

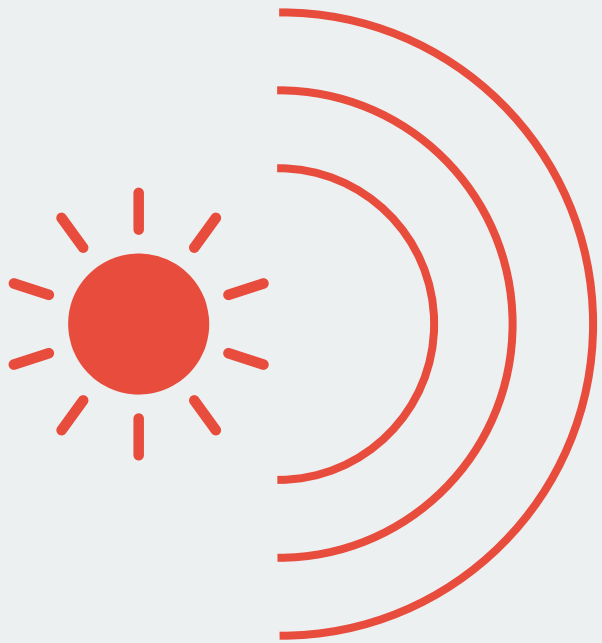
KVANTNO RAČUNALNIŠTVO

Matija Pretnar

Fakulteta za matematiko in fiziko

OSNOVNI **POSTULATI**









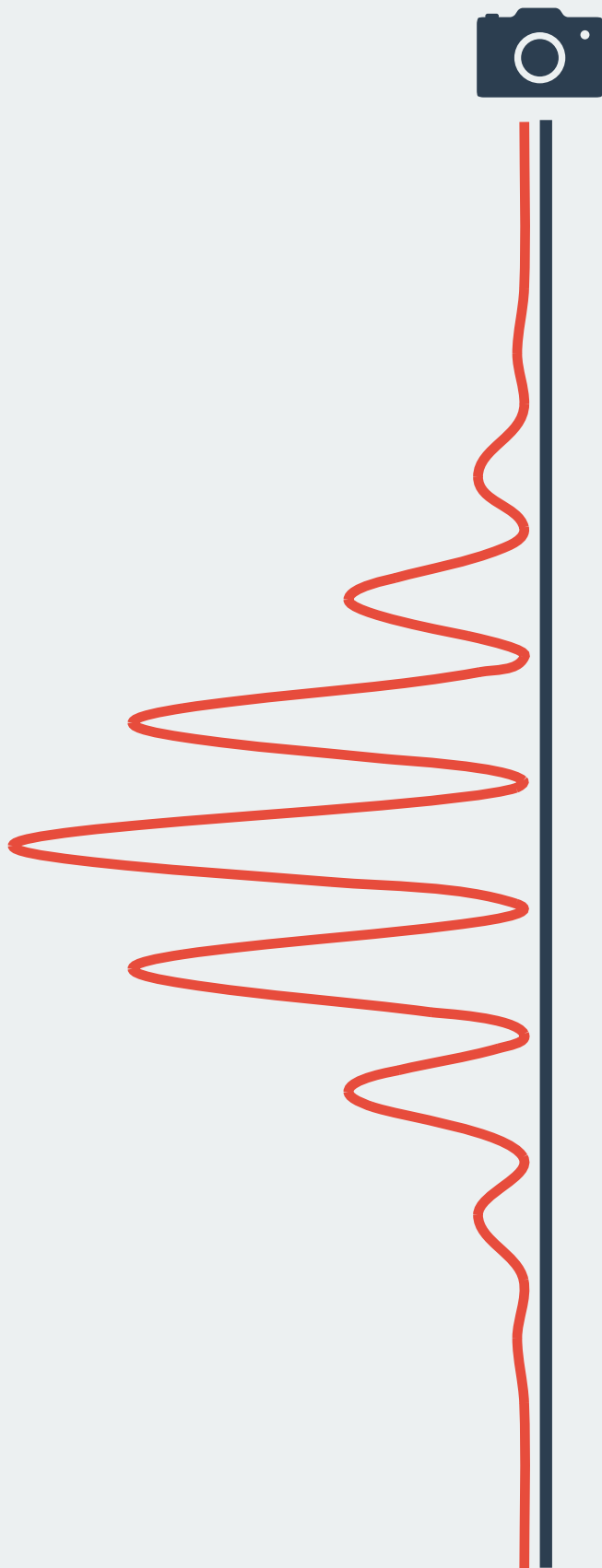
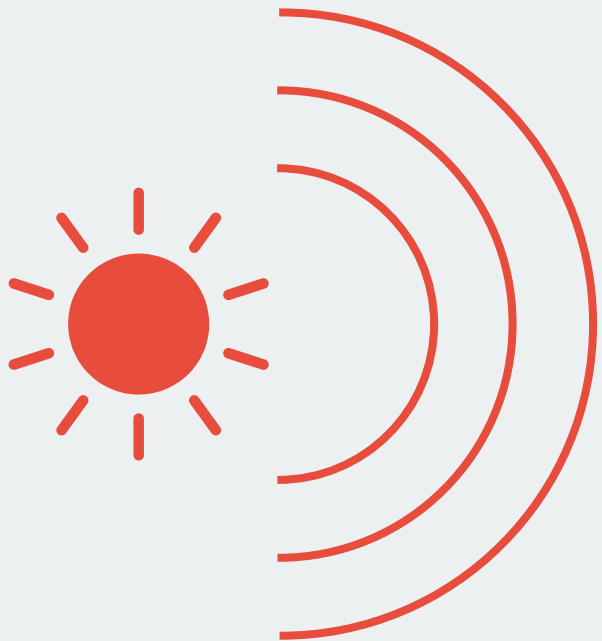


















