

①

$+22.004 \rightarrow +10110.00000001000 = 1011000000001000 \times 2^4$
 $\downarrow \quad \quad \quad \rightarrow 00000001000$
 10110

sign = 0

$* -0.0103 \rightarrow -0.00000010101 \times 2^0$
 $\downarrow \quad \quad \quad \rightarrow 00000010101$
 0

sign = 1

decimal	sign	E	F	دقیق
22.004	0	0100	011000000000/1000	بیت (بیت مائیکم)

$-0.0103 \rightarrow 1 \quad 0000 \quad 00000010101$

فست

$* -13.33 \rightarrow -001101.010101$
 $\downarrow \quad \quad \quad \rightarrow 001101 \quad \rightarrow 0.010101$

(ب)

$* 13.51 \rightarrow +010010.100000$
 $\downarrow \quad \quad \quad \rightarrow 010010 \quad \rightarrow 0.100000$
 010010

decimal	sign	E bit	G bit	دقیق
-13.33	1	001101	010101	بیت
+13.51	0	010010	100000	بیت

②

$$11001_2 = 1 \times 8 + 16 = 25$$

$$+ 11001.0001_2 \rightarrow 0.0001_2 = \frac{1}{16} = 0.0625$$

$$\Rightarrow 25.0625$$

$$+ (19.01)_{16} \rightarrow 19_{16} = 9 \times 1 + 16 = 25$$

$$0.01_{16} = \frac{1}{16} = 0.0625$$

$$\Rightarrow 25.0625$$

$$+ (31.01)_8 \rightarrow 31_8 = 1 \times 8 + 3 \times 1 + 3 \times 8 = 25$$

$$0.01_8 = \frac{1}{16} = 0.0625$$

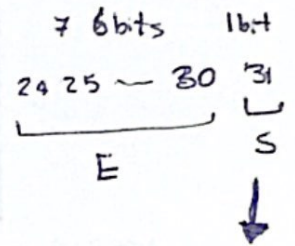
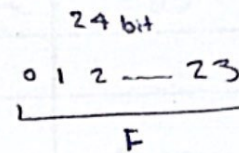
$$\Rightarrow 25.0625$$

③

$$(-1)^S \times 10^F \times 2^E \rightarrow S, F, E$$

$$E = \sum_{i=24}^{30} 2^{i-24} \times b_i$$

$$2^{E-64} \times (2 \times b_{31} - 1) \times \sum_{i=20}^{23} \overline{b_i} \times 2^{i-12}$$



$$2^{b_{31}-1}$$

+ min

$$E = E_{\min}$$

$$\rightarrow 1 \times 2^{E_{\min}} = e$$

$$F = 0.000 \dots 00$$

$$\text{smallest } e + 0000000.000 \dots 01 = 0.000000059604644 \dots \approx 0.00000006$$

largest

1111111.1111111

127 0.9999998207907104

$$\text{largest } = 127.9999998207907104$$

866061 94

(4)

$$1011\ 0100\ 1011\ 0100 = 46\ 260$$

$$11000010 = 194$$

$$B' = 0011\ 1101$$

n	E ₃	R _n	2	A	1	B	
8	0	1011 0100		1011 0100		1100 0010	
		1111 0010		1011 0100			$R+B'+1$
	1	1011 0100		1011 0100			(1 F) overflow $R = R+B$
<hr/>							
	1	0110 1001		0110 100-			SHL
	0	1010 0111		0110 1001			$E_2R = R+B'+1$ $A_0=1$
<hr/>							
7	1	0100 1110		1101 001-			SHL
	0	1000 1100		1101 0011			E_2R
6	1	0001 1001		1010 011-			SHL
	0	0101 0111		1010 0111			E_2R
5	0	1010 1111		0100 111-			SHL
	0	1110 1101		0100 1110			E_2R
	1	1010 1111		0100 1110			$R = R+B$
<hr/>							
4	1	0101 1110		1001 110-			SHL
	1	1001 1100		1001 1101			E_2R
3	1	0011 1001		0011 101-			SHL
	1	0111 0111		0011 1011			E_2R
2	0	1110 1110		0111 011-			SHL
	1	0010 1100		0111 0111			E_2R
<hr/>							
1	0	0101 1000		1110 111-			SHL
	0	1001 0110		1110 1110			E_2R
	0	0101 1000		1110 1110			
<hr/>							
0							

باقی مانده 88 =

باقی مانده 238 =

$$\begin{array}{r} 46\ 260 \\ + 194 \\ \hline 238 \\ - 88 \\ \hline \end{array}$$

حاصل شده 46 260 بر 194 و پس از آن 238 با باقی مانده 88