SAAD UR REHMAN
19k-0218
SEC: C

LAB TASK 5

Activity 1

```
.data
.arrayW WORD 1000h,3000h,4000h
arrayD DWORD 1,2,3,4,9
; will the following assemble and run?
.code
mov ax,[arrayW-2] ; ??
mov eax,[arrayD+16] ; ??
```

SOL:

1) It will give some garbage value
2) 9 value will be stored in eax as it will move **4bytes** from base.

Activity 2

Use following array declarations:

Now initialize three double word variables SUM1, SUM2, SUM3 and perform

following operations (expressed in pseudo-code here):

SUM1 = arrayB[0]+arrayW[0]+

arrayD[0]

SUM2 =arrayB[1]+arrayW[1]+

arrayD[1]

SUM3 =arrayB[2] + arrayW[2] +

arrayD[2]

SOLUTION :

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```
arrayD DWORD 60, 12, 18
SUM1 DWORD ?
SUM2 DWORD ?
SUM3 DWORD ?
.code
main PROC
;FOR SUM1 (SUM1 = arrayB[0]+arrayW[0]+arrayD[0])
mov dl,arrayB[0]
mov ax,arrayW[0]
movzx eax,ax
movzx edx,dl
add eax,edx
add eax,arrayD[0] ;EAX=50  ;SAAD UR REHMAN(19k-0218)
mov SUM1,eax  ;//EAX VALUE(50) WILL BE STORED IN SUM1

;FOR SUM2 (SUM2 =arrayB[1]+arrayW[1]+arrayD[1])
mov bl,arrayB[1]
movzx bx,bl
add bx,arrayW[2]
movzx ebx,bx;
add ebx,arrayD[4]  ;EBX=29  ;SAAD UR REHMAN(19k-0218)
mov SUM2,ebx    ;EBX VALUE(29) WILL BE STORED IN SUM2

;FOR SUM3 (SUM3 =arrayB[2] + arrayW[2] + arrayD[2])
mov cl,arrayB[2]
movzx cx,cl;
add cx,arrayW[4]
movzx ecx,cl
add ecx,arrayD[8]  ;ECX=1E  ;SAAD UR REHMAN(19k-0218)
mov SUM3,ecx       ;ECX VALUE(1E) WILL BE STORED IN SUM3

call DumpRegs
exit
```

C:\Windows\system32\cmd.exe

```
  EAX=00000050  EBX=00000029  ECX=0000001E  EDX=00000005
  ESI=00C81005  EDI=00C81005  EBP=00D8FC1C  ESP=00D8FC10
  EIP=00C81074  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0

Press any key to continue . . .
```

Activity 3

Use following array declarations:

arrayB BYTE 60, 90, 80

arrayW WORD 150, 250, 350

arrayD DWORD 600, 1200, 1800

For each array, add its 1st and last element using above 3 methods and display the result in a separate

Register

SOLUTION :

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```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data
arrayB BYTE 60, 90, 80
arrayW WORD 150, 250, 350
arrayD DWORD 600, 1200, 1800
.code
main PROC    ;SAAD UR REHMAN (19k-0218)
mov ah,arrayB[0]
add ah,arrayB[2]  ;EAX=004F8CF4 ;AH=8C

mov bx,arrayW[0]
add bx,arrayW[4] ;EBX=003201F4  ;BX=1F4

mov edx,arrayD[0]
add edx,arrayD[8] ;EDX=00000960

call DumpRegs
exit
main ENDP
END main
```

C:\Windows\system32\cmd.exe

```
EAX=004F8CF4  EBX=003201F4  ECX=00061005  EDX=00000960
ESI=00061005  EDI=00061005  EBP=004FFAA8  ESP=004FFA9C
EIP=0006103B  EFL=00000216  CF=0  SF=0  ZF=0  OF=0  AF=1  PF=1

Press any key to continue . . .
```

Activity 4

Write down the value of each destination operand???

