Quiz 1 Solution

Question 1.

Why Assembly language is not portable among machines with different processors?

Answer:

Different processor might have different instruction sets and different version of assembly language tailored for the specific processor.

Question 2.
Assume 8-bit registers are used. Evaluate the subtraction operation (9 – 16) using two's complement arithmetic in binary system. Convert the result back to signed decimal. Show all the steps of the computation in details.

Answer: 9 in binary = 1001

9 in binary in a 8-bit storage = 0000 1001

16 in binary:

Division	Quotient	Remainder
16/2	8	0
8/2	4	0
4/2	2	0
2/2	1	0
1/2	0	1

16 in binary : 10000

16 in binary in a 8-bit storage = 0001 0000

2's complement of 16:

1) Step 1: Flip the bits : 1110 1111

2) Add 1 : 1 111 ← carry

+ 0000 0001

1111 0000 → this is (-16)

Now, 9 − 16 = 9 + (−16) :

9 : 0000 1001

−16 : 1111 0000 (+)

1 1111001 → Result

↘ most significant bit (MSB) is 1 so the number is negative.

Absolute vale of the result:

Do a 2's complement on result:

1) Flip the bits: 0000 110

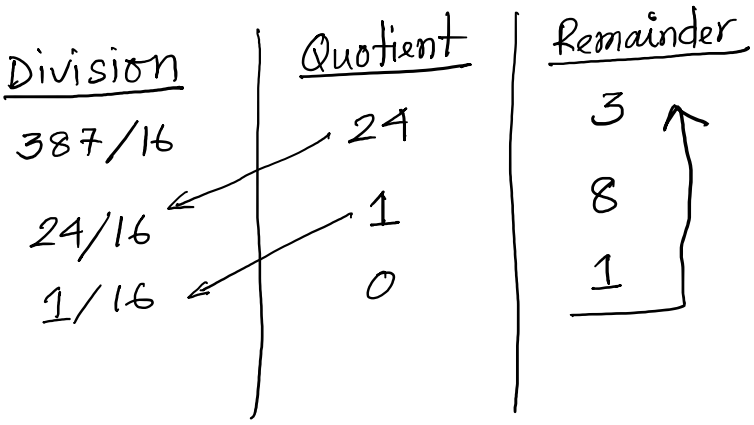
2) Add 1 : 0000 0001 (+)

0000 0111 → this is 7. in decimal

result is (-7)

Question 3.
Convert decimal 387 to hexadecimal. Show all the steps of computation. No Points if you don't show the work.

Answer:



Hexadecimal = (183)