COAL LAB 4

Questions:

1. What errors are present in the following?

- MOV AX 3d
- MOV 23, AX
- MOV CX, CH
- MOVE AX, 1h
- ADD 2, CX
- ADD 3, 6
- INC AX, 2

2. Store the ASCII codes for starting three letters of your name in a register.

3. Use following array declarations:

varB BYTE +10

varW WORD -150

varD DWORD 600

Now move every element to EAX,EBX and ECX.

6. Write a program which declares a symbolic constant named SecondsInDay using the equal-sign

directive and assign it an arithmetic expression that calculates the number of seconds in a 24-

hour period.

7. Let A = 0FF10 h and B = 0E10B h, you need to write an assembly language code to swap the

contents.

8. Use this data for the following questions:

i. Write an instruction that increments val2.

ii. Write an instruction that subtracts val3 from EAX.

iii. Write instructions that subtract val4 from val2.

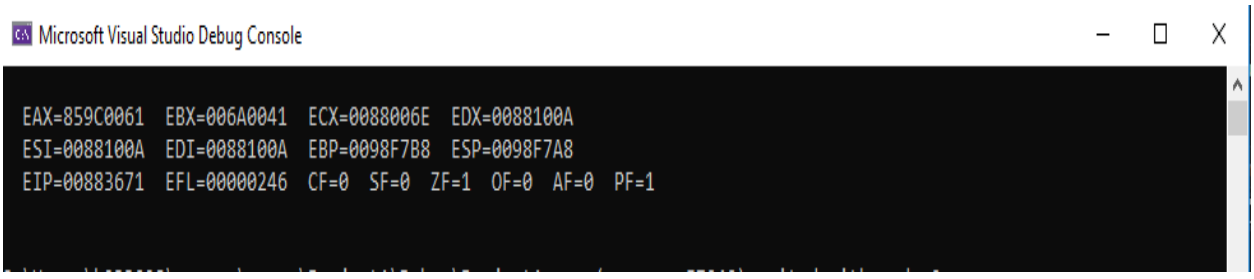
Q1

1. Comma is missing; correct code: MOV AX, 3d
2. We cannot move register into variable; correct code: MOV AX , 23
3. We cannot move 8 bit register into 16 bit register with MOV instruction.
4. Incorrect spelling of the MOV instruction.
5. We cannot store register into constant. Correct code: ADD CX , 2
6. A constant cannot be stored in a constant.
7. Syntax is wrong since we cannot increment register by any value other than 1. Correct code: INC AX

Q2

Code:

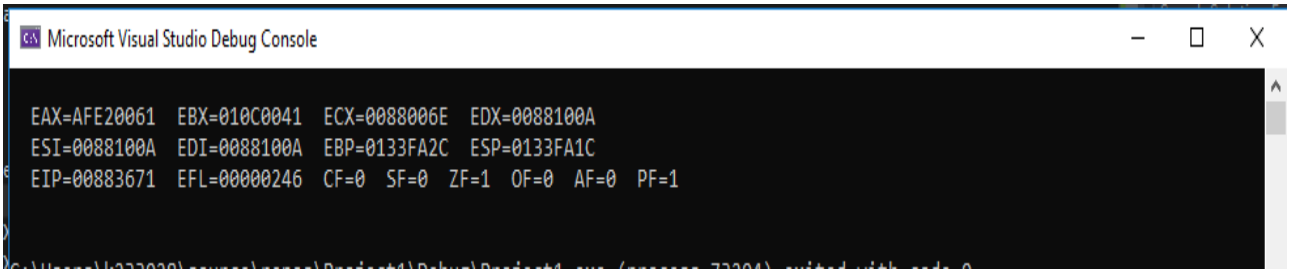
```
INCLUDE Irvine32.inc

.data


.code
main PROC
mov ax , 65
mov cx , 110
mov bx , 97
call Dumpregs

exit
main ENDP
END main
```



Q3

Code:

```
INCLUDE Irvine32.inc

.data
varB BYTE +10
varW WORD -150
varD DWORD 600

.code
main PROC
MOVSX EAX , varB
MOVSX EBX , varW
MOVZX ECX , varD

call Dumpregs

exit
main ENDP
END main
```



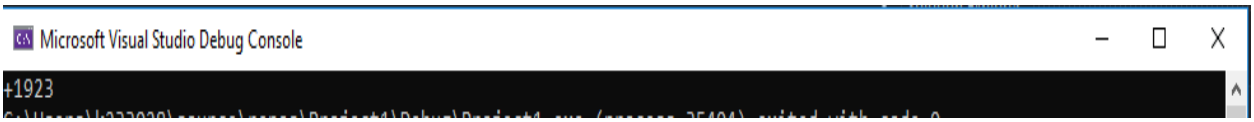
Q4

Equation 1

Code:

```
INCLUDE Irvine32.inc

.data

.code
main PROC
MOV EAX , 0
MOV EAX , 89 ; eax = 89
ADD EAX , 75Fh
ADD EAX , 1101b
SUB EAX , 46o
SUB EAX , 28

call Writeint

exit
main ENDP
```

```
END main
```



