Lab Manual 3

***COAL FALL 2017***

**PART 1**

* + 1. **Write down the values of Carry Flag, Sign Flag, Parity Flag, Zero Flag and Overflow Flag. Justify your values in flags with explanations.**

1. mov ax,16

mov bx,4

sub bx,ax

1. mov ax,4

mov bx,4

sub ax,bx

1. mov ax,-5
2. mov ax,-5

mov bx,-6

add ax,bx

* + 1. **Give the value of Carry Flag, Sign Flag, Parity Flag, Zero Flag and Overflow Flag after each of the following instructions if AX is initialized with 0x1254 and BX is initialized with 0x0FFF.**

**Justify your values in flags with explanations**

* + 1. Add ax,0xEDAB

|  |  |
| --- | --- |
| **CF** |  |
| **SF** | **1** |
| **ZF** |  |
| **OF** |  |
| **AF** |  |
| **PF** | **1** |

* + 1. Add ax,bx

|  |  |
| --- | --- |
| **CF** | **1** |
| **SF** |  |
| **ZF** |  |
| **OF** |  |
| **AF** |  |
| **PF** |  |

* + 1. Add bx,0xF001

|  |  |
| --- | --- |
| **CF** | **1** |
| **SF** |  |
| **ZF** | **1** |
| **OF** |  |
| **AF** |  |
| **PF** | **1** |

* + 1. Mov ax,0xFFF
    2. Mov bx,2
    3. Add ax,bx

|  |  |
| --- | --- |
| **CF** | **1** |
| **SF** |  |
| **ZF** | **1** |
| **OF** |  |
| **AF** |  |
| **PF** | **1** |

1. **Will an overflow occur if a signed 0xFF is added to a signed 0x01?**

**Ans: No Overflow**

1. **Explain the difference between the following instructions** 
   * 1. MOV BX,DATA; and,
     2. MOV BX,[DATA];

Where data is defined as DATA DB 56;

Ans: DATA DB 56 is of Type DATA DW 56.

IN 1. MOV BX,DATA; Directly Assign Value

IN 2. MOV BX,[DATA]; INDirectly Assign Value

1. **What are the contents of memory locations 100,101,102 and 103 if the word 1234 is stored at address 100 and the word 5678 is stored at address 102?**

**Ans 100 Address will contain 34**

**101 Address will contain 12**

**102 Address will contain 78**

**103 Address will contain 56**

1. **Observe the difference in the values of flags and justify the difference in values**
   1. **Mov al,0x7F**

**Mov bl,0x81**

**Add al,bl**

***Ans:* Zero and Carry and Parity and AF Flag is on while other values is off.**

* 1. **Mov ax,0x7F**

**Mov bx,0x81**

**Add al,bl**

***Ans:* Zero and Carry and Parity and AF Flag is on while other values is off.**

***Template for flag values….***

|  |  |
| --- | --- |
| **CF** | **1** |
| **SF** |  |
| **ZF** | **1** |
| **OF** |  |
| **AF** | **1** |
| **PF** | **1** |

PART 2

* + - 1. Write a program to add three numbers using memory variables and write down the status of flags after execution of every instruction.
      2. Let variables var1=69 ,var2=90,var3=50.

Use the address of var2 and perform var2=(var1+var3)-var2

Justify the values of each flag.

* + - 1. Write a program to add ten numbers using register + offset addressing you can take address of first variable.
      2. Fill in the blank value in this code:
         1. Mov al,0xF0

Mov bl,\_\_\_\_

Add al,bl

|  |  |
| --- | --- |
| **CF** | **1** |
| **SF** | **0** |
| **ZF** | **1** |
| **OF** | **0** |
| **AF** | **0** |
| **PF** | **1** |

Such that the value of flags are set to

1. Mov al,79h

Mov bl,\_\_\_\_

Add al,bl

|  |  |
| --- | --- |
| **CF** | **0** |
| **SF** | **1** |
| **ZF** | **0** |
| **OF** | **1** |
| **AF** | **0** |
| **PF** | **1** |

Such that the value of flags are set to

* + - 1. You have two variables of type double word add these two numbers and verify the final value.

(Hint: use add with carry instruction: adc al,bl)

Let values are:

Var1 dd 12345678h

var2 dd 76A6B312h

* + - 1. Copy this code snippet

Jmp start

Var1 dw 0xFFFF

Var2 dd 0x15FABD

Var3 dw 0x64F

Var4 dw 0x76C

Var5 dd 0x99876

Var6 db 0x6F

Var7 dw 0xDD

Var8 dd 0xFE8459AC

Var9 dw 0xCDE

start:

mov al,1

* + - * 1. Copy contents of memory location with address 0008 into AX by using register indirect addressing mode.
        2. Copy AX into memory location with address 0018 in the current data segment.
        3. Identify the names of variables which are used in these two parts.