Quiz 1 - COAL Lab - Section A

(Lab 1 to Lab 5)

Question 1:

Write a small program to subtract two binary numbers Var1 and Var2. And then move the answer to CX register. Also perform debugging and take screenshot of the registers at the end of the program.

$$AX = Var2 - Var1$$

Question 2:

Store a number 0FFFA532Bh hexadecimal number to EDX and then extract lower half byte of EDX to AL, higher byte to BH and then store the DX to EBX. And dump register values on console using Irvine32.inc built-in procedure.

Question 3:

Store a value 10010001 to EAX and then print the values of AL, AH and AX registers on console using "WriteInt" procedure.

Question 4:

Store a value -65511 in EDX. Move the DL to EAX and print its value to console then move DH to EAX and print its value. Then move the DX to EAX and print its value using "WriteInt".

Question 5:

Store -50 to DWORD variable Var1 and store -60 DWORD variable Var2. Perform $Var1 * Var2$ using "imul" instruction. Also debug the program and take screenshot of the registers at the end of program.

Question 6:

Insert a binary value to AL and insert another binary value to BL. Add AL to BL in such a way that both Auxiliary Carry (AC) and Carry Flags (CF) sets. Also take screenshot of the flags register at the end of program.

Question 7:

Set and clear Zero Flag (ZF) by subtracting two signed integers using EAX.

Question 8:

Make corrections in the following Assembly program if there is any syntax or logical error and then execute this program. Also perform debugging and take screenshot of the var1 and var2 variables from watch window. And take screenshot of Registers window.

```
#Include Irvine32.h
.data
	var1 WORD ?
	var2 WORD F55Ah
	sum DWORD 0
	intArray1 BYTE 5 DUP()    ; Uninitialize array
.code
main PROC
	mov eax,var1
	mov ebx,var2
	add eax,ebx
	mov sum,eax
	mov eax,0
	mul var1,var2
	mov var1,intArray1

	INVOKE ExitProcess,0
main ENDP
END main
```

Question 9:

Exchange values of two integer variables Var1 and Var2 without using any 3rd variable or register. Then subtract Var1 from Var2 and store the answer in EAX. Then again exchange the values of variables and perform addition of Var1 and Var2 and store answer in EBX.

Question 10:

Declare two symbolic constants “const1” and “const2” using TEXTEQU having integer values 5 and 6 respectively and then initialize a BYTE variable “var1” using the value of “const1”. Initialize a BYTE array “intArray1” using DUP operator of length 5 having the value of const2 on each index.

Perform addition of the value at the last index of array “intArray1” and the variable “Var1” and print the answer on console.

Question 11:

Find the length (number of elements) and size (bytes occupied) of the following array using “Current Location Counter” directive:

```
	intArray1 WORD 10,20,30,40,50,60,70,80,90,100
```

Question 12:

You are given this DWORD variable “var1” having value 12345678h. Perform following activities on this variable:

- Get the address of this variable and store in ESI register
- Ger the lower byte of var1 and store it in AL using PTR operator.
- Get the 3rd byte of this variable and store it in BL using PTR operator.
- Get last WORD from this variable using LABEL directive.