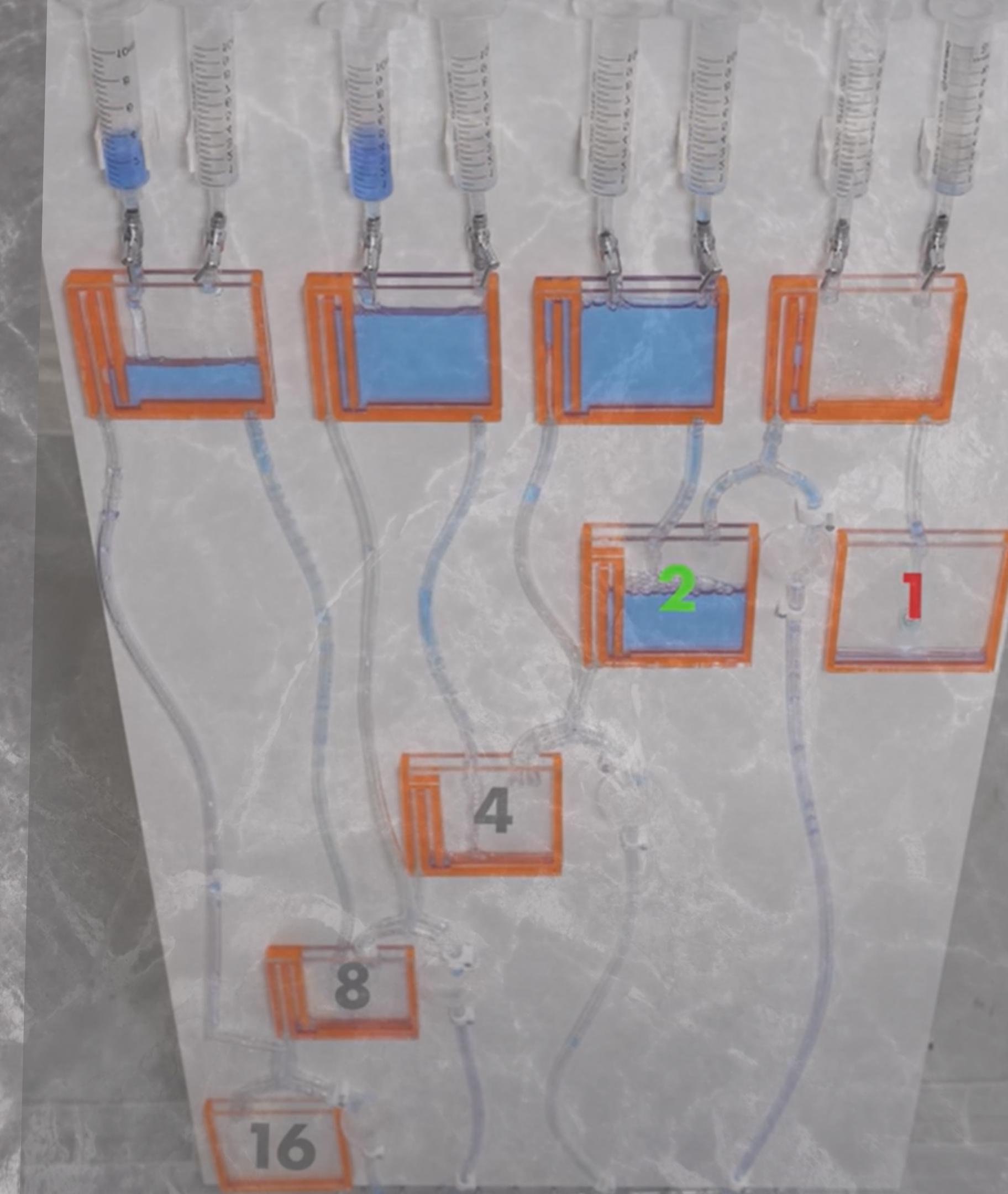


WATER COMPUTER

By Group-F-E

Supervised by :- Manish Agrawal Sir



Introduction

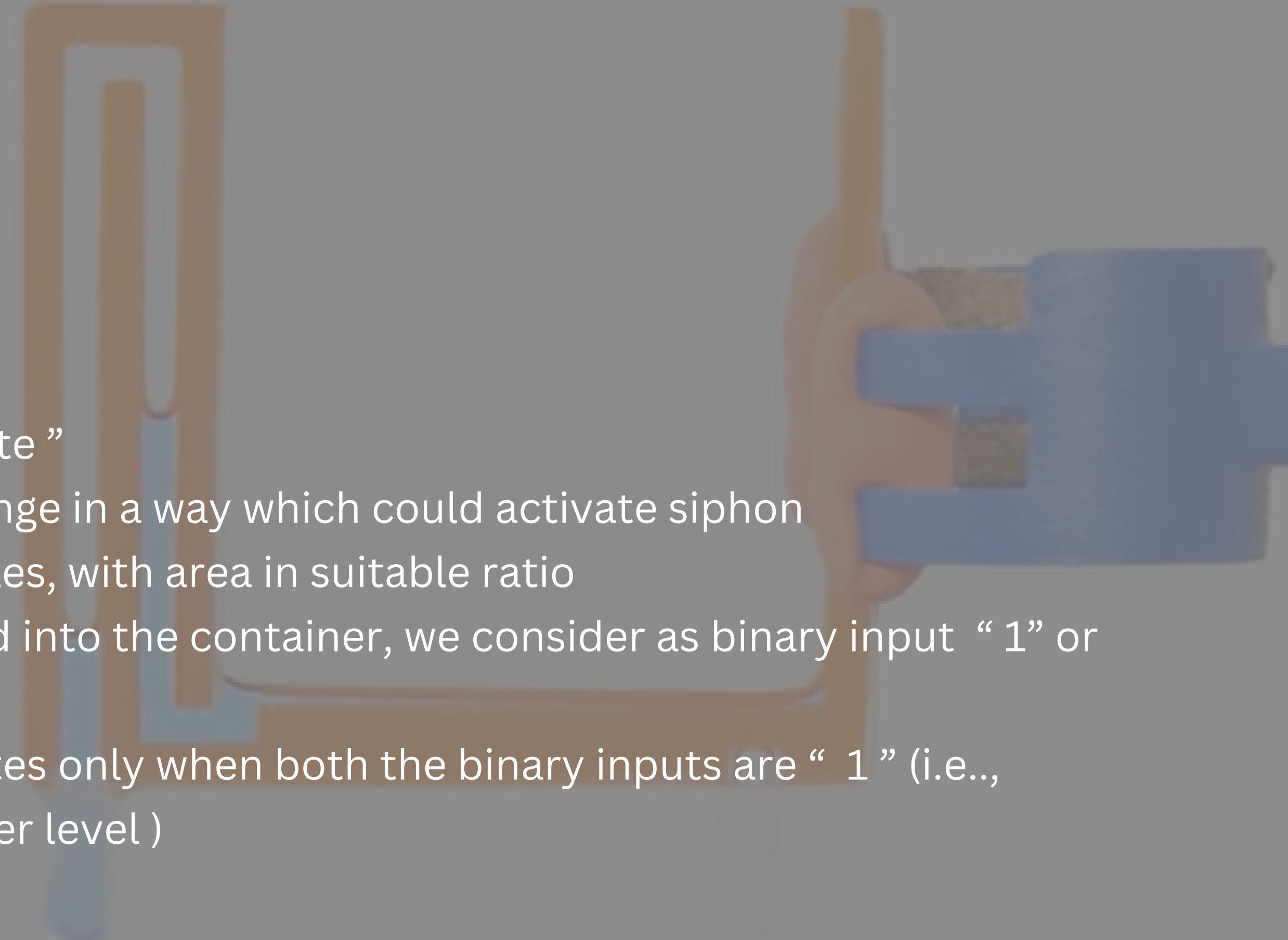
- ◆ Water Computer is based on fluidic logic that add number by changing together a series of logic gates which carry out logical operations on the single or multiple binary inputs and give one binary output for every logic gate.
- ◆ As elementary electronic texts use water as analogy of electricity by assuming pressure as Voltage ,flow as current and pipe diameter as resistance.
- ◆ This Water Computer depends on the water level and shipon action to work