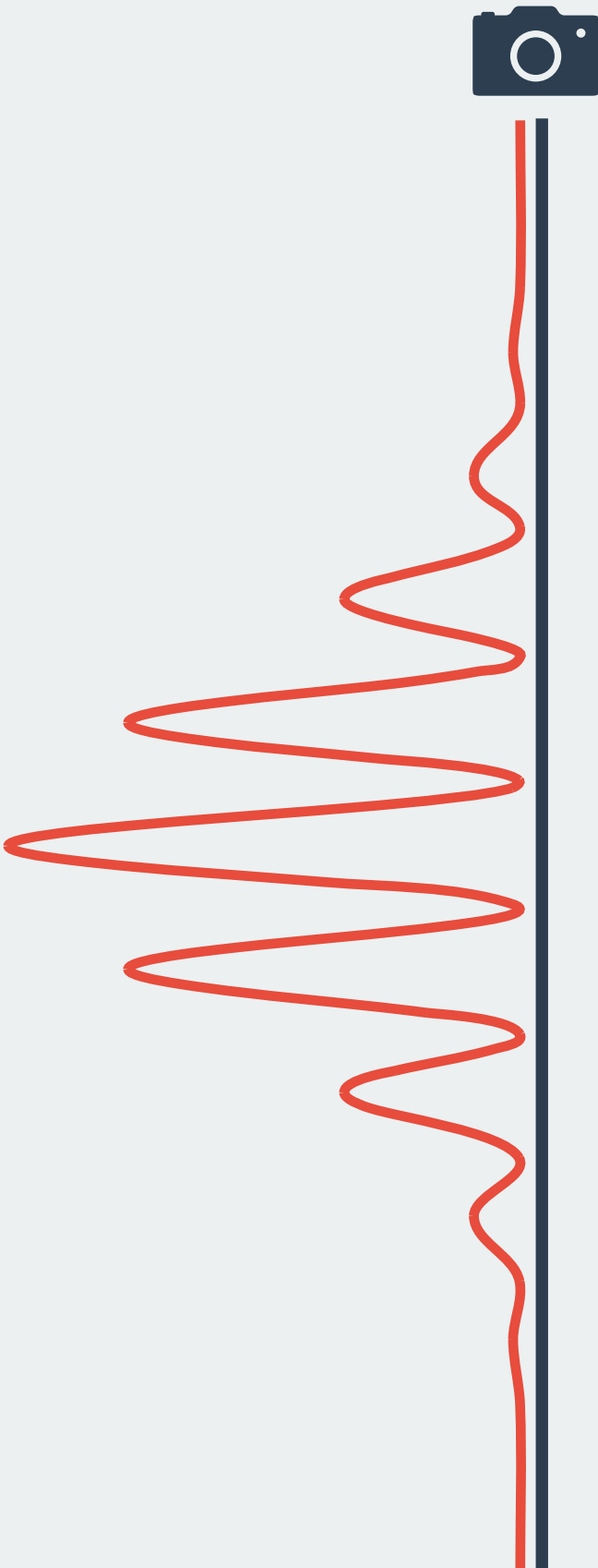


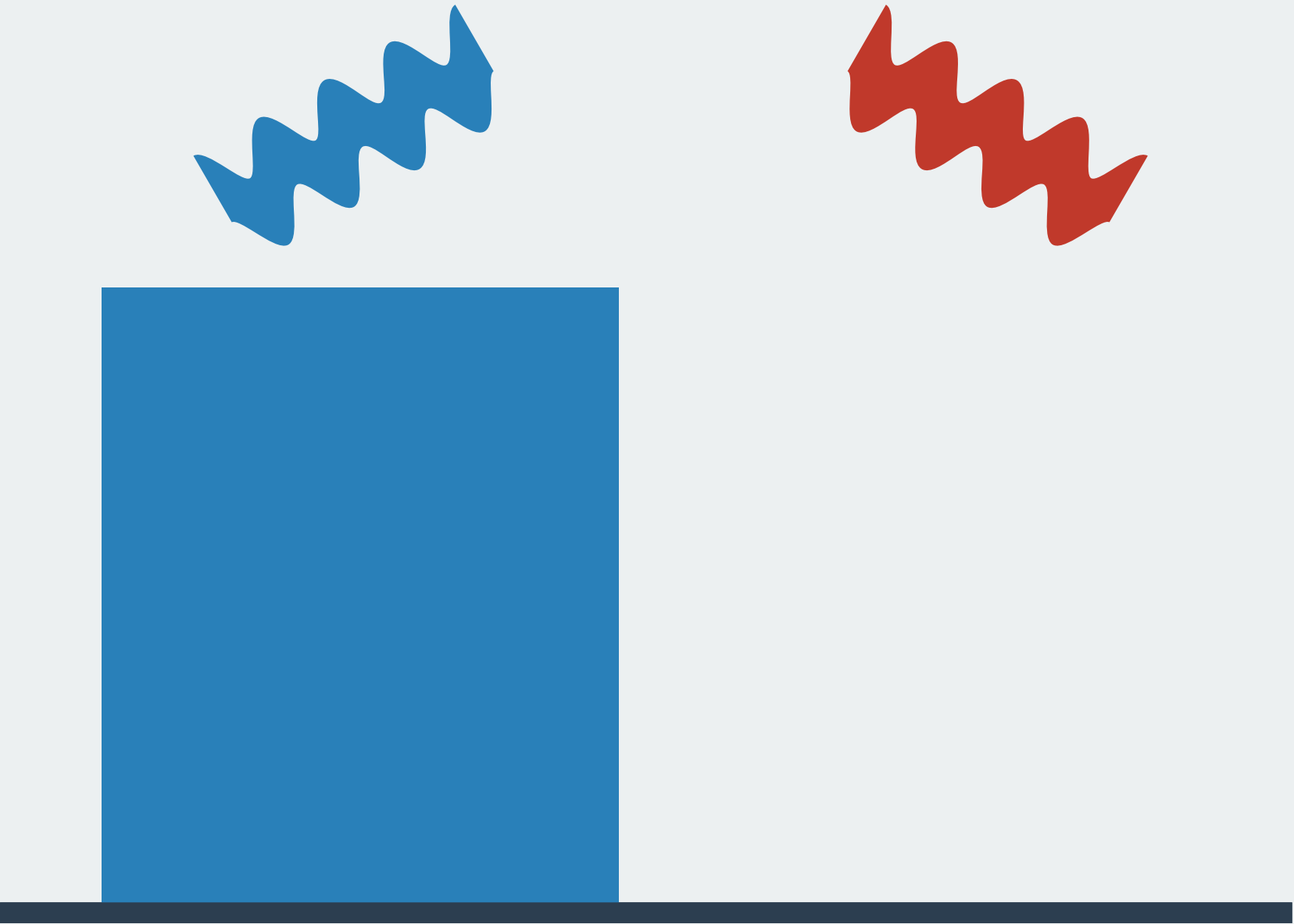


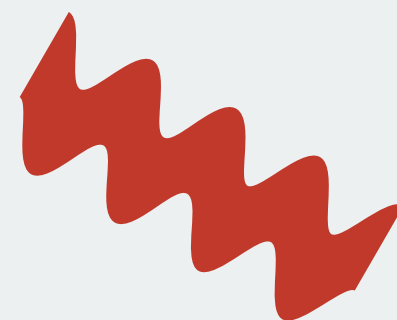
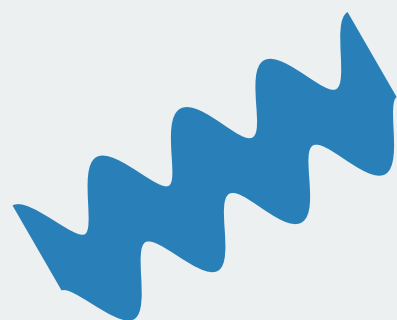


