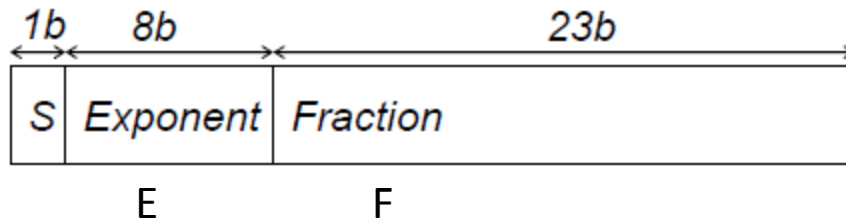


Convert Decimal to Floating point number [IEEE 754]



Try to do the conversion in 3 steps, let's continue with an example:

13.1875

1101.0011

Step 1 : Convert 13 to binary (13)_{decimal} → (1101)_{binary}

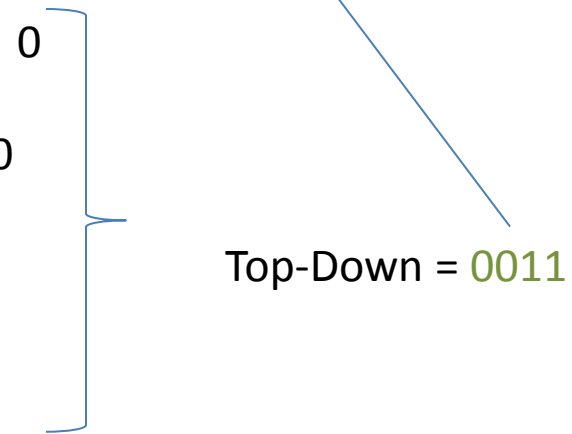
Step 2: ~~13~~.1875 → 0.1875 × 2 = 0.375

0.375 × 2 = 0.75

0.75 × 2 = 1.5

0.5 × 2 = 1.0

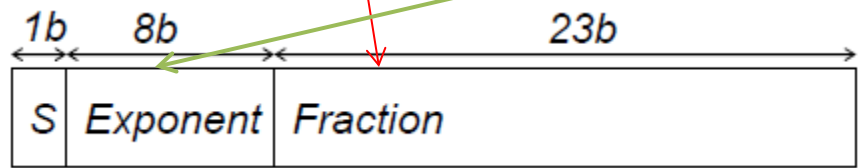
We reached 0, so we stopped



We should reach to this condition : $(+/-) 1.F \times 2^{(E-127)}$

1101.0011 we move the decimal point to the left to make it like 1.F so the result will be:
 $1.1010011 = 1.F$ so **F = 1010011**

We moved the decimal point 3 to the left so $2^3 = 2^{(E-127)} \rightarrow E-127=3$ SO **E = (130)_{decimal}**
E = (10000010)_{binary}



↓ ↓ ↓
0 **10000010** **10100110000000000000000**

0 for positive number
1 for negative number

We add these 0s to **right** to make it 23 bits

Fortunately it is 8 bits, but if it is less, you have to add 0s to the **left**