Lab: 3

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Instructor

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Fast

NUCES

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Campus

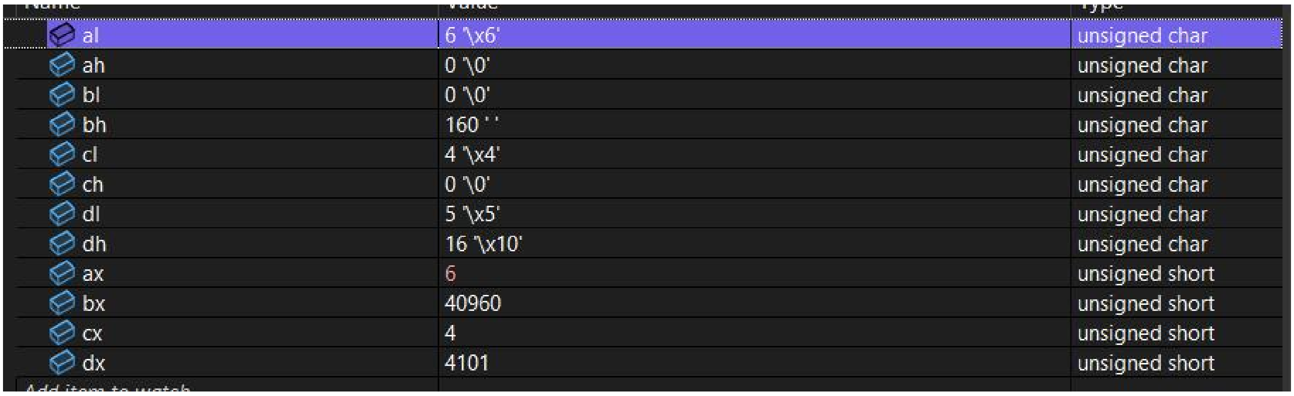
Task1:

Code:

```
.386
.model flat, stdcall
.stack 4096


.code
main PROC



mov ax , 2  ; 2 in ax
mov cx , 4     ; 4 in cx
ADD ax,cx      ; 6 in ax

mov bx , 6  ; 6 in bx
mov dx , 4     ; 4 in dx
SUB bx,dx      ; 2 in bx

mov bl , 6  ; 6 in bl
mov bh , 4     ; 4 in bh
ADD bl,bh      ; 10 in bl

mov al , 6  ; 6 in al
mov ah , 4     ; 4 in ah
SUB al,ah      ; 2 in al

mov cl , 6  ; 6 in cl
mov ch , 4     ; 4 in ch
ADD cl,ch      ; 10 in cl

mov dl , 6  ; 6 in dl
mov dh , 4     ; 4 in dh
SUB dl,dh      ; 2 in dl
main endp
end main
```

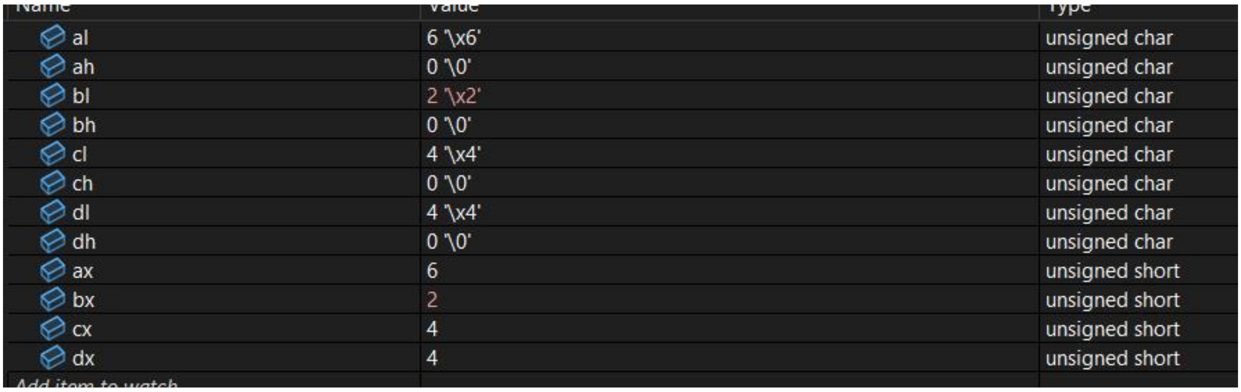
Output:

add



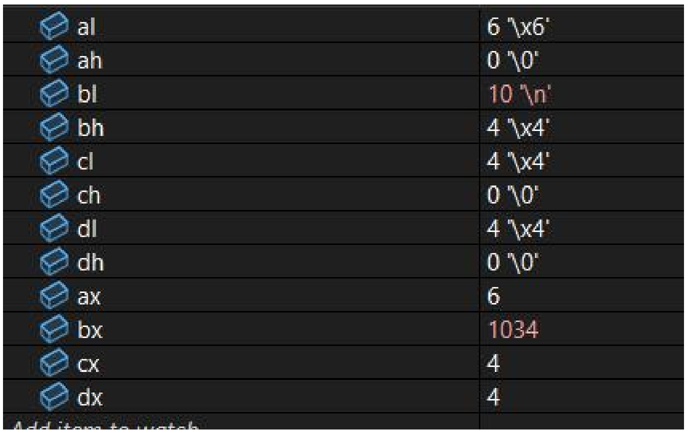
Name	Value	Type
al	6 '\x6'	unsigned char
ah	0 '\0'	unsigned char
bl	0 '\0'	unsigned char
bh	160 ' '	unsigned char
cl	4 '\x4'	unsigned char
ch	0 '\0'	unsigned char
dl	5 '\x5'	unsigned char
dh	16 '\x10'	unsigned char
ax	6	unsigned short
bx	40960	unsigned short
cx	4	unsigned short
dx	4101	unsigned short
Add item to watch		