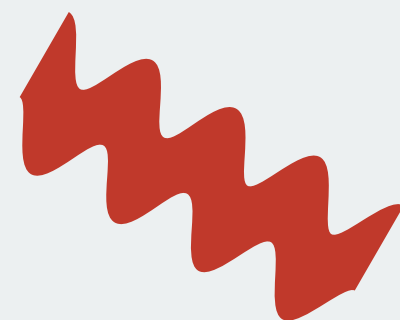
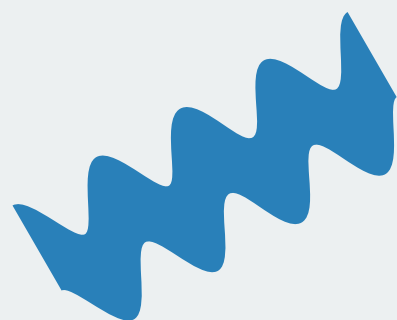


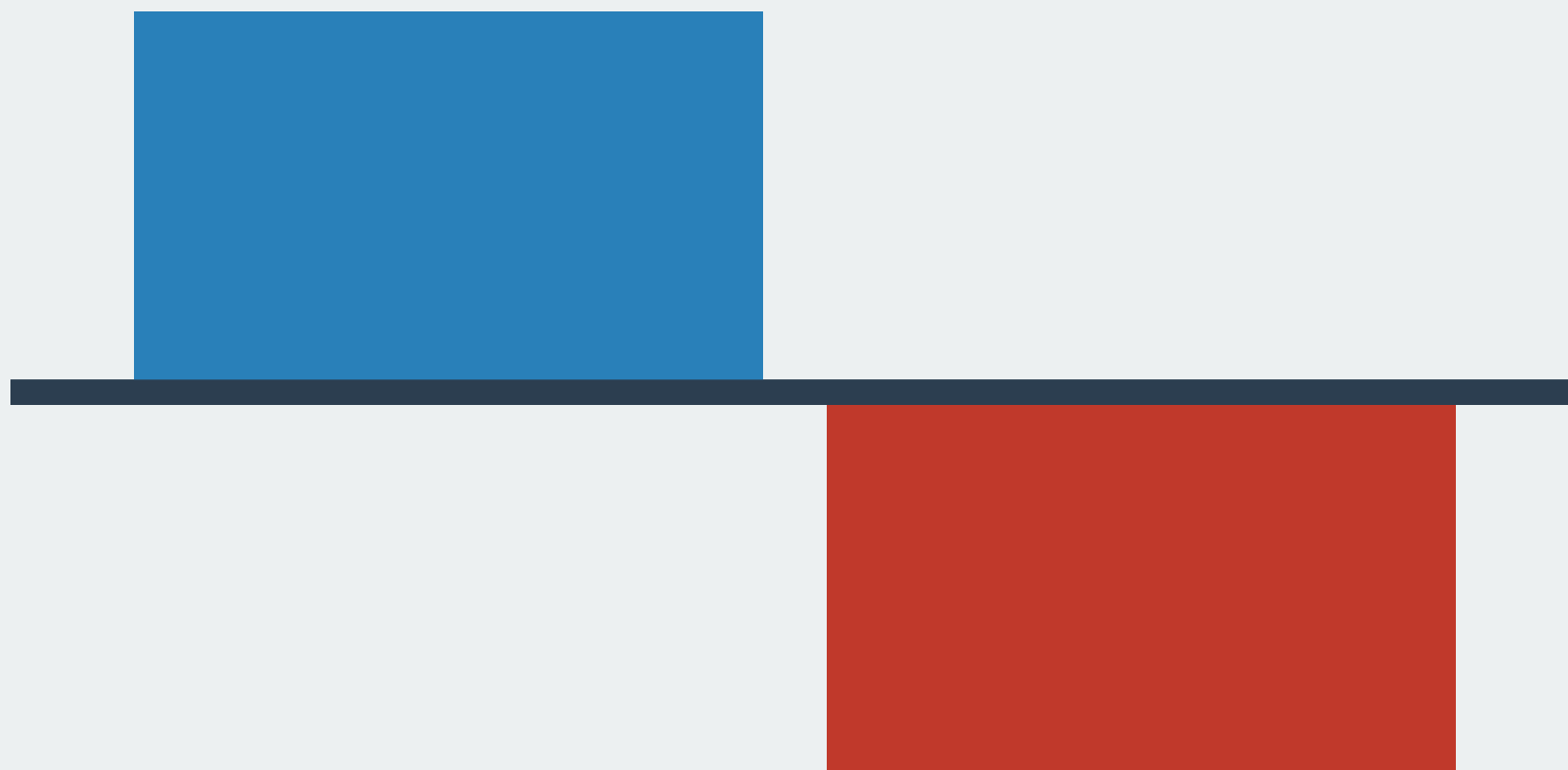
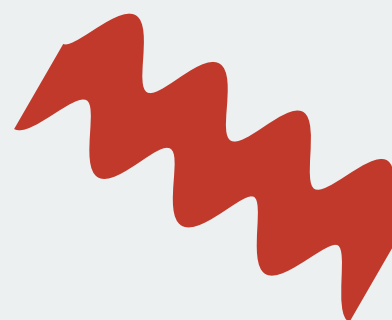
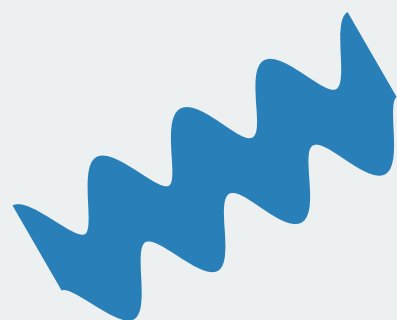




