

modifier bit (00)

00 → no displacement

01 → 8 bit signed disp

10 → 16/32 bit signed disp

11 → register field

00 → modifier bit

mmm → R/M field

rrr → register field

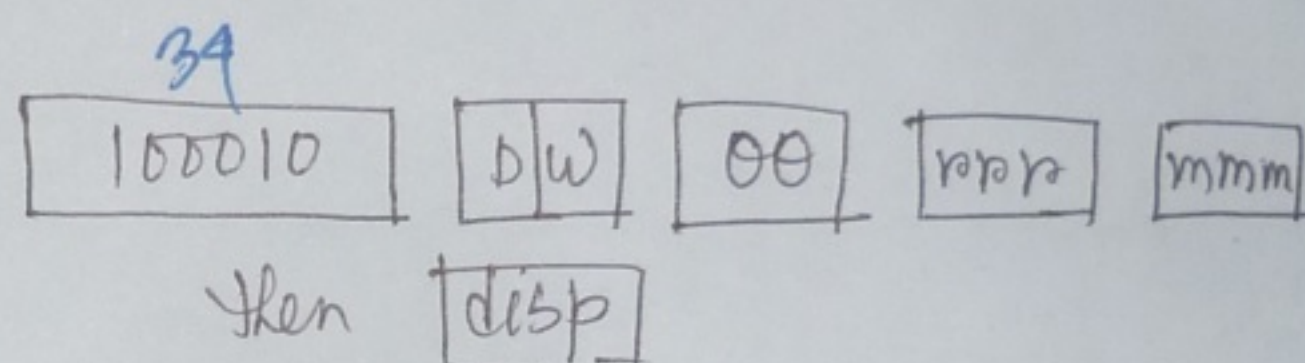
MOV

①

MOV reg, reg

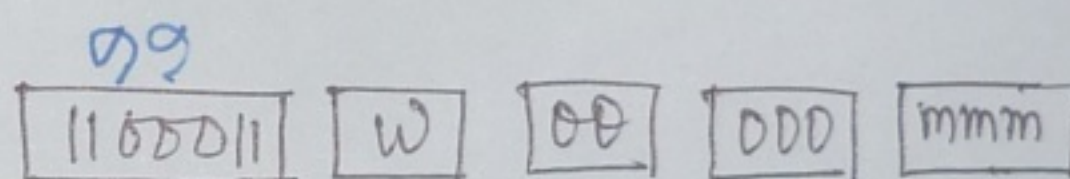
MOV mem, reg

MOV reg, mem



②

MOV mem, imm →



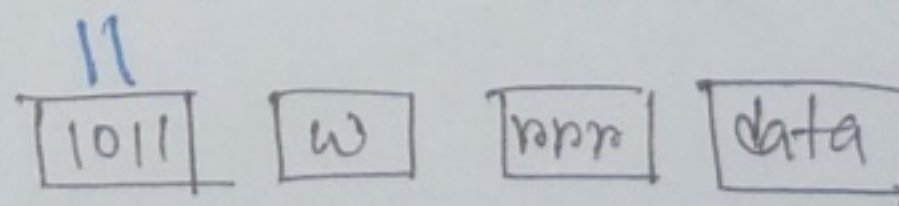
MOV WORD PTR

[BX+1000H], 1234H

then disp data

③

MOV reg, imm →



MOV AX, 1234H

④

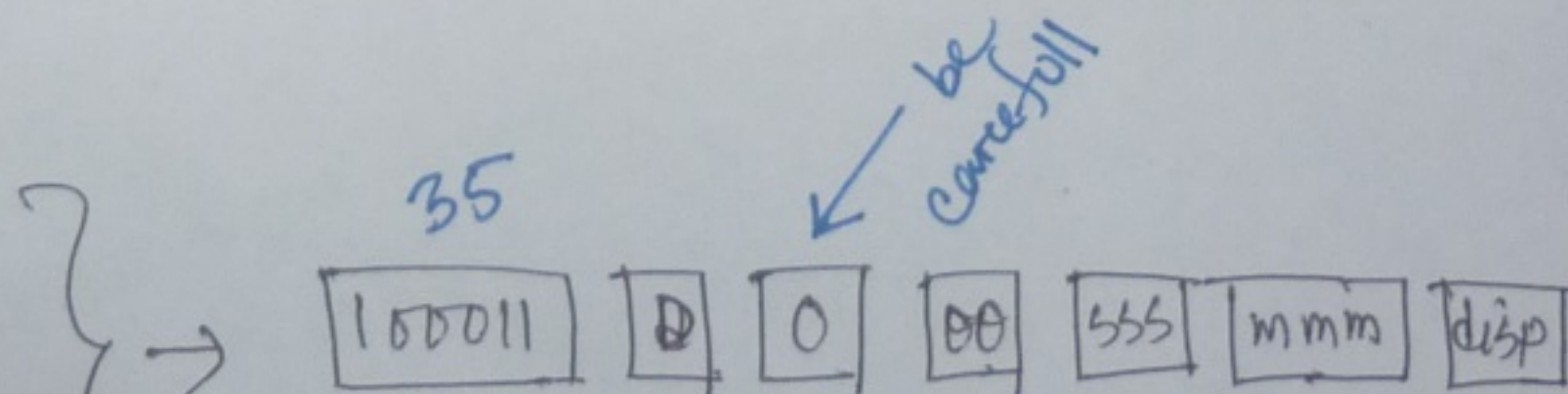
MOV seg, reg

MOV seg, mem

MOV reg, seg

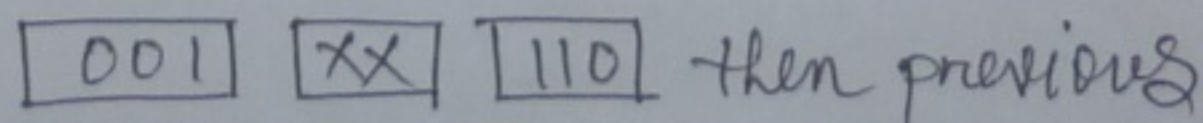
MOV mem, seg

MOV BX, DS



Segment reg can be moved b2n
any 16 bit reg or 16 bit mem location

⑤ Segment override prefix →



MOV ES:[BX], DL

ES → 00

CS → 01

SS → 10

DS → 11

⑤ IN acc, pt \rightarrow ¹¹⁴ 1110010 w port (fixed port)

IN AL, 12H

⑥ IN acc, DX \rightarrow ¹¹⁸ 1110110 w (variable port)

IN AL, DX

⑦ for OUT it is 115(10) & 119(10)

Binary of 10

