Decimal to Floating Binary Trick

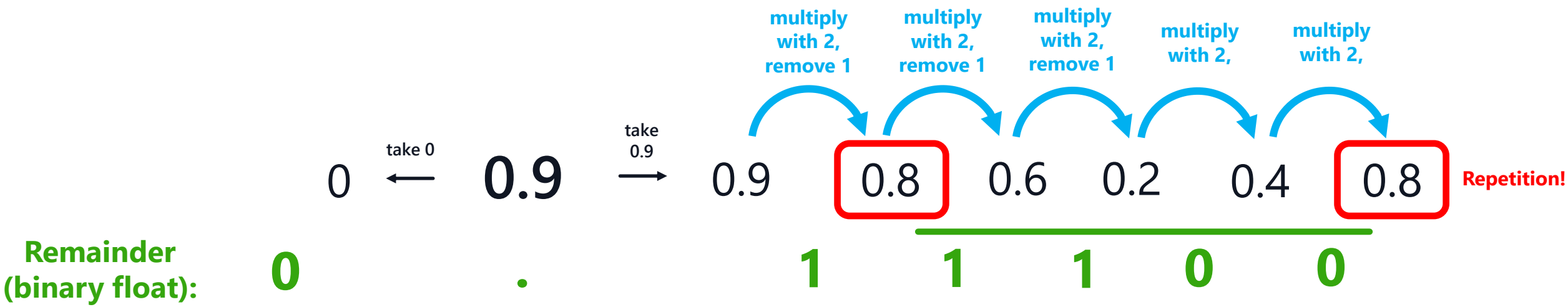
- Continuously **divide** number left to the comma **by 2** and **write down remainder**
- Continuously **multiply** fractional number right to the comma **with 2** and **remove and write down 1's (if number gets bigger than 1)**
- Example: 7.625

$$7.625 = 111.101_2$$

Repeating Patterns

You can stop calculating as soon as you see a repeating pattern (Period)

- Example 0.9:



$$0.9 = 0.1110011001100\,..._2 = 0.1\overline{1100}_2$$

Alternative Method (Table)

You can also use a table to calculate fractional parts to binary (0.9):

x	b_i	$x - b_i$	$2 \cdot (x - b_i)$
0.9	0	0.9	1.8
1.8	1	0.8	1.6
1.6	1	0.6	1.2
1.2	1	0.2	0.4
0.4	0	0.4	0.8
0.8	0	0.8	1.6
1.6	1	0.6	1.2

$$\mathbf{0.9 = 0.1\overline{1100}_2}$$