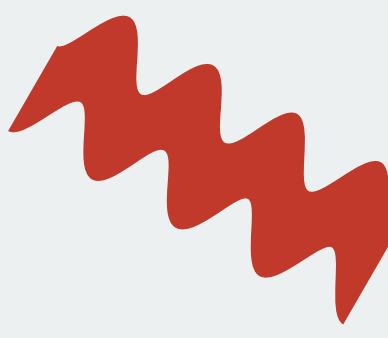
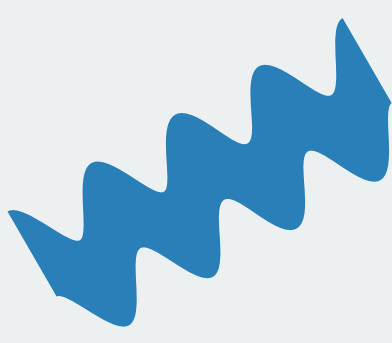
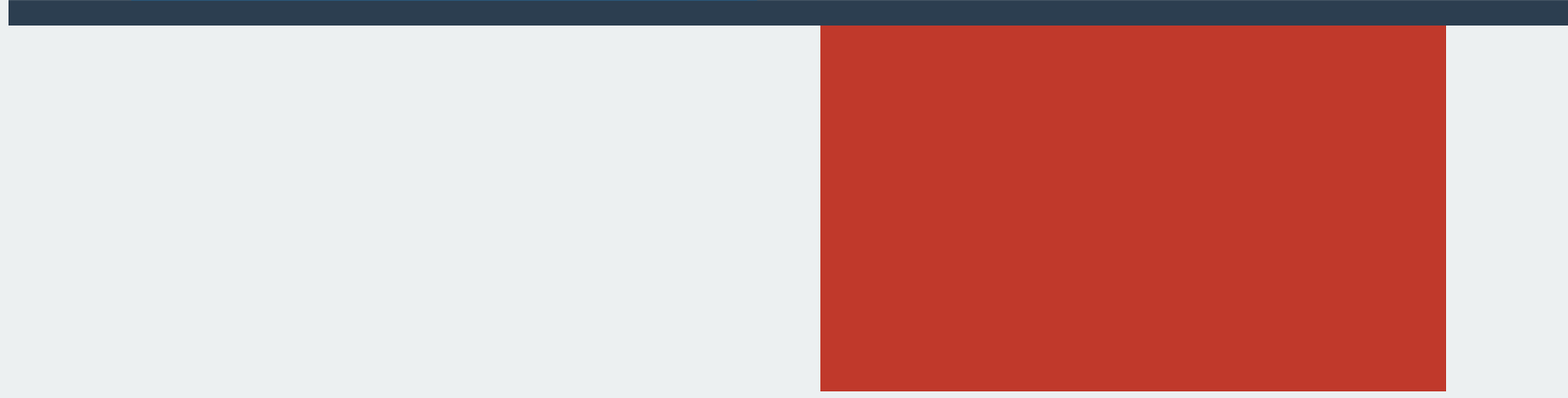