$$\begin{array}{r} 2 \overline{) 10} \\ 2 \overline{) 5-0} \\ 2 \overline{) 2-1} \\ 2 \overline{) 1-0} \\ 0-1 \end{array}$$

So ~~100~~ $10(10) = 1010(2)$

Decimal of 101011

$$\begin{aligned} & 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \\ & = 32 + 0 + 8 + 0 + 2 + 1 \\ & = 43 \end{aligned}$$

Binary of 0.125

$$0.125 \times 2 = 0.25$$

$$0.25 \times 2 = 0.5$$

$$0.5 \times 2 = 1$$

So $0.125(10) = 0.001(2)$

Binary of 6.625

$$6(10) = 110(2)$$

$$0.625(10) = 0.101(2)$$

$$\text{So } 6.625(10) = 110.101(2)$$

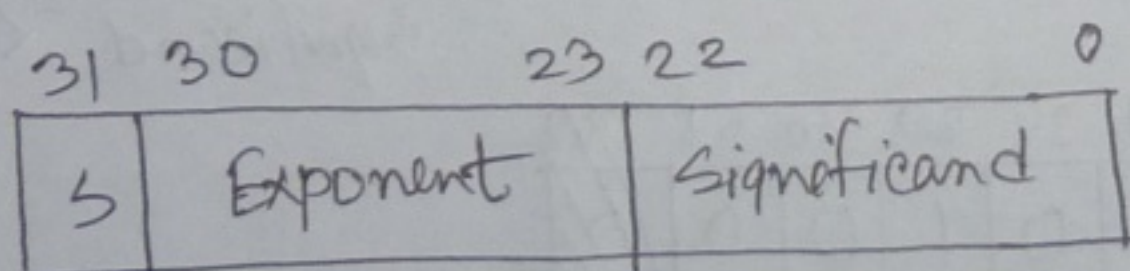
Decimal of ~~6.625~~ 110.101

$$1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 + 1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3}$$

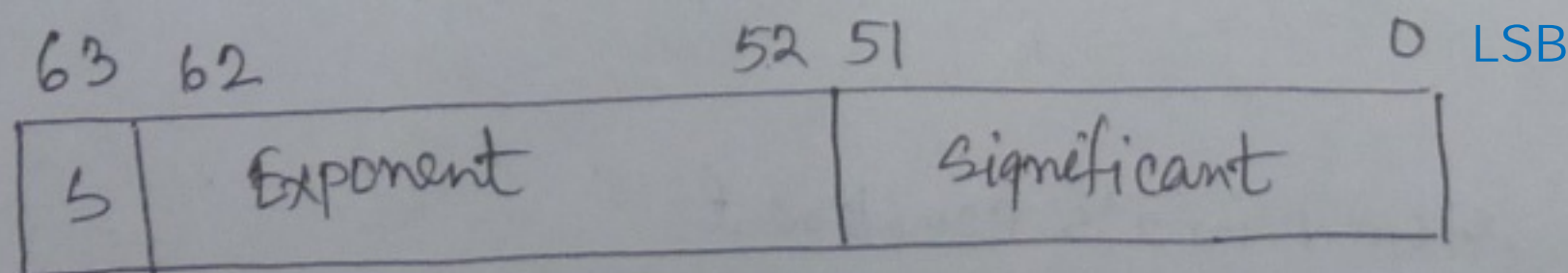
$$= 4 + 2 + 0 + 0.5 + 0 + 0.125$$

$$= 6.625(10)$$

Single precision floating number



Double precision floating number



Represent 12.25 in Single precision floating number

$$12.25(10) = 1100.001(2)$$

$$\text{Normalized} = 1.100001 \times 2^3$$