Sub:



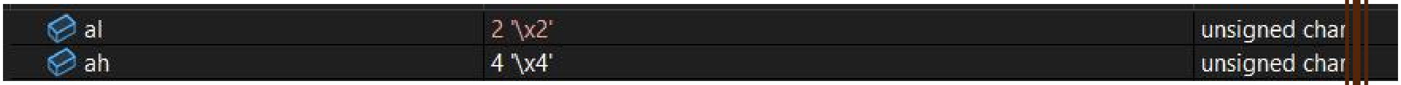
Name	Value	Type
al	6 '\x6'	unsigned char
ah	0 '\0'	unsigned char
bl	2 '\x2'	unsigned char
bh	0 '\0'	unsigned char
cl	4 '\x4'	unsigned char
ch	0 '\0'	unsigned char
dl	4 '\x4'	unsigned char
dh	0 '\0'	unsigned char
ax	6	unsigned short
bx	2	unsigned short
cx	4	unsigned short
dx	4	unsigned short
Add item to watch		

Add



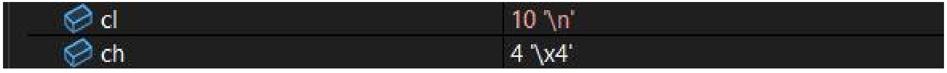
al	6 '\x6'
ah	0 '\0'
bl	10 '\n'
bh	4 '\x4'
cl	4 '\x4'
ch	0 '\0'
dl	4 '\x4'
dh	0 '\0'
ax	6
bx	1034
cx	4
dx	4
Add item to watch	

Sub



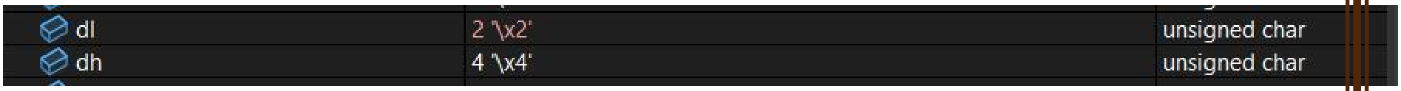
al	2 '\x2'	unsigned char
ah	4 '\x4'	unsigned char

Add



cl	10 '\n'
ch	4 '\x4'

Sub



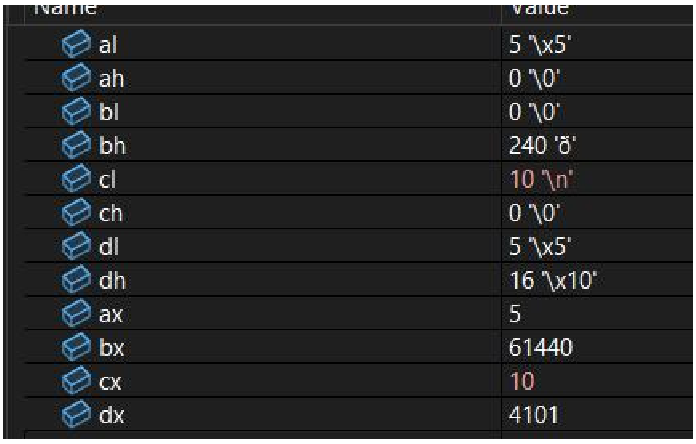
dl	2 '\x2'	unsigned char
dh	4 '\x4'	unsigned char

Task2:

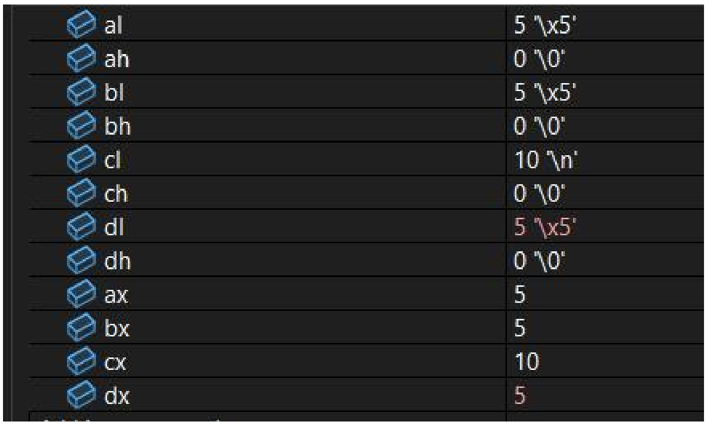
Code:

```
.386
.model flat, stdcall
.stack 4096


.code
main PROC



mov ax , 5  ; 5 in ax
mov cx , 5     ; 5 in cx
ADD cx,ax      ; 10 in cx

mov bx , 5  ; 5 in bx
mov dx , 10    ; 10 in dx
SUB dx,bx      ; 5 in dx

mov bl , 5  ; 5 in bl
mov bh , 4     ; 4 in bh
ADD bh,bl      ; 9 in bh

mov al , 5  ; 5 in al
mov ah , 15    ; 15 in ah
SUB ah,al      ; 10 in ah

mov cl , 5  ; 5 in cl
mov ch , 12    ; 12 in ch
ADD ch,cl      ; 17 in ch

mov dl , 5  ; 5 in dl
mov dh , 50     ; 50 in dh
SUB dh,dl       ; 45 in dh

main endp
end main
```