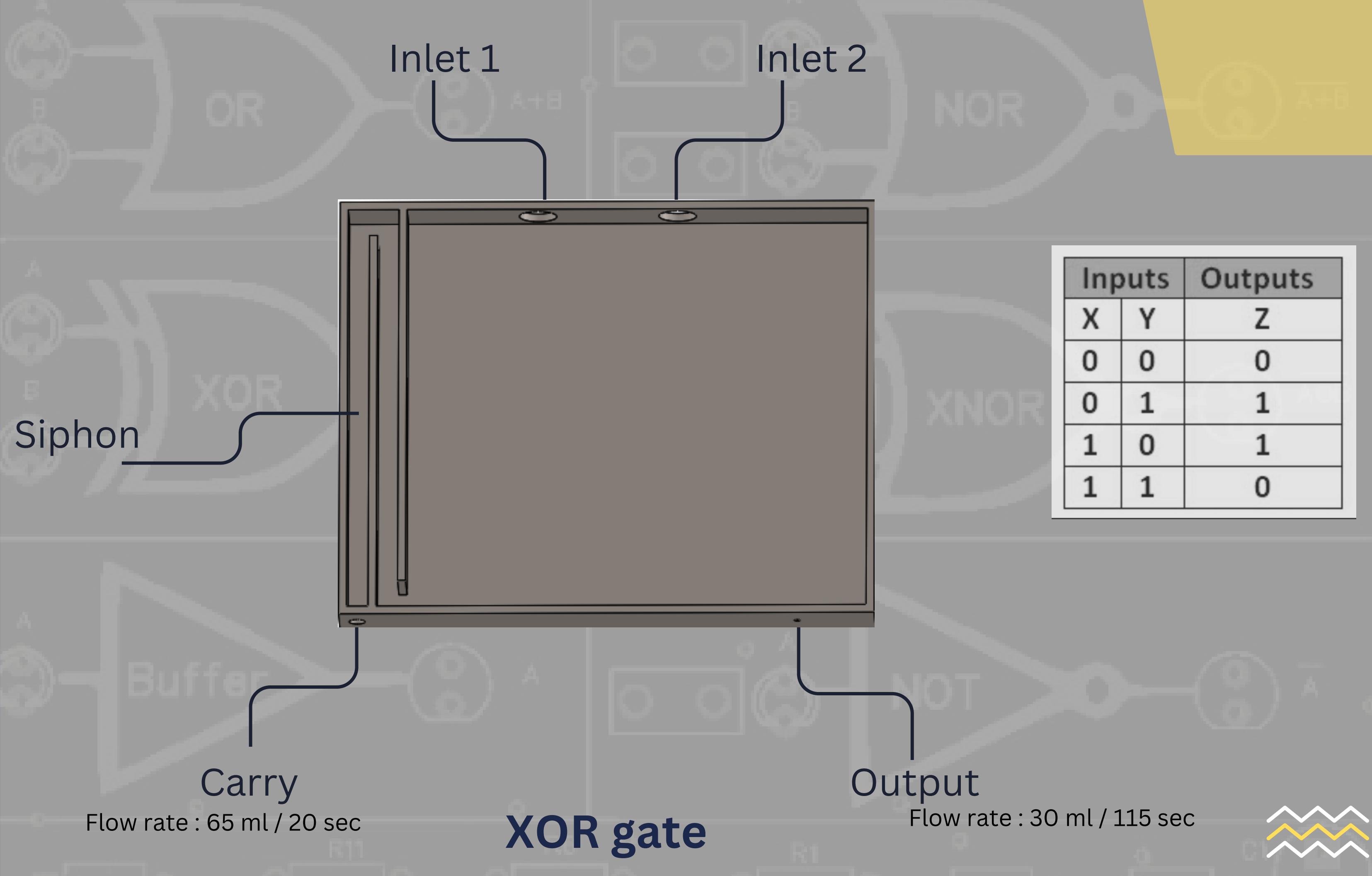
Design:-



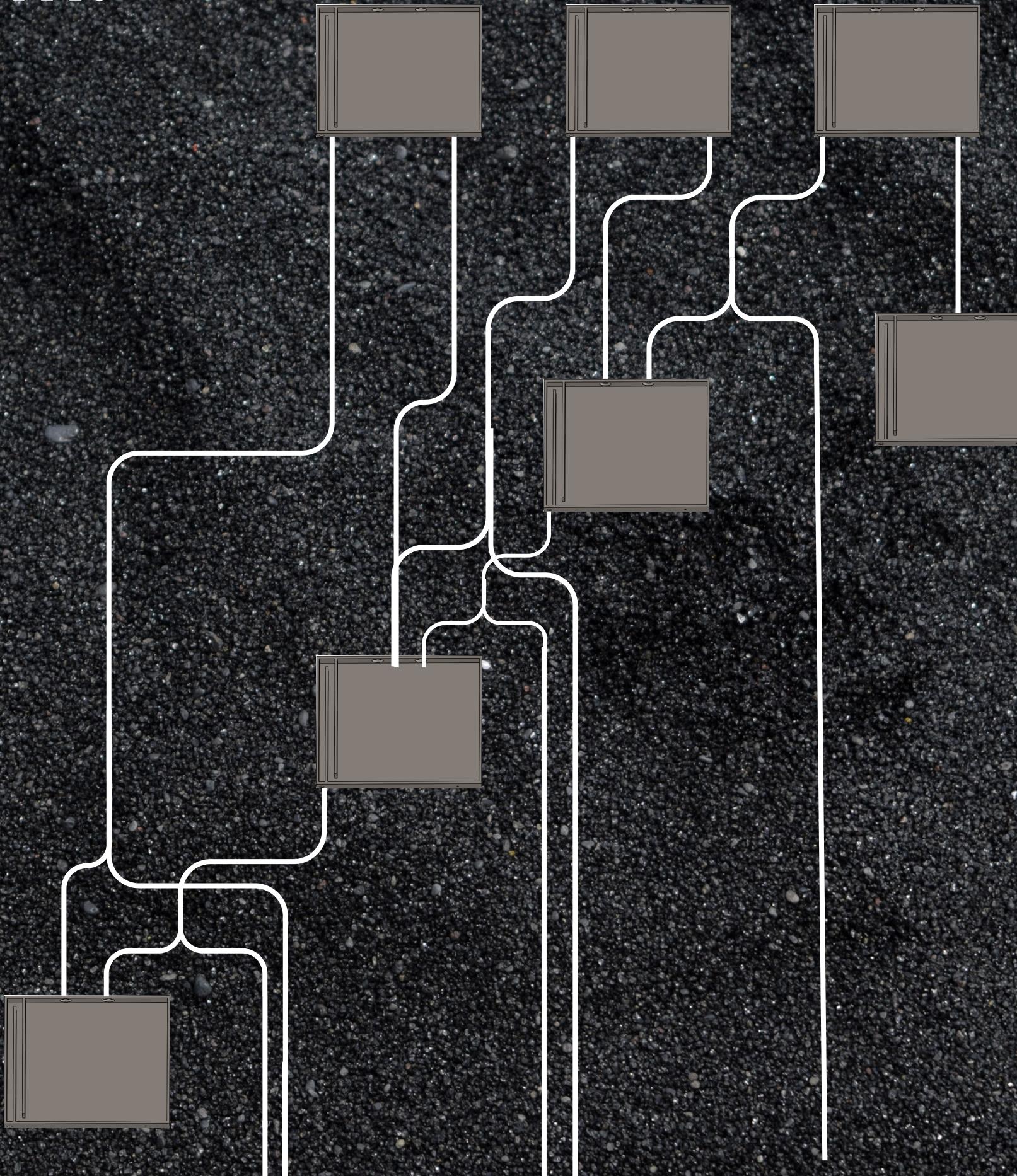
Water container

- Act as “ xor gate ”
- Pipes are arrange in a way which could activate siphon
- Two outlet holes, with area in suitable ratio
- Water pumped into the container, we consider as binary input “ 1 ” or else “ 0 ”