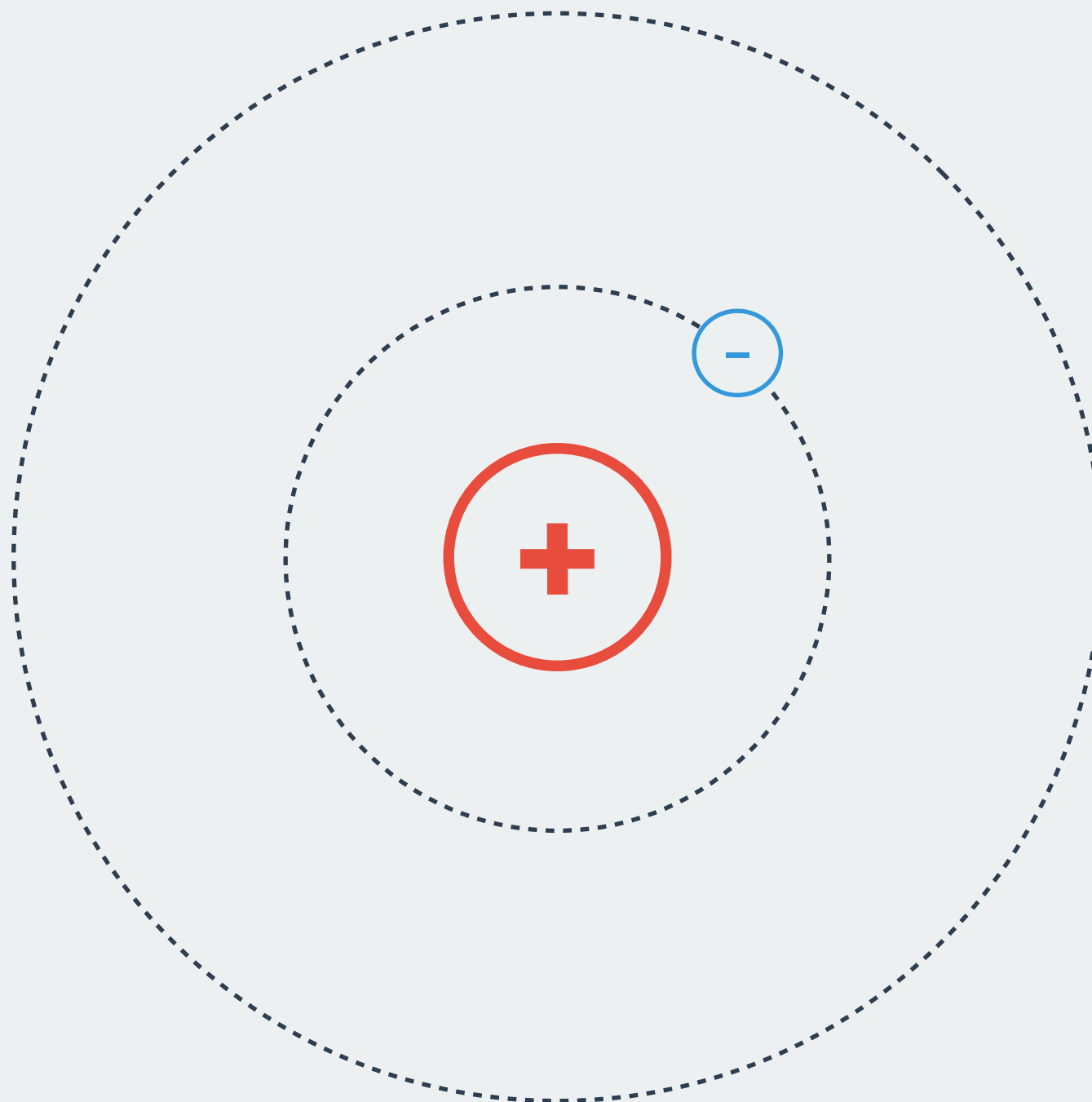


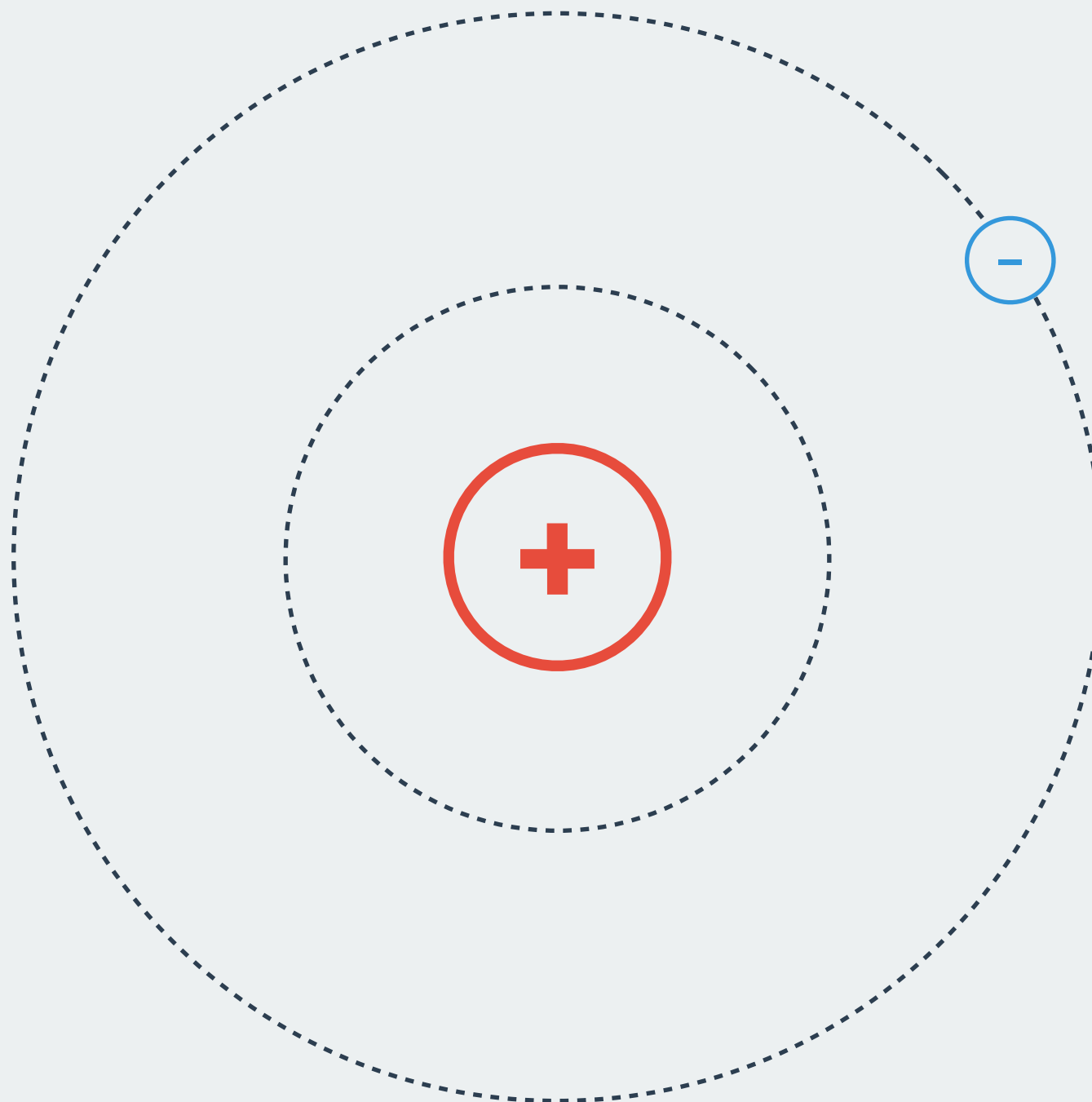


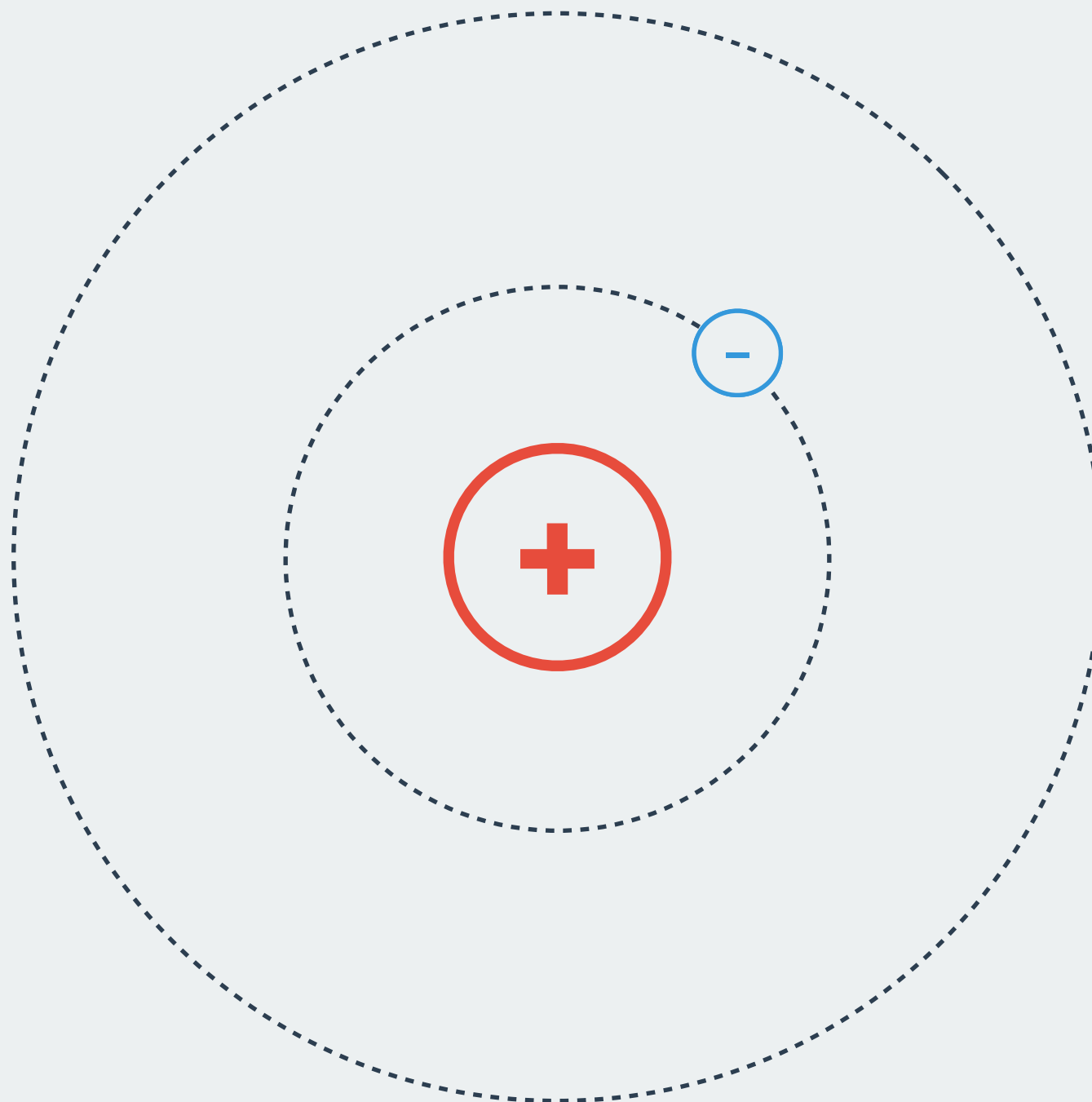


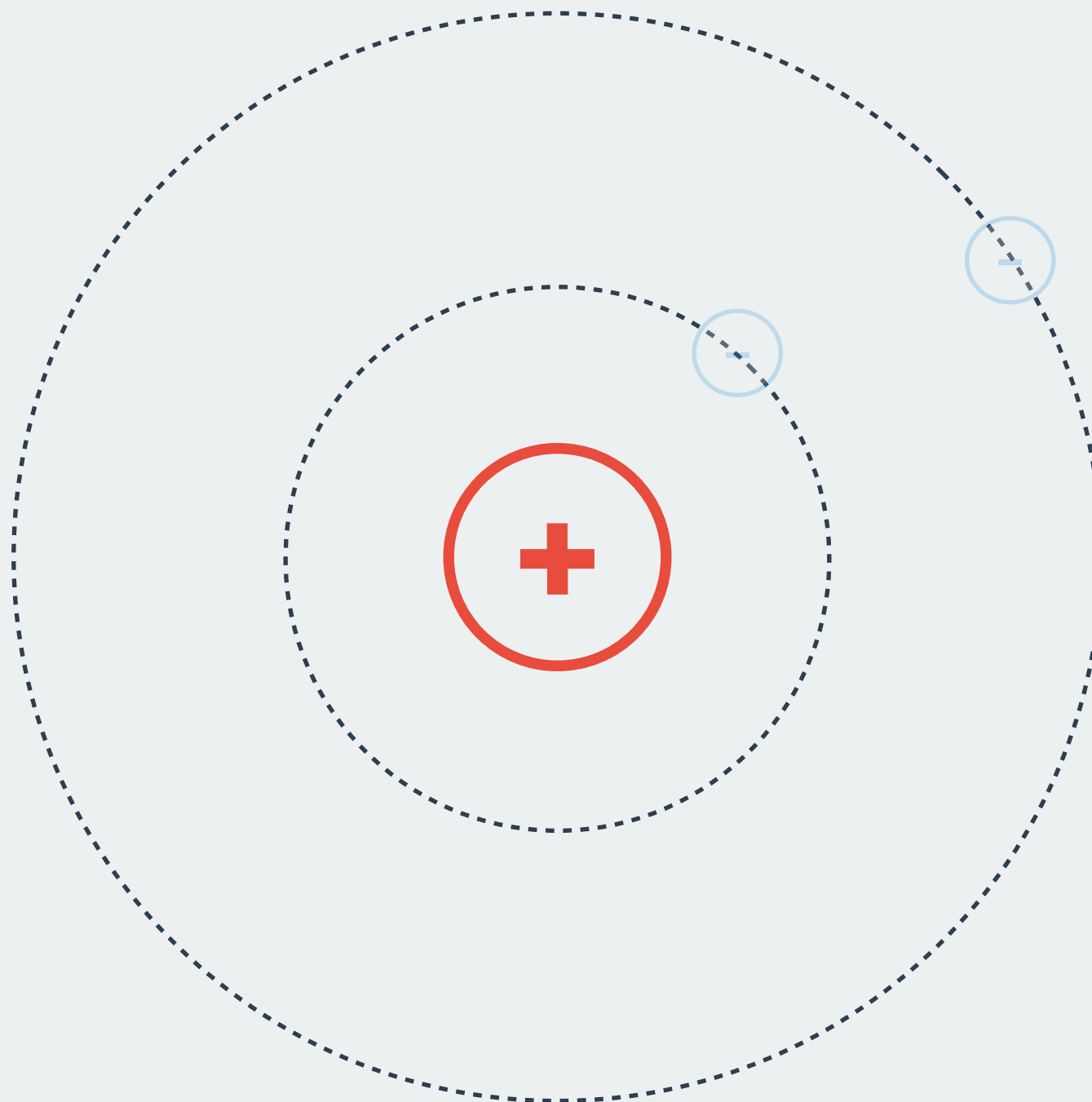
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