Name: KEY Id#

COE 205, Term 081

Computer Organization & Assembly Programming

Quiz# 5

 Date: Tuesday, Jan. 5, 2010

# **Q1.** Write a macro, **DISPSUM,** that receives three constant parameters representing the address of an array, the number of elements in the array and the type of elements in the array. The macro should compute the sum of the elements in the array and display the sum in a new line. The macro should preserve all the used registers. Then, use the macro to display the sum of the following three arrays:

##  Array1 Byte 1, 2, 3, 4, 5

## Array2 Word 6, 7, 8, 9

## Array3 DWORD 10, 11, 12, 13, 14, 15

DISPSUM MACRO Array, len, t

LOCAL NEXT, SKIP1, SKIP2, SKIP3

 PUSH EAX

 PUSH EBX

 PUSH ECX

 PUSH ESI

 PUSH EDI

 MOV ESI, Array

 MOV ECX, len

 XOR EAX, EAX

 XOR EDI, EDI

 MOV BL, t

NEXT:

 CMP BL, 1

 JA SKIP1

 ADD AL, [ESI+EDI]

 JMP SKIP3

SKIP1:

 CMP BL, 2

 JA SKIP2

 ADD AX, [ESI+EDI\*2]

 JMP SKIP3

SKIP2:

 ADD EAX, [ESI+EDI\*4]

SKIP3:

 INC EDI

 LOOP NEXT

 CALL Crlf

 CALL Writeint

 POP EDI

 POP ESI

 POP ECX

 POP EBX

 POP EAX

ENDM

DISPSUM offset Array1, lengthof Array1, type Array1

DISPSUM offset Array2, lengthof Array2, type Array2

DISPSUM offset Array3, lengthof Array3, type Array3

## **Q2.** Write a macro, SREG, that can be used to save any number of registers passed to it. For example, to save the registers EAX, EBX and ECX, the macro is invoked with the statement:

 **SREG < EAX, EBX, ECI>**

|  |
| --- |
| **SREG MACRO REGS**  |
|  **IRP D, <REGS>**  |
|  **PUSH D**  |
|  **ENDM**  |
|  **ENDM**  |