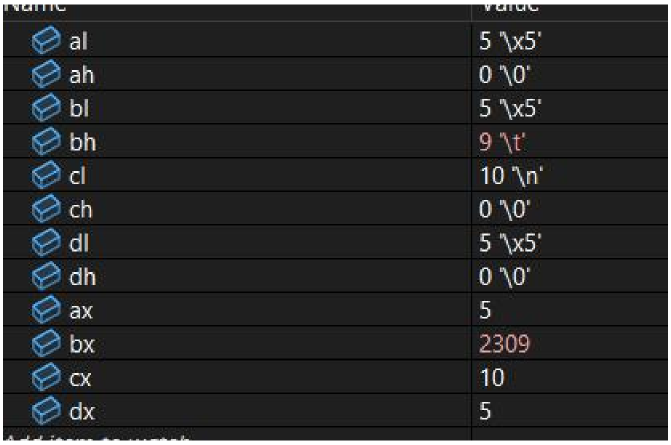
Output:



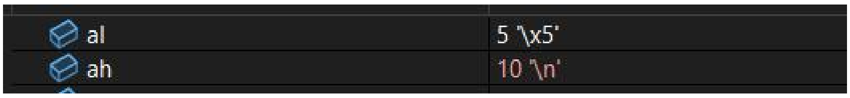
```
Name    Value
al      5 '\x5'
ah      0 '\0'
bl      0 '\0'
bh      240 'ð'
cl      10 '\n'
ch      0 '\0'
dl      5 '\x5'
dh      16 '\x10'
ax      5
bx      61440
cx      10
dx      4101
```



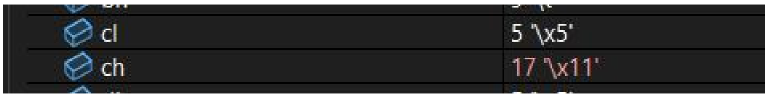
```
al      5 '\x5'
ah      0 '\0'
bl      5 '\x5'
bh      0 '\0'
cl      10 '\n'
ch      0 '\0'
dl      5 '\x5'
dh      0 '\0'
ax      5
bx      5
cx      10
dx      5
```



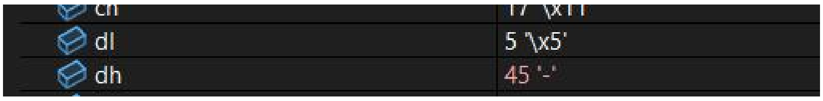
```
Name    Value
al      5 '\x5'
ah      0 '\0'
bl      5 '\x5'
bh      9 '\t'
cl      10 '\n'
ch      0 '\0'
dl      5 '\x5'
dh      0 '\0'
ax      5
bx      2309
cx      10
dx      5
```



```
al      5 '\x5'
ah      10 '\n'
```



```
cl    5 '\x5'
ch    17 '\x11'
```



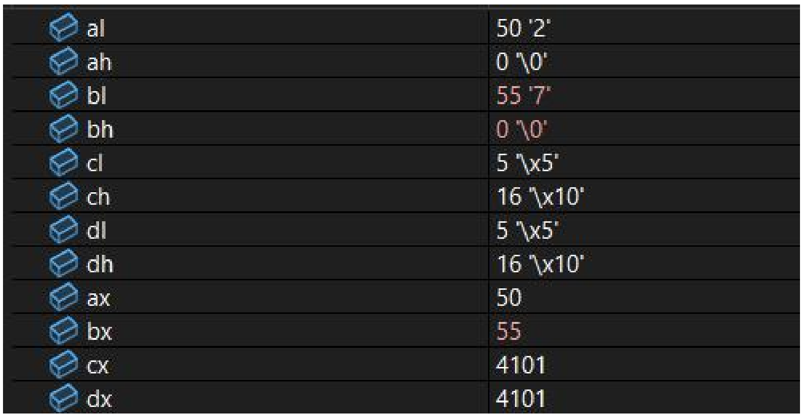
```
ch    17 '\x11'
dl    5 '\x5'
dh    45 '-'
```

Task3:

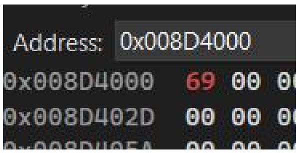
Code:

```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC


mov ax , 50  ; 50 in ax, 50 in al, 0 in ah
mov bx , 55     ; 55 in bx, 55 in bl, 0 in bh
ADD ax,bx       ; 105 in ax, 105 in al , 0 in ah
mov var, ax ; 69 in var (hexa)



main endp
end main
```

Output:



al	50 '2'
ah	0 '\0'
bl	55 '7'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	50
bx	55
cx	4101
dx	4101



```
Address: 0x008D4000
0x008D4000  69 00 0
0x008D402D  00 00 0
0x008D405A  00 00 0
```

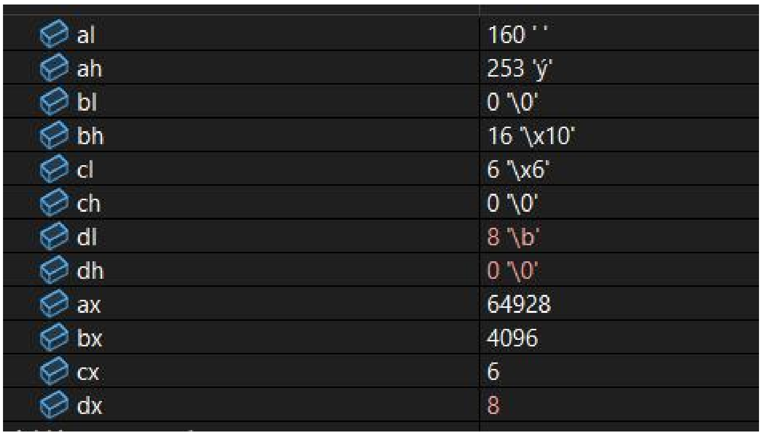
Task4:

Code:

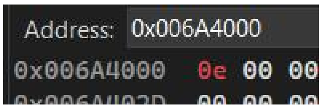
```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC


mov cx , 6  ; 6 in cx, 6 in cl, 0 in ch
mov dx , 8      ; 8 in dx, 8 in dl, 0 in dh
ADD cx,dx       ; 14 in cx, 14 in cl , 0 in ch
mov var, cx ; 0e in var (hexa)
```

```
main endp
end main
```

Output:



al	160 ' '
ah	253 'ý'
bl	0 '\0'
bh	16 '\x10'
cl	6 '\x6'
ch	0 '\0'
dl	8 '\b'
dh	0 '\0'
ax	64928
bx	4096
cx	6
dx	8



```
Address: 0x006A4000
0x006A4000  0e 00 00
0x006A402D  00 00 00
```

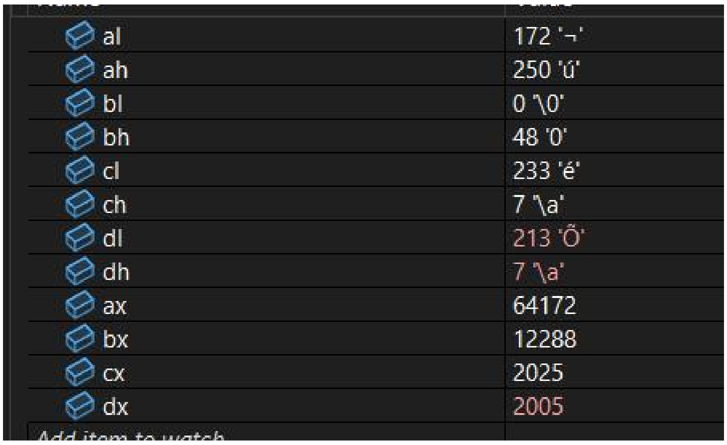
Task5:

Code:

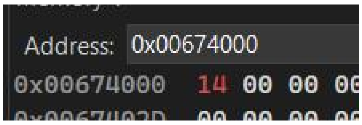
```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC


mov cx , 2025  ; 2025 in cx, 233 in cl, 7 in ch
mov dx , 2005  ; 2005 in dx, 213 in dl, 7 in dh
SUB cx,dx      ; 20 in cx, 20 in cl , 0 in ch
mov var, cx ; 14 in var (hexa)
```

```
main endp
end main
```

Output:



```
al    172 '¬'
ah    250 'ú'
bl    0 '\0'
bh    48 '0'
cl    233 'é'
ch    7 '\a'
dl    213 'Õ'
dh    7 '\a'
ax    64172
bx    12288
cx    2025
dx    2005
Add item to watch
```



```
Address: 0x00674000
0x00674000  14 00 00 00
```

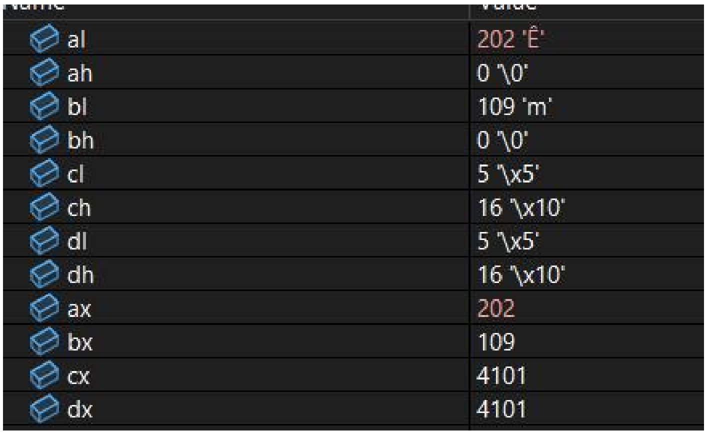
Task6:

Code:

```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC


mov ax , 01011101b  ; bin of 93
mov bx , 01101101b    ; bin of 109
ADD ax,bx       ; 202 in ax, bin = 11001010
```

```
main endp
end main
```

Output:



Name	Value
al	202 'Ê'
ah	0 '\0'
bl	109 'm'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	202
bx	109
cx	4101
dx	4101

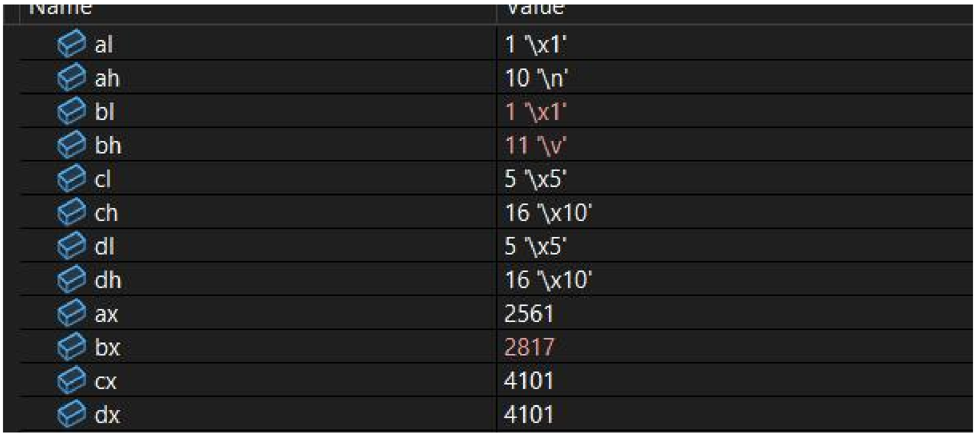
Task7:

Code:

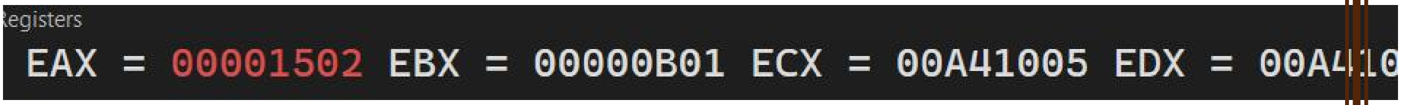
```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC


mov eax , 0a01h  ; hex of 2561
mov ebx , 0b01h; hex of 2817
ADD eax,ebx    ;  5378 in eax, hex = 1502
```

```
main endp
end main
```

Output:



Name	Value
al	1 '\x1'
ah	10 '\n'
bl	1 '\x1'
bh	11 '\v'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	2561
bx	2817
cx	4101
dx	4101



```
Registers
 EAX = 00001502 EBX = 00000B01 ECX = 00A41005 EDX = 00A410
```

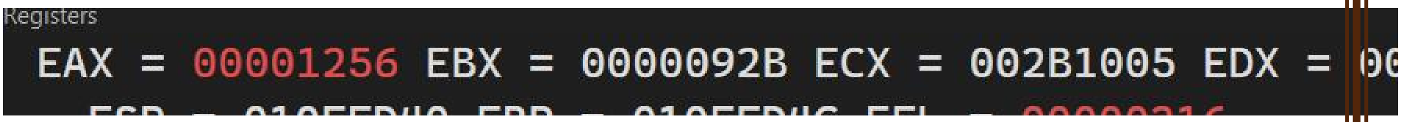
Task8:

Code:

```
.386
.model flat, stdcall
.stack 4096
.data

var WORD ?

.code
main PROC



mov eax , 2347  ; oct of 1255
mov ebx , 2347 ; oct of 1255
ADD eax,ebx    ;  2694 in eax, hex = 1256
```

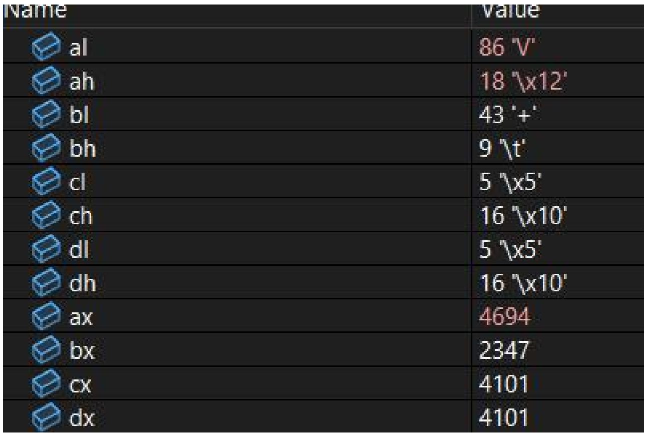
```
main endp
end main
```

Output:



Registers

```
EAX = 00001256 EBX = 0000092B ECX = 002B1005 EDX = 00
   ESP = 010FFD40 EBP = 010FFD4C EFL = 00000216
```



Name	Value
al	86 'V'
ah	18 '\x12'
bl	43 '+'
bh	9 '\t'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	4694
bx	2347
cx	4101
dx	4101

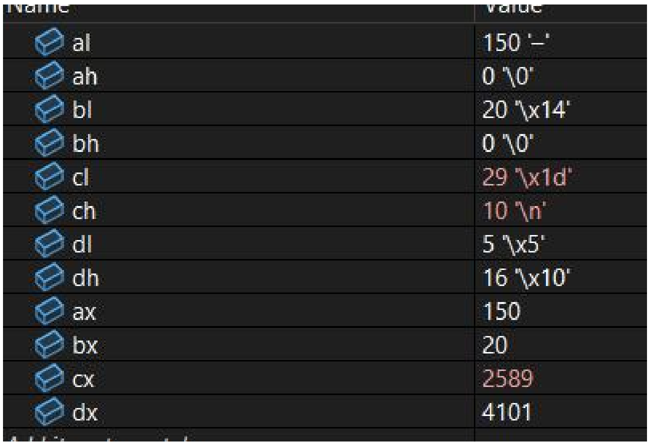
Task9:

Code:

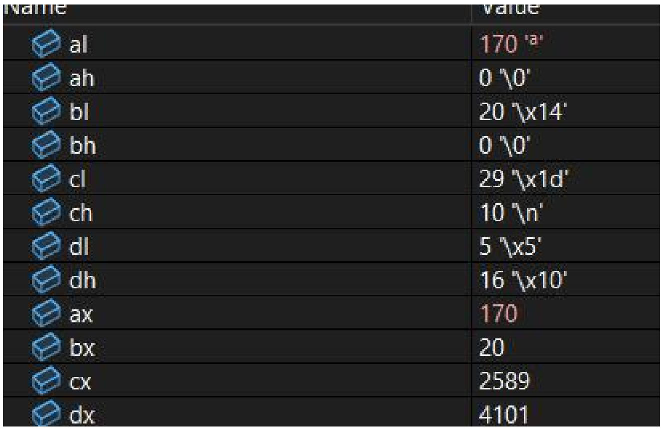
```
.386
.model flat, stdcall
.stack 4096


.code
main PROC


mov ax , 150  ; a50 in ax, 150 in al , 0 in ah
mov bx , 20      ; 20 in bx , 20 in bl , 0 in bh
mov cx , 2589 ; 2589 in cx, 29 in cl , 10 in ch
ADD ax,bx  ;
ADD ax,cx
```

```
main endp
end main
```

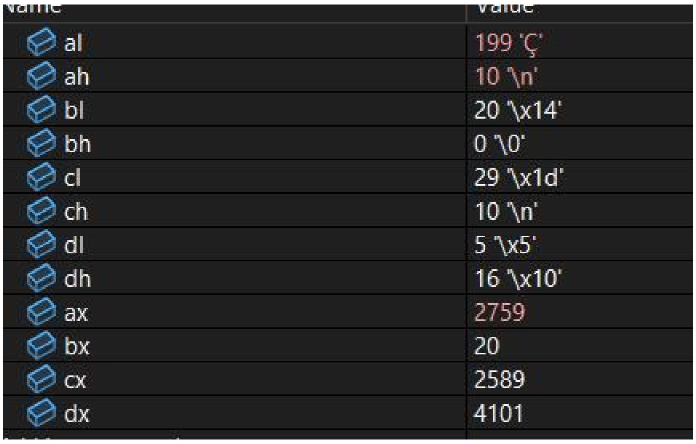
Output:



Name	Value
al	150 '–'
ah	0 '\0'
bl	20 '\x14'
bh	0 '\0'
cl	29 '\x1d'
ch	10 '\n'
dl	5 '\x5'
dh	16 '\x10'
ax	150
bx	20
cx	2589
dx	4101



Name	Value
al	170 'ª'
ah	0 '\0'
bl	20 '\x14'
bh	0 '\0'
cl	29 '\x1d'
ch	10 '\n'
dl	5 '\x5'
dh	16 '\x10'
ax	170
bx	20
cx	2589
dx	4101



Name	Value
al	199 'Ç'
ah	10 '\n'
bl	20 '\x14'
bh	0 '\0'
cl	29 '\x1d'
ch	10 '\n'
dl	5 '\x5'
dh	16 '\x10'
ax	2759
bx	20
cx	2589
dx	4101

Task10:

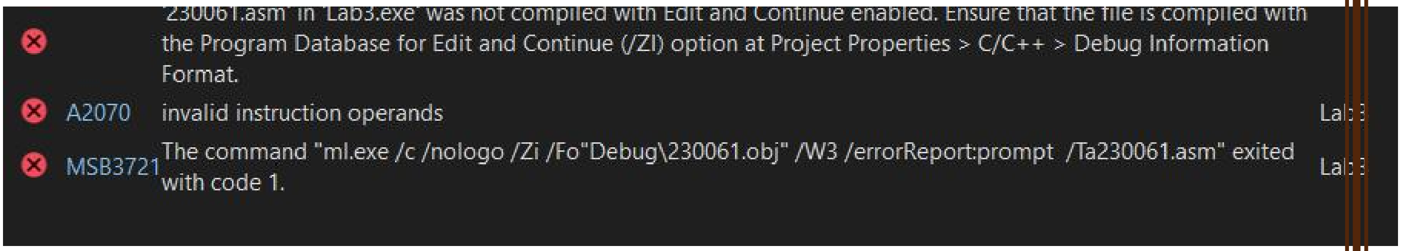
Code:

```
.386
.model flat, stdcall
.stack 4096
```

```
.code
main PROC


mov ax , 150
mov bl , 20
ADD ax,bl


main endp
end main
```

Output:

Error: Ax is of 16 bit and BL is of 8bit therefore due to this issue error will occure.



```
          '230061.asm' in 'Lab3.exe' was not compiled with Edit and Continue enabled. Ensure that the file is compiled with
          the Program Database for Edit and Continue (/ZI) option at Project Properties > C/C++ > Debug Information
          Format.
A2070     invalid instruction operands                                                                  Lab3
MSB3721   The command "ml.exe /c /nologo /Zi /Fo"Debug\230061.obj" /W3 /errorReport:prompt  /Ta230061.asm" exited   Lab3
          with code 1.
```

Task11:

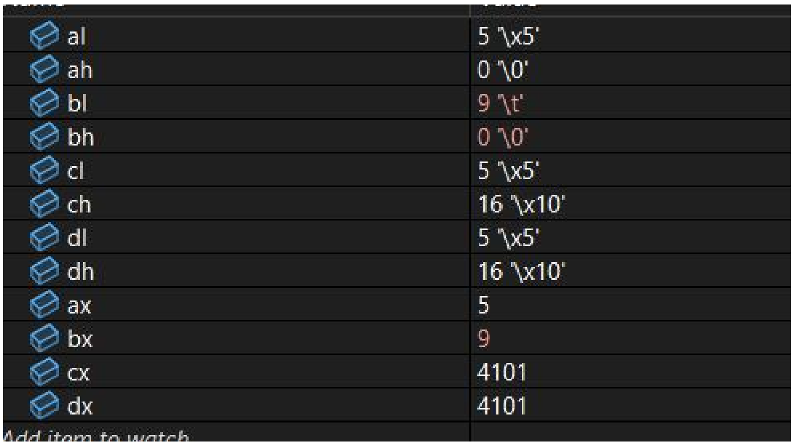
Code:

```
.386
.model flat, stdcall
.stack 4096


.code
main PROC


mov ax , 101b
mov bx , 09h
ADD ax,bx


main endp
```

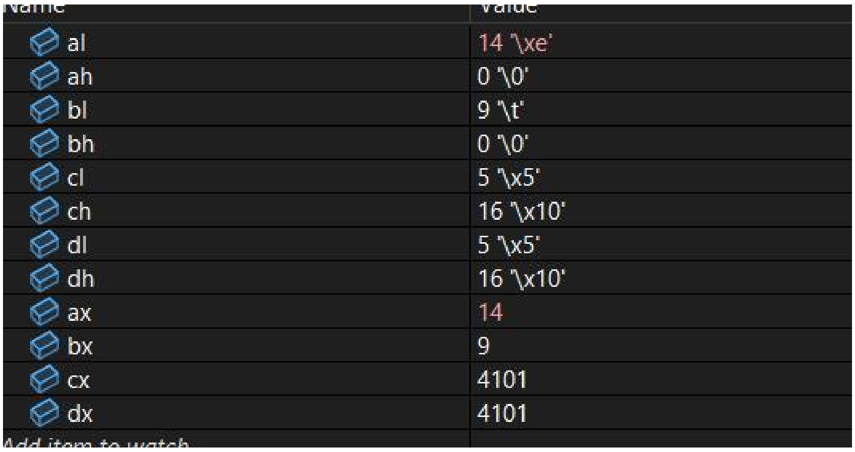
```
end main
```

Output:

As both operands are of same size therefore no error will occur.