.data

varB BYTE 65h,33h,02h,05h

varW WORD 654Ah,1202h

varD DWORD 12344678h

.code

mov ax,WORD PTR [varB+2]

mov bl,BYTE PTR varD

mov bl,BYTE PTR [varW+2]

mov ax,WORD PTR [varD+2]

mov eax,DWORD PTR varW

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INSTRUCTION 1:

Registers

```
EAX = 00790502 EBX = 008A8000 ECX = 00D21005 EDX = 00D21005 ESI = 00D21005 EDI =

00D25008 = 78
```

masm.targets | taskk.asm

```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data          ;SAAD UR REHMAN
varB BYTE 65h,33h,02h,05h
varW WORD 654Ah,1202h
varD DWORD 12344678h
.code
main PROC
mov ax,WORD PTR [varB+2]
mov bl,BYTE PTR varD
mov bl,BYTE PTR [varW+2]
mov ax,WORD PTR [varD+2]
mov eax,DWORD PTR varW

call DumpRegs
exit
```

INSTRUCTION 2:

Registers

```
EAX = 00790502 EBX = 008A8078 ECX = 00D21005 EDX = 00D21005 ESI = 00D21005 EDI = 00D21005 EIP = 00D2101C

00D25006 = 02
```

masm.targets | taskk.asm

```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data          ;SAAD UR REHMAN
varB BYTE 65h,33h,02h,05h
varW WORD 654Ah,1202h
varD DWORD 12344678h
.code
main PROC
mov ax,WORD PTR [varB+2]
mov bl,BYTE PTR varD
mov bl,BYTE PTR [varW+2]
mov ax,WORD PTR [varD+2]
mov eax,DWORD PTR varW

call DumpRegs
exit
```

INSTRUCTION 3:

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Registers

```
EAX = 01350502 EBX = 010FC002 ECX = 00D21005 EDX = 00D21005 ESI = 00D21005 EDI = 00D21005 EIP = 00D21022

00D2500A = 1234
```

masm.targets taskk.asm

```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data          ;SAAD UR REHMAN
varB BYTE 65h,33h,02h,05h
varW WORD 654Ah,1202h
varD DWORD 12344678h
.code
main PROC
mov ax,WORD PTR [varB+2]
mov bl,BYTE PTR varD
mov bl,BYTE PTR [varW+2]
mov ax,WORD PTR [varD+2]
mov eax,DWORD PTR varW

call DumpRegs
exit
```

INSTRUCTION 4:

Registers

```
EAX = 01351234 EBX = 010FC002 ECX = 00D21005 EDX = 00D21005 ESI = 00D21005 EDI = 00D21005 EIP = 00D21028

00D25004 = 1202654A
```

masm.targets taskk.asm

```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data          ;SAAD UR REHMAN
varB BYTE 65h,33h,02h,05h
varW WORD 654Ah,1202h
varD DWORD 12344678h
.code
main PROC
mov ax,WORD PTR [varB+2]
mov bl,BYTE PTR varD
mov bl,BYTE PTR [varW+2]
mov ax,WORD PTR [varD+2]
mov eax,DWORD PTR varW

call DumpRegs
exit
```

100 %

INSTRUCTION 5:

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Registers

```
EAX = 1202654A EBX = 010FC002 ECX = 00D21005 EDX = 00D21005 ESI = 00D21005 EDI = 00D21005 EIP = 00D2102D
```

masm.targets taskk.asm

```
TITLE My First Program (taskk.asm)
INCLUDE Irvine32.inc
.data          ;SAAD UR REHMAN
varB BYTE 65h,33h,02h,05h
varW WORD 654Ah,1202h
varD DWORD 12344678h
.code
main PROC
mov ax,WORD PTR [varB+2]
mov bl,BYTE PTR varD
mov bl,BYTE PTR [varW+2]
mov ax,WORD PTR [varD+2]
mov eax,DWORD PTR varW

call DumpRegs
exit
```

100 %

_____END_____