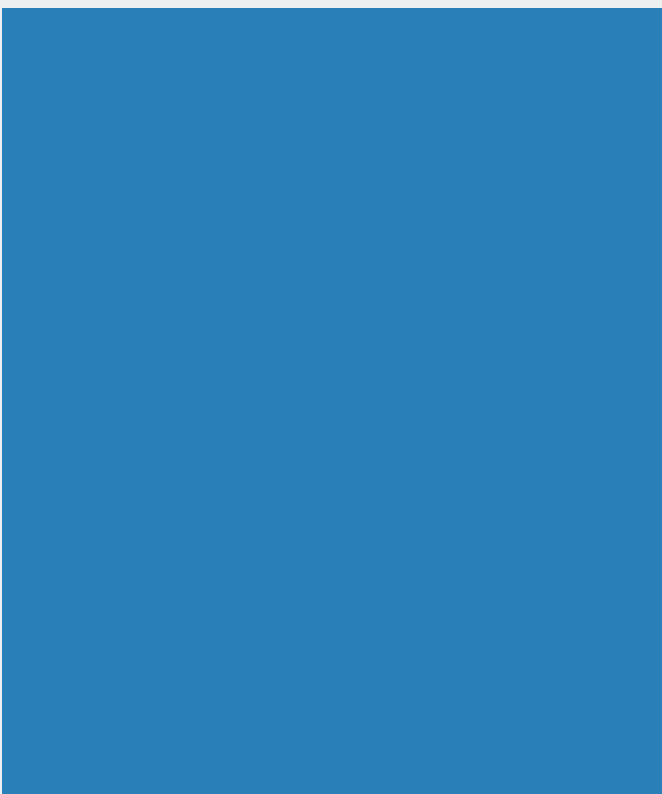
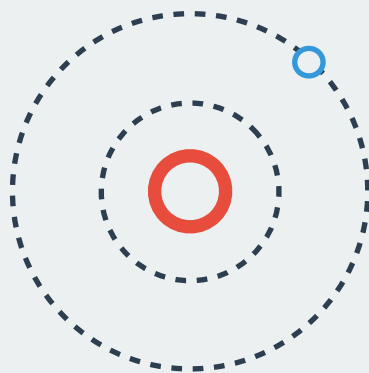
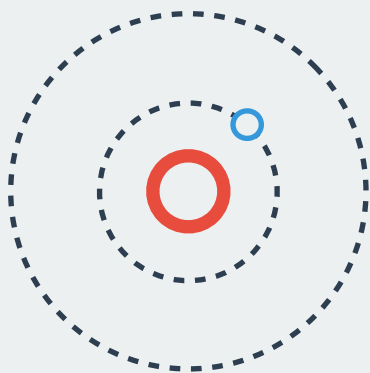


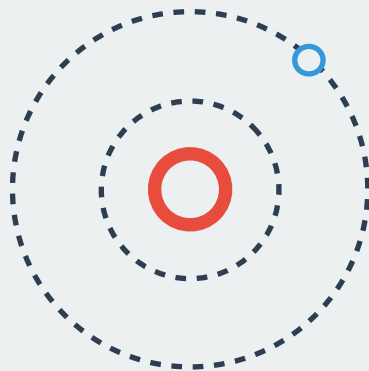
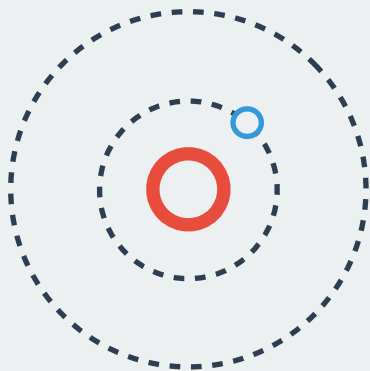