- Siphon activates only when both the binary inputs are “ 1 ” (i.e., increased water level)





Mechanism:



To add:

$$6 + 7 = 13$$

In binary:

110

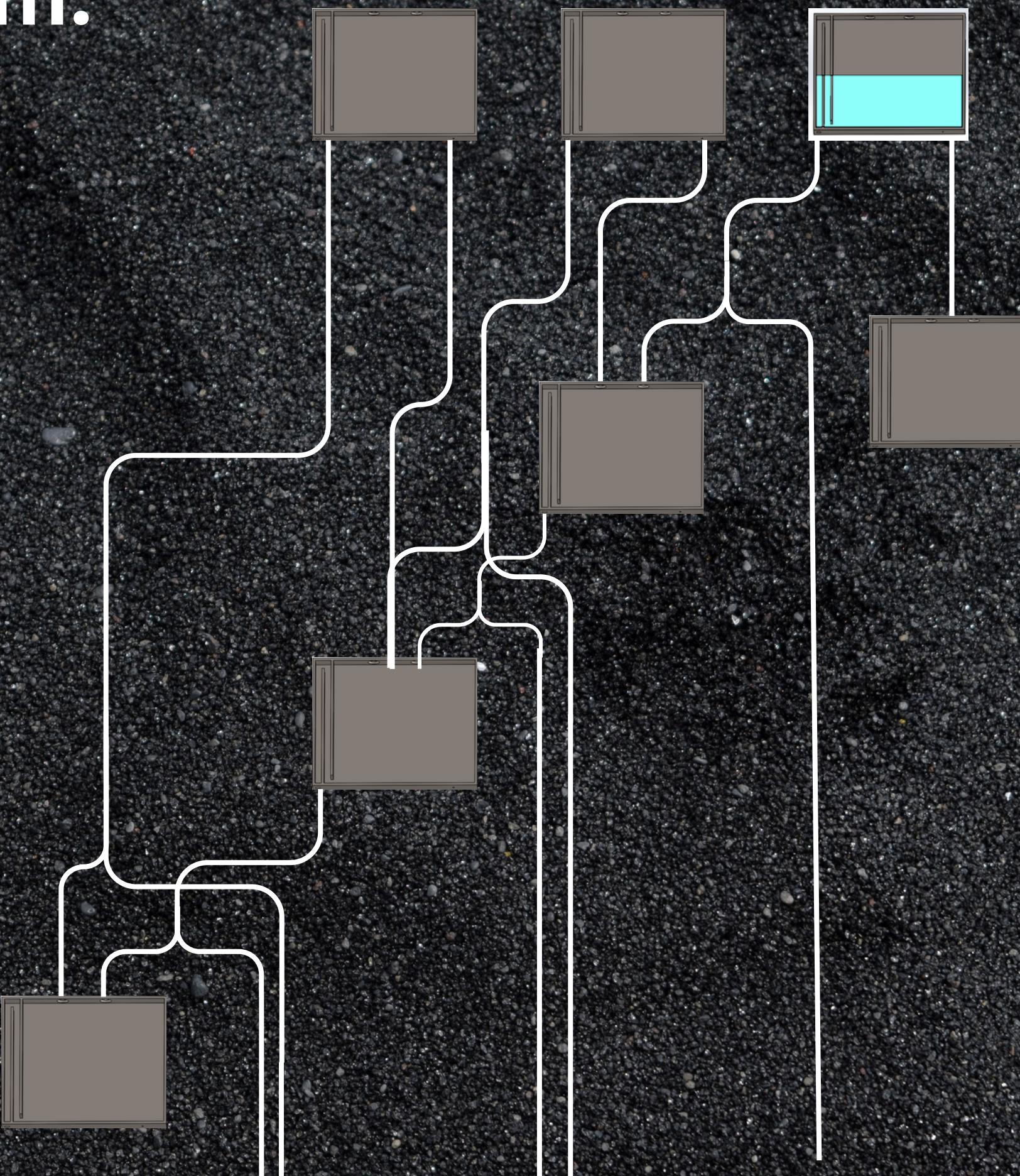
+111

1101

1 is equivalent to half
the volume of container

0 is equivalent to empty
container

Mechanism:



To add:

$$6 + 7 = 13$$

In binary:

110

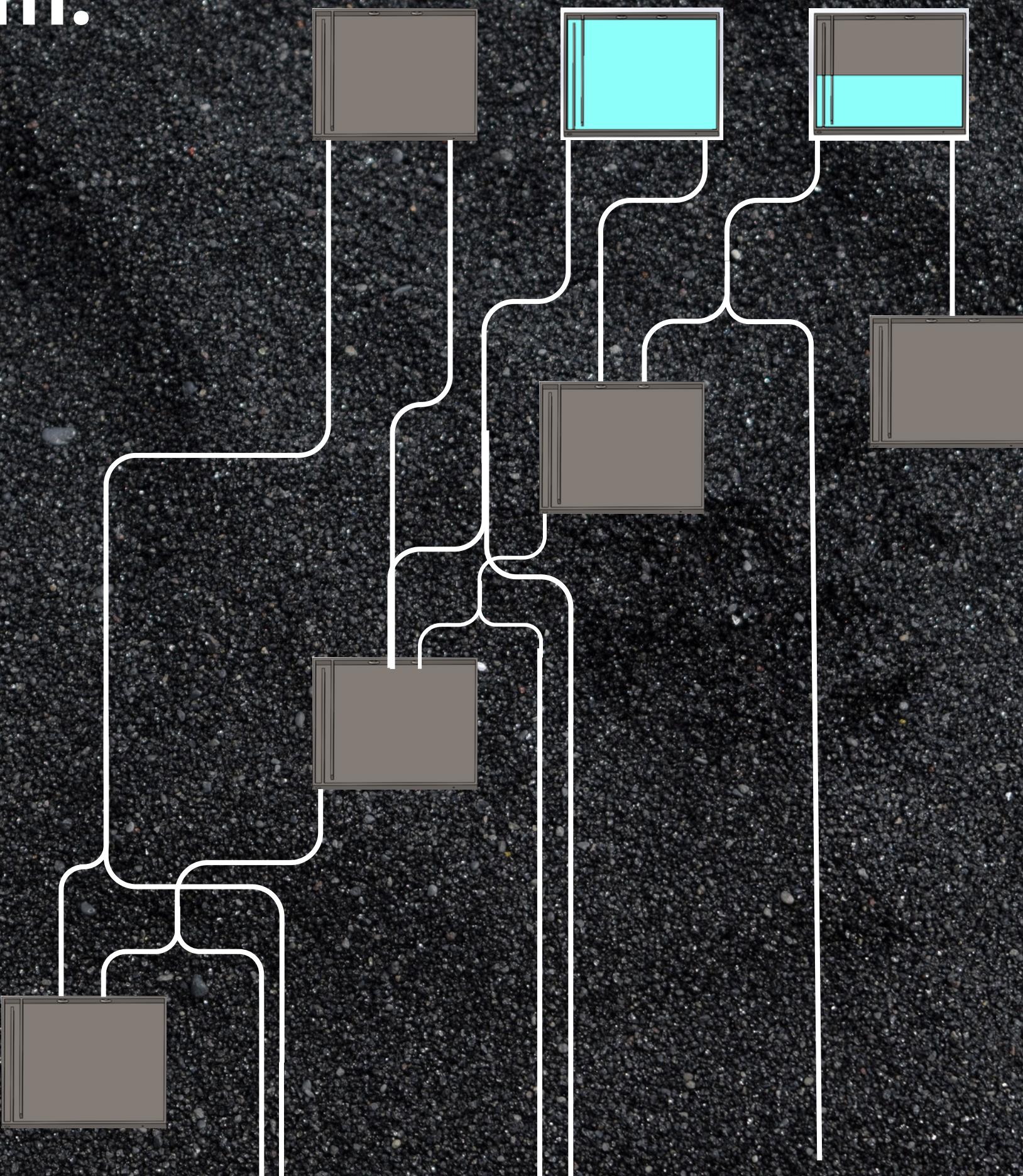
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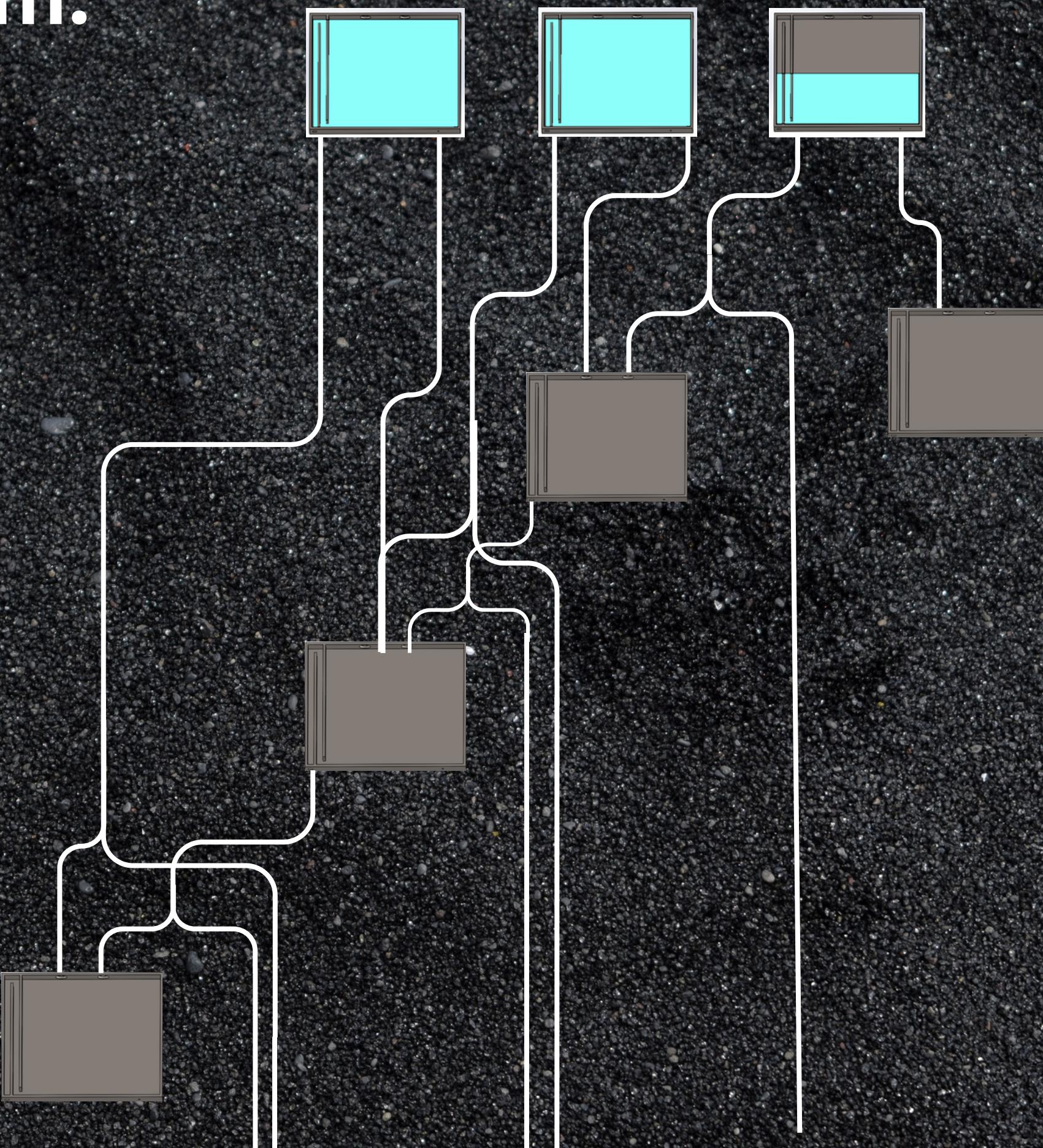
