

> Explain why overflow cannot occur when the MUL and one-opened IMUL instruction execute.

Answer

➤ The product is stored in registers that are twice the size of the multiplier and multiplicand. If you multiply OFFh by OFFh, for example, the Product (FE01h) easily fits within 16 bits.

Problem # 02

➤ How is the one-operand IMUL instruction different from MUL in the way it generates a multiplication product?

Answer

➤ When the product fits completely within the lower register of the product, IMUL sign extends the product into the upper product register . MUL, on the other hand zero-extends the product.

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➤ What has to happen in order for the one-operand IMUL to set the carry and overflow flogs?

Answer

➤ With IMUL, the Carry and overflow flags are set when the upper half of the product is not a sign extension of the lower half of the product.

Problem # 04

➤ When EBX is the operand in a DIV instruction, which register holds the quotient?

Answer

> EAX

Problem # 05

➤ When BX is the operand in a DIV instruction, which register holds the Quotient?

Answer

> AX

➤ When BL is the operand in a MUL instruction, Which registers hold the product?

Answer

> AX

Problem # 07

➤ Show an example of sign extension before calling the IDIV instruction with a 16-bit operand.

Answer

> Code example:

Mov ax, dividendlow
Cwd; sign-extend dividend
Mov bx, divisor
Idiv bx

What will be the contents of AX and DX after the following operation? Mov dx,0 mov ax,22h mov cx,100h mul cx

Answer

> DX = 0002h, AX = 2200h.

Problem # 09

What will be the contents of AX after the following operation? mov ax, 63h mov bl,10h div bl

Answer

> AX = 0306h

What will be the contents of EAX and EDX after the following operation? mov eax, 123400h mov edx, 0 mov ebx,10h div ebx

Answer

 \triangleright EDX = 0, EAX = 00012340h.

Problem # 11

What will be the contents of AX and DX after the following operation? mov ax, 4000h mov dx, 500h mov bx, 10h div, bx

Answer

> The DIV will cause a divide overflow, so the value of AX and DX cannot be determined.

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➤ Write instruction that multiply -5 by 3 and store the result in a 16-bit variable Val 1.

Answer

mov al 3 mov bl, -5 imul bl mov val1,ax; product

Problem # 13

Write instruction that divide -276 by 10 and store the result in a 16-bit variable val1.

Answer

mov ax, -276 cwd; sign-extend AX into DX mov bx,10 idiv bx mov val1,ax; quotient

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➤ Implement the following C++ expression in assembly language, using 32-bit unsigned operands: val1 (val2 * val3) / (val4

Answer

mul val3
mov ebx,val4
sub ebx,3
div ebx
mov val1,eax

➤ Implement the following C++ expression in assembly language, using 32-bit signed operands:
val1 (val2 / val3) * (val1 — val2) 7.5 Extended Addition

and Subtraction

Extended precision addition and subtraction is adding and subtracting

numbers having

Answer

mov eax,val2 cdq idiv val3 mov ebx,val1 add ebx,val2 imul ebx mov val1,eax

The End

Miss Thank you