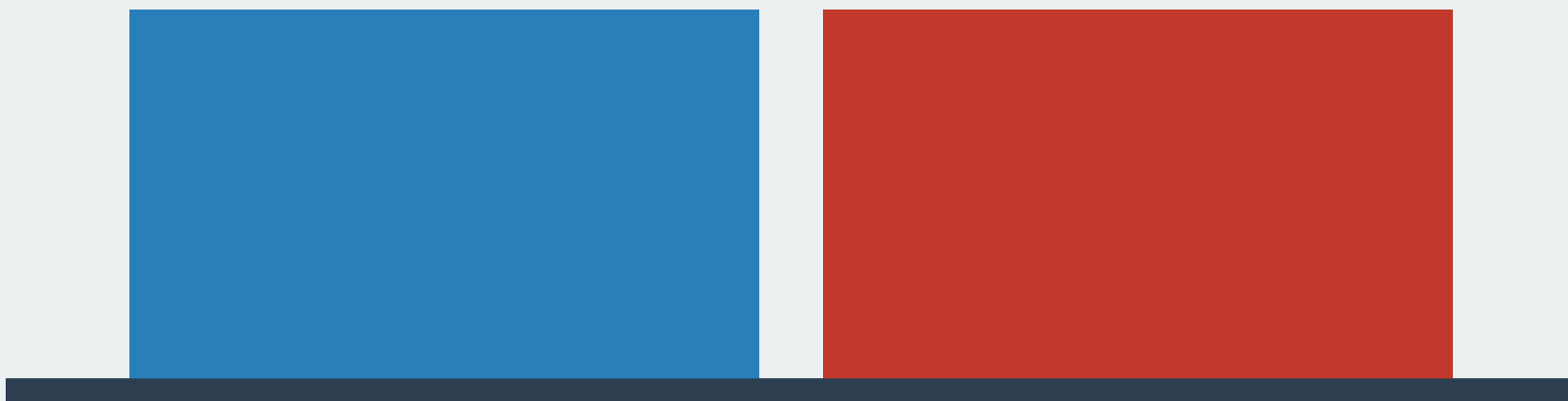
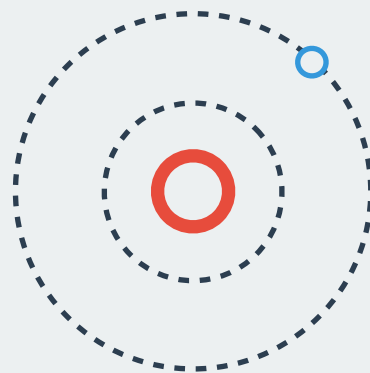
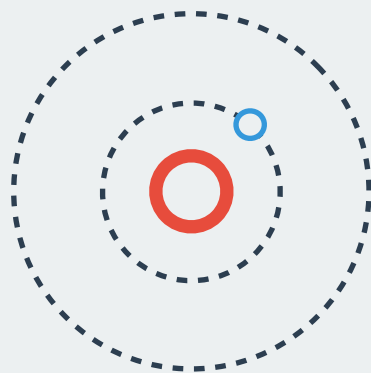


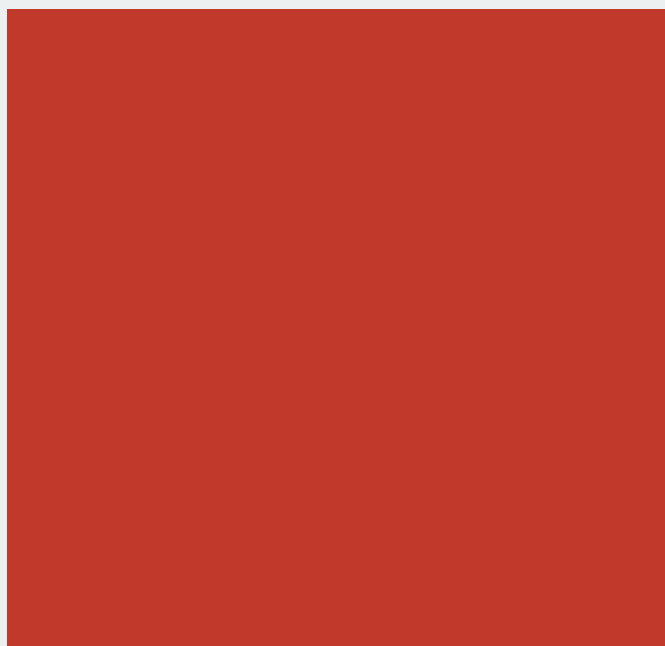
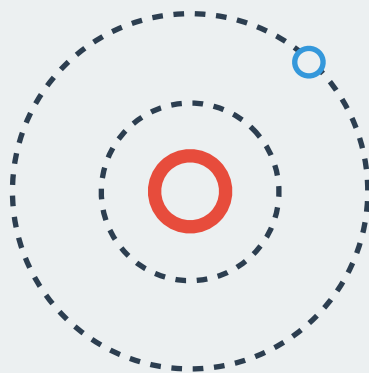
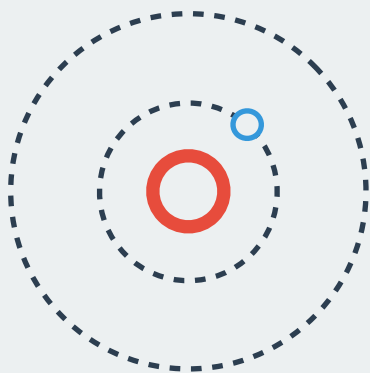


