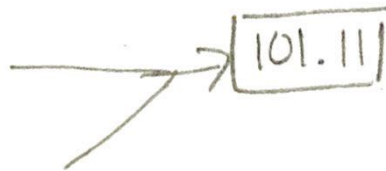


Phillip Mai Essay Quiz

① 5.75

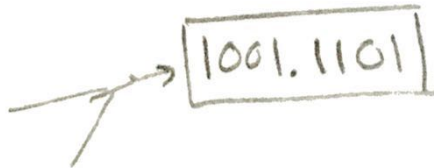
5) 2r1
2) 1r0
1) 0r1



$$0.75 \times 2 = 1.5 \rightarrow 0.5 \times 2 = 1.0$$

4.8125

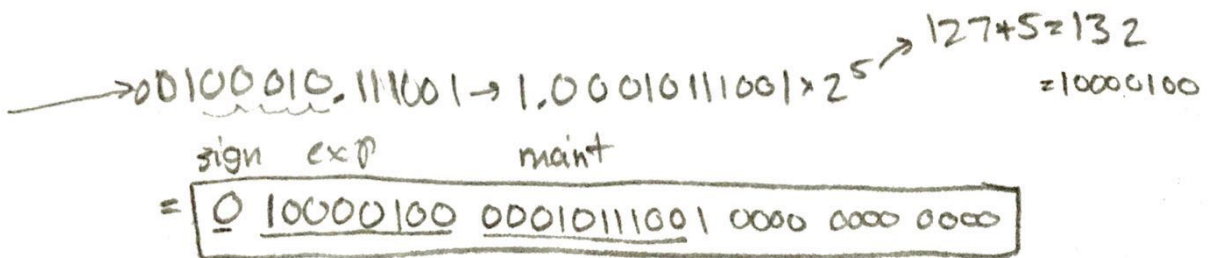
9) 4r1
4) 2r0
2) 1r0
1) 0r1



$$0.8125 \times 2 = 1.625 \rightarrow 0.625 \times 2 = 1.25 \rightarrow 0.25 \times 2 = 0.5 \times 2 = 1.0$$

② 34.890625

34) 17r0
17) 8r1
8) 4r0
4) 2r0
2) 1r0
1) 0r1



$$0.890625 \times 2 = 1.78125 \rightarrow 0.78125 \times 2 = 1.5625 \rightarrow 0.5625 \times 2 = 1.125 \rightarrow 0.125 \times 2 = 0.25 \times 2 = 0.5 \times 2 = 1.0$$

③ sign exp mant.
0 01111011 000-0

$$01111011 = 2^6 + 2^5 + 2^4 + 2^3 + 2^1 + 2^0 = 123 - 127 = -4$$

$$1.0 = 2^{-4} = 0.0625$$

$$63/64 = 0.984375$$

$$0.984375 \times 2 = 1.96875$$

$$0.96875 \times 2 = 1.9375$$

$$0.9375 \times 2 = 1.875$$

$$0.875 \times 2 = 1.75$$

$$0.75 \times 2 = 1.5$$

$$0.5 \times 2 = 1.0$$

$$\approx 0.111111$$

④ The denormalized numbers in floating point representation is a value that have a significand with a leading digit of zero. Basically, if a number bias is 2^{126} to 2^{146} it denormalized and normalized if it 2^{-126} to 2^{-127} .

To convert decimal to binary we use denormalized for bigger numbers and normalized for smaller numbers