Name	Value
al	5 '\x5'
ah	0 '\0'
bl	9 '\t'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	5
bx	9
cx	4101
dx	4101
Add item to watch	



Name	Value
al	14 '\xe'
ah	0 '\0'
bl	9 '\t'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	14
bx	9
cx	4101
dx	4101
Add item to watch	

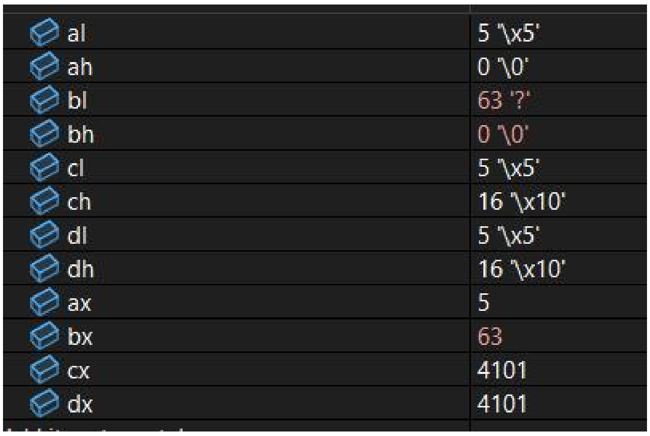
Task12:

Code:

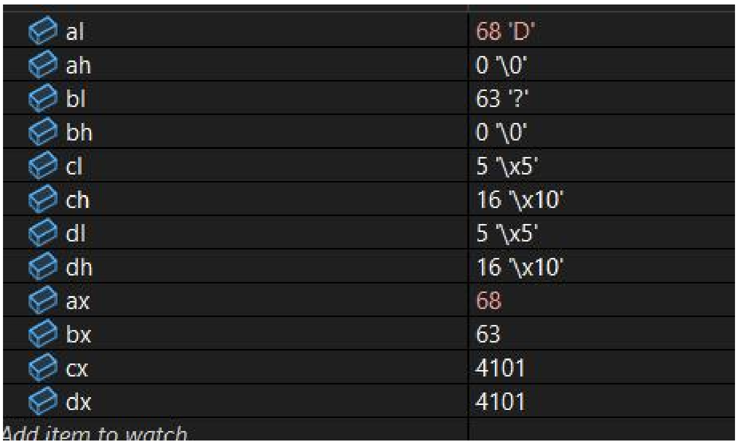
```
.386
.model flat, stdcall
.stack 4096


.code
main PROC


mov ax , 101b
mov bx , 77o
ADD ax,bx


main endp
end main
```

Output:

As both operands are of same size therefore no error will occur.



al	5 '\x5'
ah	0 '\0'
bl	63 '?'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	5
bx	63
cx	4101
dx	4101



al	68 'D'
ah	0 '\0'
bl	63 '?'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	68
bx	63
cx	4101
dx	4101
Add item to watch	

Task13:

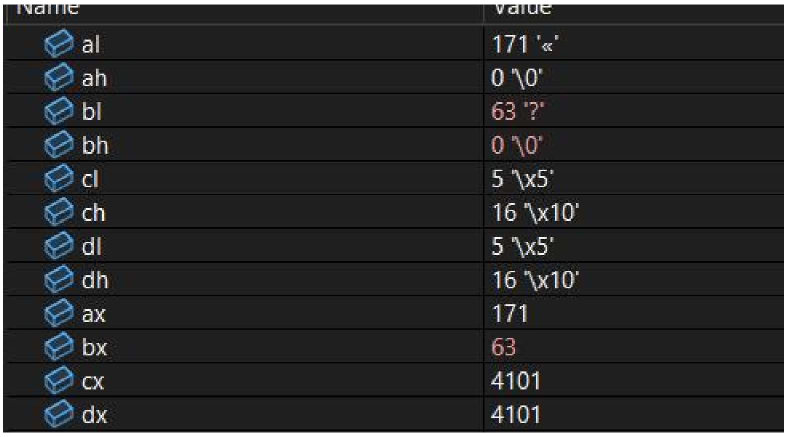
Code:

```
.386
.model flat, stdcall
.stack 4096
```

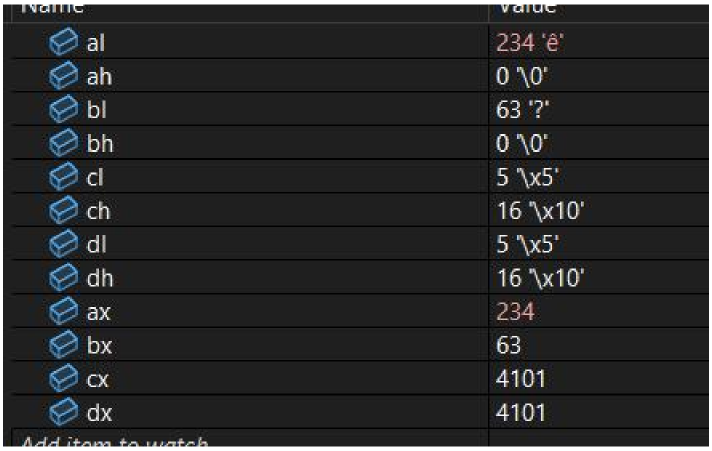
```
.code
main PROC


mov ax , 0abh
mov bx , 77o
ADD ax,bx


main endp
end main
```

Output:

As both operands are of same size therefore no error will occur.



Name	Value
al	171 '«'
ah	0 '\0'
bl	63 '?'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	171
bx	63
cx	4101
dx	4101



Name	Value
al	234 'ê'
ah	0 '\0'
bl	63 '?'
bh	0 '\0'
cl	5 '\x5'
ch	16 '\x10'
dl	5 '\x5'
dh	16 '\x10'
ax	234
bx	63
cx	4101
dx	4101
Add item to watch	