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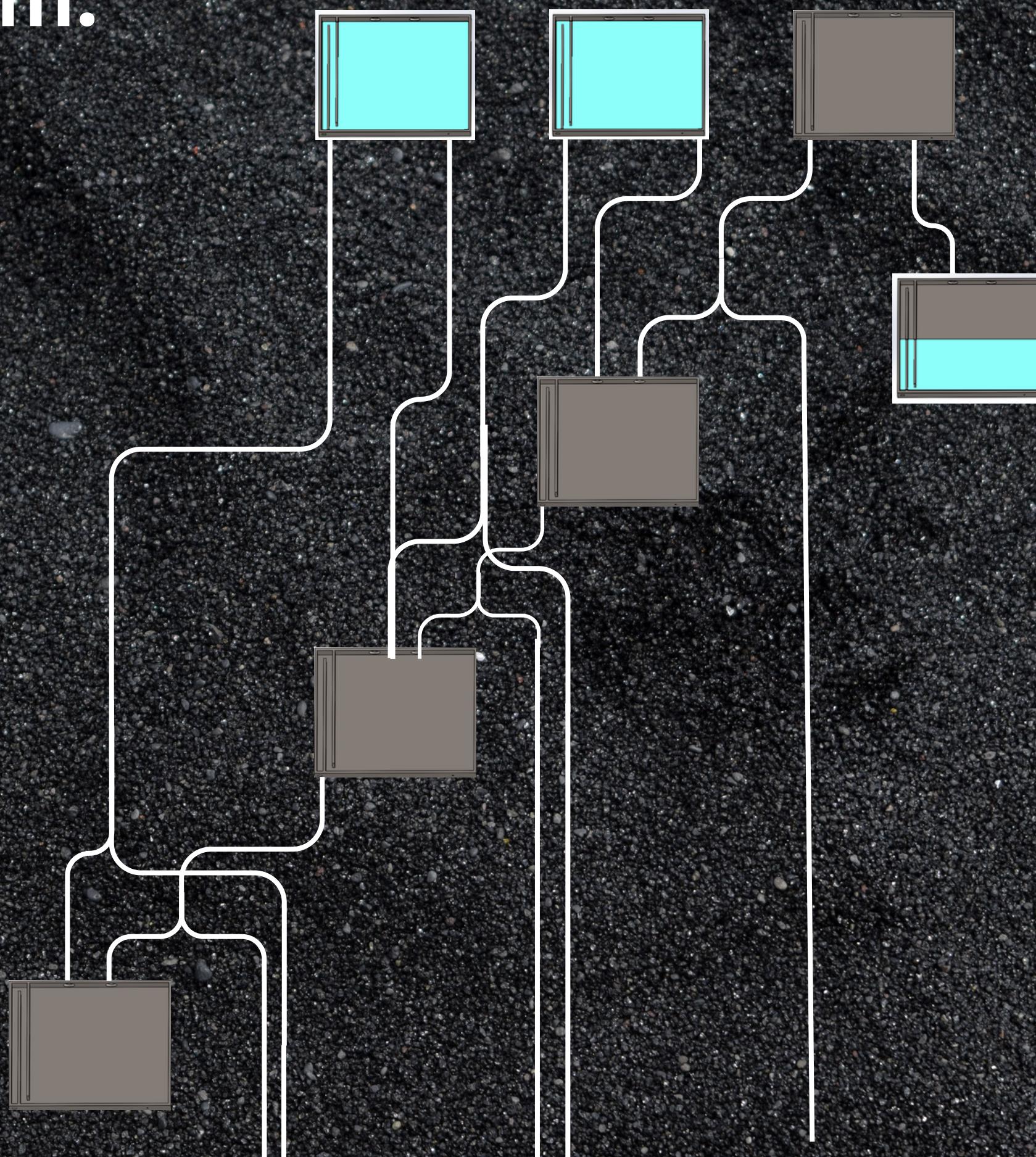
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Mechanism:



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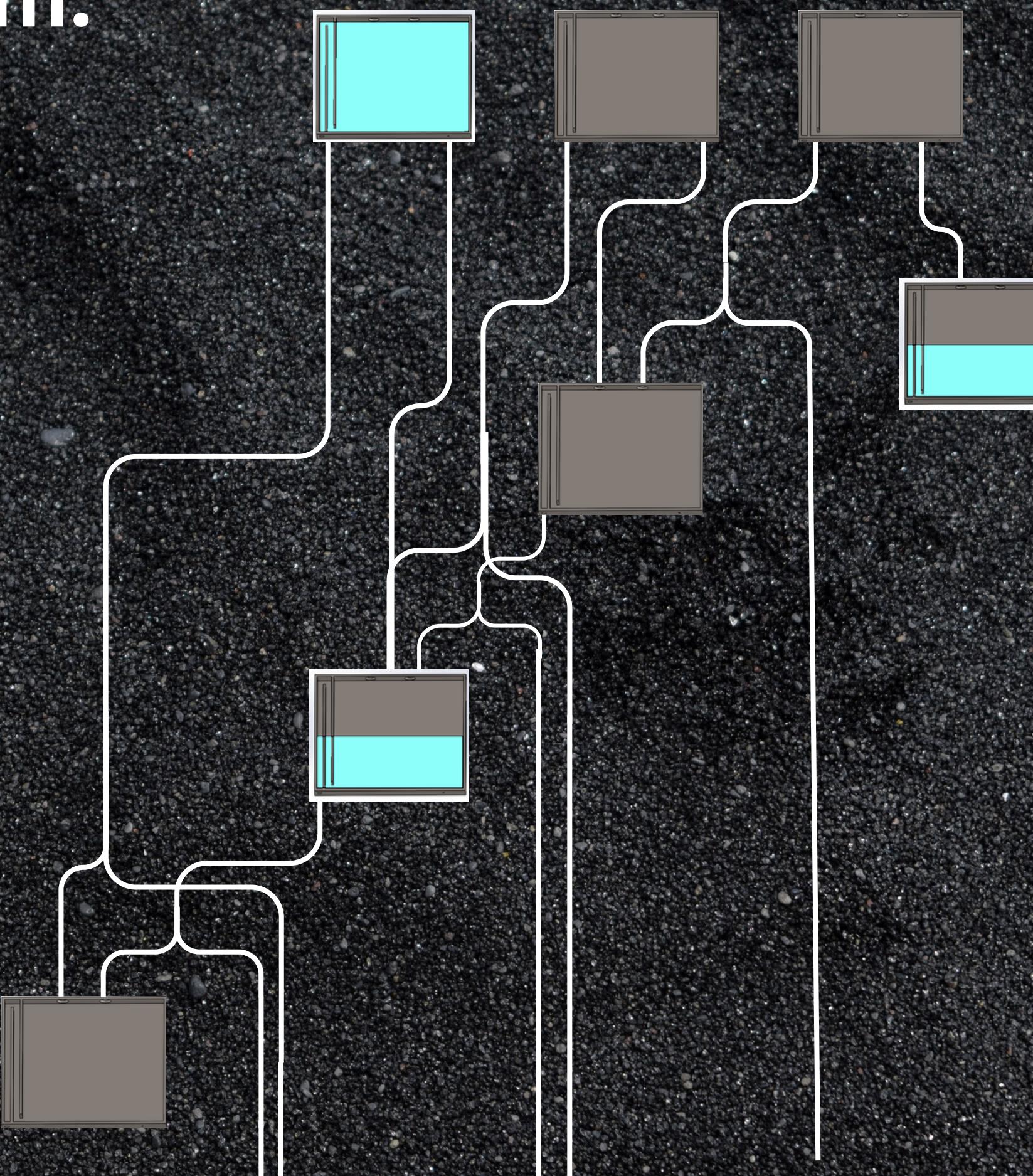
$$\begin{array}{r} 110 \\ +111 \\ \hline \end{array}$$

$$1101$$

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Mechanism:



To add:

$$6 + 7 = 13$$

In binary:

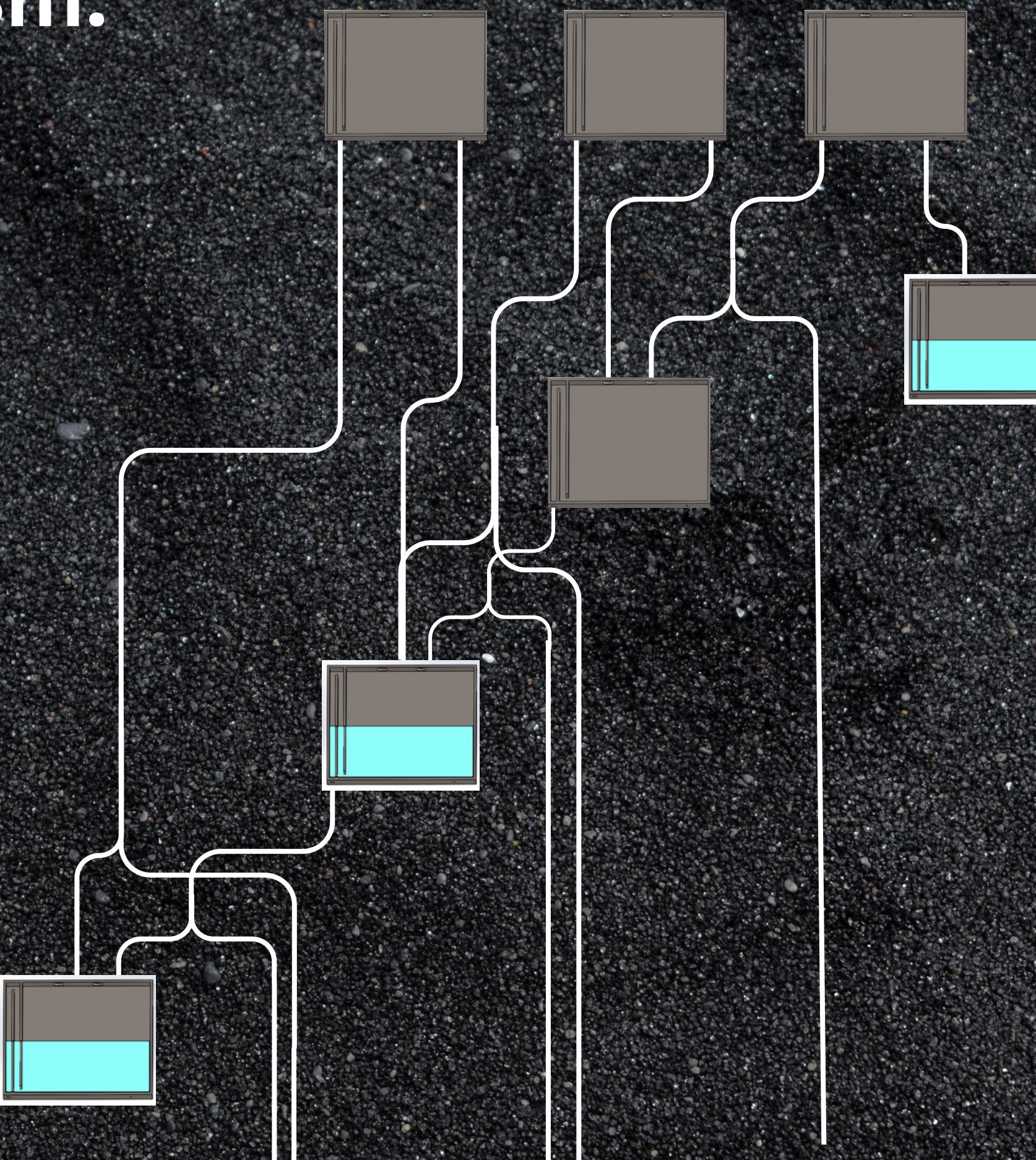
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$$\begin{array}{r} 110 \\ +111 \\ \hline \end{array}$$

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LIMITATIONS:



- Can calculate sum of up to 3 binary digit numbers. If the prototype is scaled to add large numbers, it will require very large area.
- Due to fluid being used, designing suffers from a lot of failures.
- Siphon activation can be hampered by a lot of factors like, viscosity, capillary action, change in cross section area, bubble stuck, leakage etc.

Thank You

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