Name: Amber Khurshid

Section: BAI-4A

Roll No: 22P-9295

COAL ASSIGNMENT #01

Question No. 1:

Write a program in assembly language for each of the below separately that sets the following flags.

(write four programs i.e. One for each part)

a) Zero Flag

b) Carry Flag

c) Parity Flag

d) Auxillary Flag

a) Zero Flag

```
 [org 0x0100]


mov ax, [num1]


mov bx, [num1 + 2]

sub ax, bx

add ax, bx


mov bx, [num1 + 4]

add ax, bx

mov [num1 + 6], ax

mov ax, 0x4c00
```

int 0x21

num1: dw 20

dw 20

dw 15

dw 0

b) Carry Flag

; a program to add three numbers using memory variables

[org 0x0100]

mov ax, [num1]

mov bx, [num2]

add ax, bx

mov bx, [num3]

add ax, bx

mov [num4], ax

mov ax, 0x4c00

int 0x21

num1: dw 65535

num2: dw 1

num3: dw 15

num4: dw 0

c) Parity Flag

```
[org 0x0100]


mov ax, [num1]

mov bx, [num2]

add ax, bx

mov bx, [num3]


add ax, bx

mov [num4], ax

mov ax, 0x4c00

int 0x21


num1: dw 65535

num2: dw 1

num3: dw 15

num4: dw 0
```

d) Auxillary Flag

```
[org 0x0100]


mov ax, [num1]
```

mov bx, [num1 + 2]

sub ax, bx

add ax, bx

mov bx, [num1 + 4]

add ax, bx

mov [num1 + 6], ax

mov ax, 0x4c00

int 0x21

num1: dw 5

dw 10

dw 15

dw 0

Question No. 2:

What will be the size of the following assembly language program in bytes? Explain your answer using ".lst" file of this code.

[org 0x0100]

mov ax, 5

mov bx, 10

add ax, bx

mov bx, 15

add ax, bx

mov ax, 0x4c00

int 0x21

.lst file

```
1 [org 0x0100]
2 00000000 B80500          mov ax, 5        ; 3 bytes (instruction: B8 05 00)
3 00000003 BB0A00          mov bx, 10       ; 3 bytes (instruction: BB 0A 00)
4 00000006 01D8            add ax, bx       ; 2 bytes (instruction: 01 D8)
5 00000008 BB0F00          mov bx, 15       ; 3 bytes (instruction: BB 0F 00)
6 0000000B 01D8            add ax, bx       ; 2 bytes (instruction: 01 D8)
7 0000000D B8004C          mov ax, 0x4c00   ; 3 bytes (instruction: B8 00 4C)
8 00000010 CD21            int 0x21         ; 2 bytes (instruction: CD 21)
```

3 + 3 + 2 + 3 + 2 + 3 + 2 = 18 bytes

Therefore, the size of the assembly language program is 18 bytes.

Question No. 3:

Calculate the physical memory address generated by the following segment-offset pairs:

1DDD:0436

1234:7920

74F0:2123

0000:6727

FFFF:4336

1080:0100

1DDD:0436 = 1DDD0 + 00436 = 1E206

1234:7920 = 12340 + 07920 = 19C60

74F0:2123 = 74F00 + 02123 = 77023

0000:6727 = 00000 + 06727 = 06727

FFFF:4336 = FFFF0 + 04336 = 104326

1080:0100 = 10800 + 00100 = 10900