 2000, 2
           DWORD 99, 16, 150, 530, 440
```

```
Enter a row number: 1
Row# 1:
600 0 1110 2000 2
```

```

.686
.MODEL FLAT, STDCALL
.STACK

INCLUDE Irvine32.inc

.DATA

TARRAY    DD 1, 5, 300, 100, 5000
           DD 600, 0, 1110, 2000, 2
           DD 99, 16, 150, 530, 440

MSG BYTE "Enter a row number:",0
MSG2 BYTE "Row# ",0

.CODE
main PROC

    ; displaying first MSG
    LEA EDX, MSG
    Call WriteString

    ; reading row number
    Call ReadDec

    ; displaying 2nd msg
    LEA EDX, MSG2
    Call WriteString
    Call WriteDec
    MOV AL, ':'
    Call WriteChar

    Call Crlf

    ; calculating the starting address of the row
    MOV EBX, 0
    MOV ECX, sizeof TARRAY
    Again:
    ADD EBX, EAX
    LOOP Again

    ; displaying the row
    MOV ECX, Lengthof TARRAY
    MOV ESI, 0
    Next:
    MOV EAX, TARRAY[EBX][ESI*4]
    Call WriteDec
    MOV AL, ' '
    Call WriteChar
    INC ESI
    LOOP Next

    exit    ; exit to operating system
main ENDP

END main

```