Equation 2

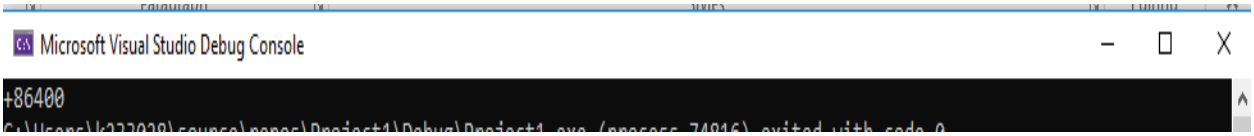
Code:

```
INCLUDE Irvine32.inc

.data
Val1 DWORD 25h
Val2 BYTE 36o
Val3 WORD 20d


.code
main PROC
MOV EAX , 0
MOV EAX , Val1
MOVZX EBX , Val2
MOVZX ECX , Val3
ADD EAX , EBX
ADD EAX , ECX
SUB EAX , 654h

call Writeint

exit
main ENDP
END main
```

Q5

```
INCLUDE Irvine32.inc

.data
SecondsInDay = 24*60*60

.code
main PROC
MOV EAX , SecondsInDay

call Writeint
```

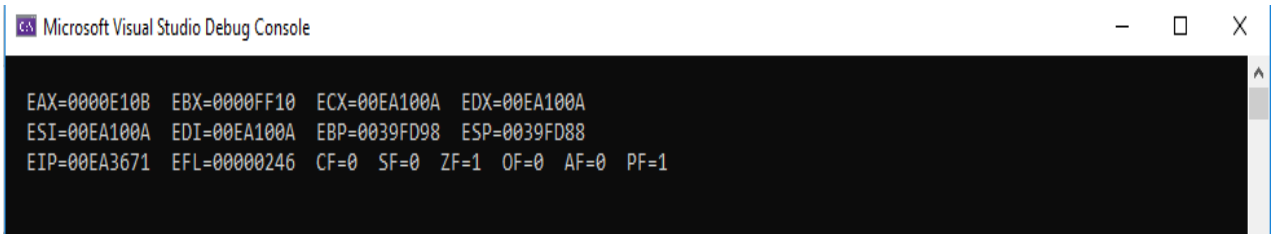
```
exit
main ENDP
END main
```



Q7

Code:

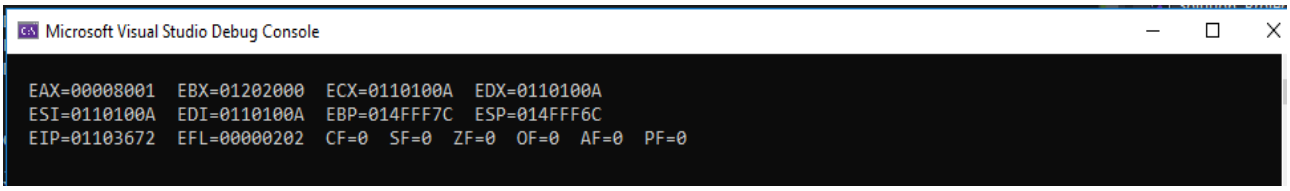
```
INCLUDE Irvine32.inc

.data
A DWORD 0FF10h
B DWORD 0E10Bh

.code
main PROC
MOV EAX , A
MOV EBX , B
XCHG EAX , EBX

call Dumpregs

exit
main ENDP
END main
```



Q8

```
INCLUDE Irvine32.inc

.data
Val1 BYTE 10h
val2 WORD 8000h
val3 DWORD 0FFFFh
val4 WORD 7FFFh

.code
main PROC
MOVZX EAX , val2
INC EAX
```

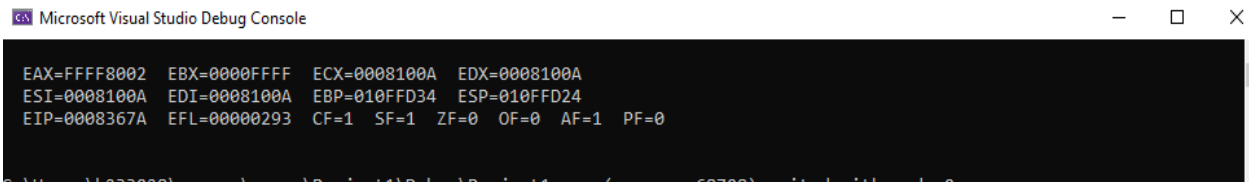
```
call Dumpregs

exit
main ENDP
END main
```



ii)

Code:

```
INCLUDE Irvine32.inc

.data
vail BYTE 10h
val2 WORD 8000h
val3 DWORD 0FFFFh
val4 WORD 7FFFh

.code
main PROC
MOV EAX , 0
MOVZX EAX , val2
INC EAX
MOV EBX , val3
SUB EAX , EBX

call Dumpregs

exit
main ENDP
END main
```



iii)

Code:

```
INCLUDE Irvine32.inc

.data
val1 BYTE 10h
```

```
val2 WORD 8000h
val3 DWORD 0FFFFh
val4 WORD 7FFFh

.code
main PROC
MOV EAX , 0
MOVZX EAX , val2
INC EAX
MOV EBX , val3
SUB EAX , EBX
MOVZX ECX , val4
SUB EAX , ECX

call Dumpregs

exit
main ENDP
END main
```