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, TARRY. 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

              ; calculting 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
```