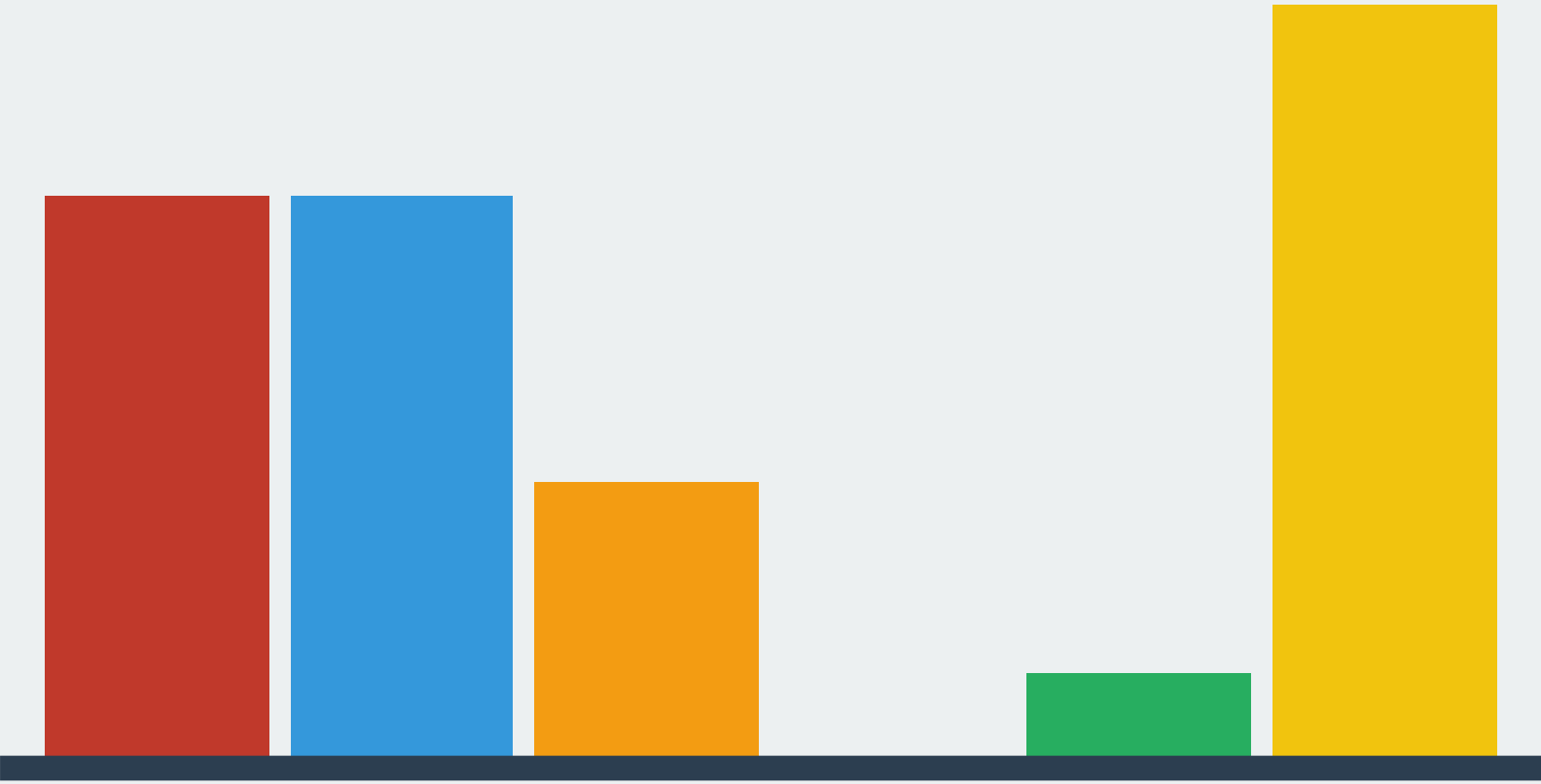






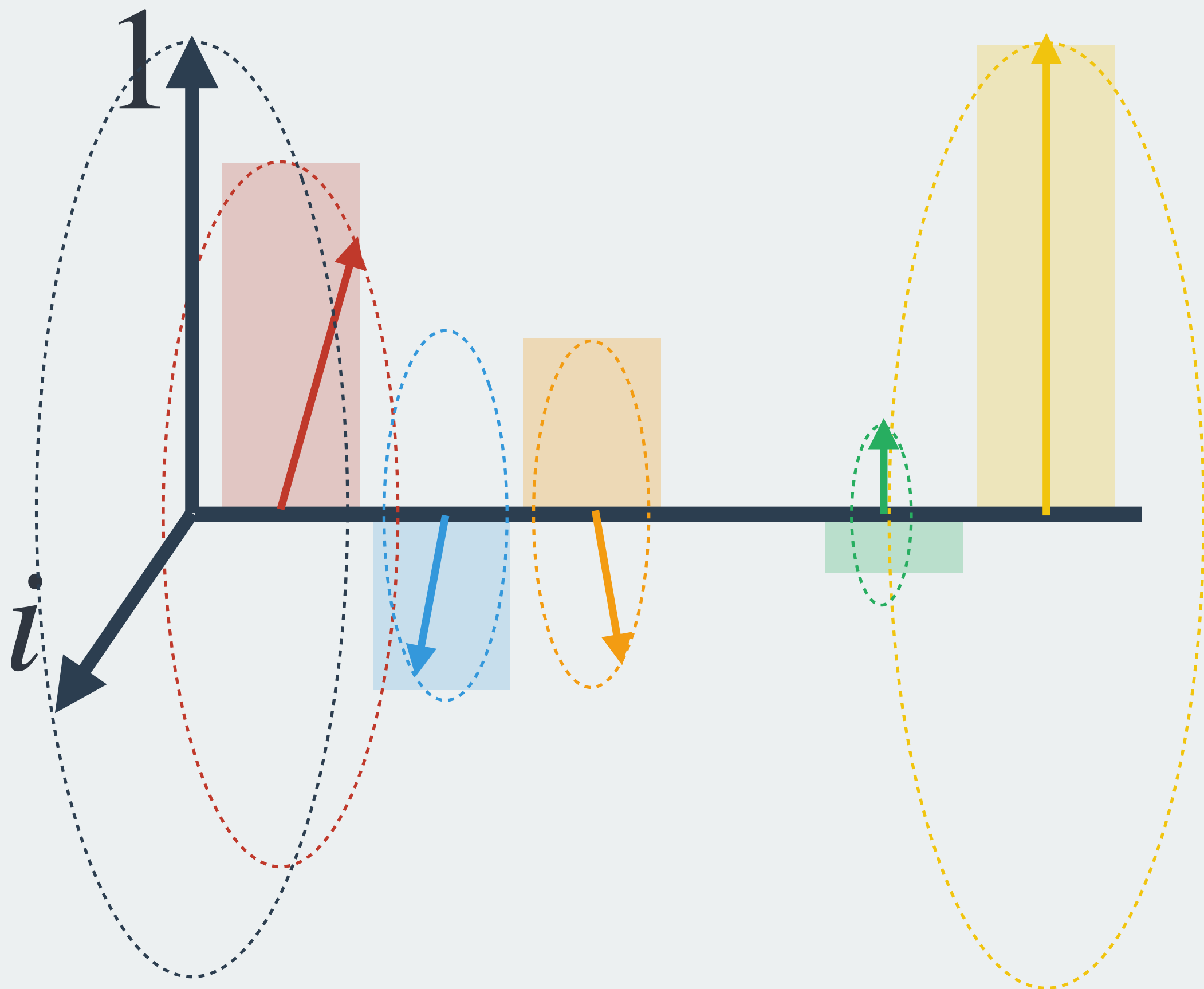


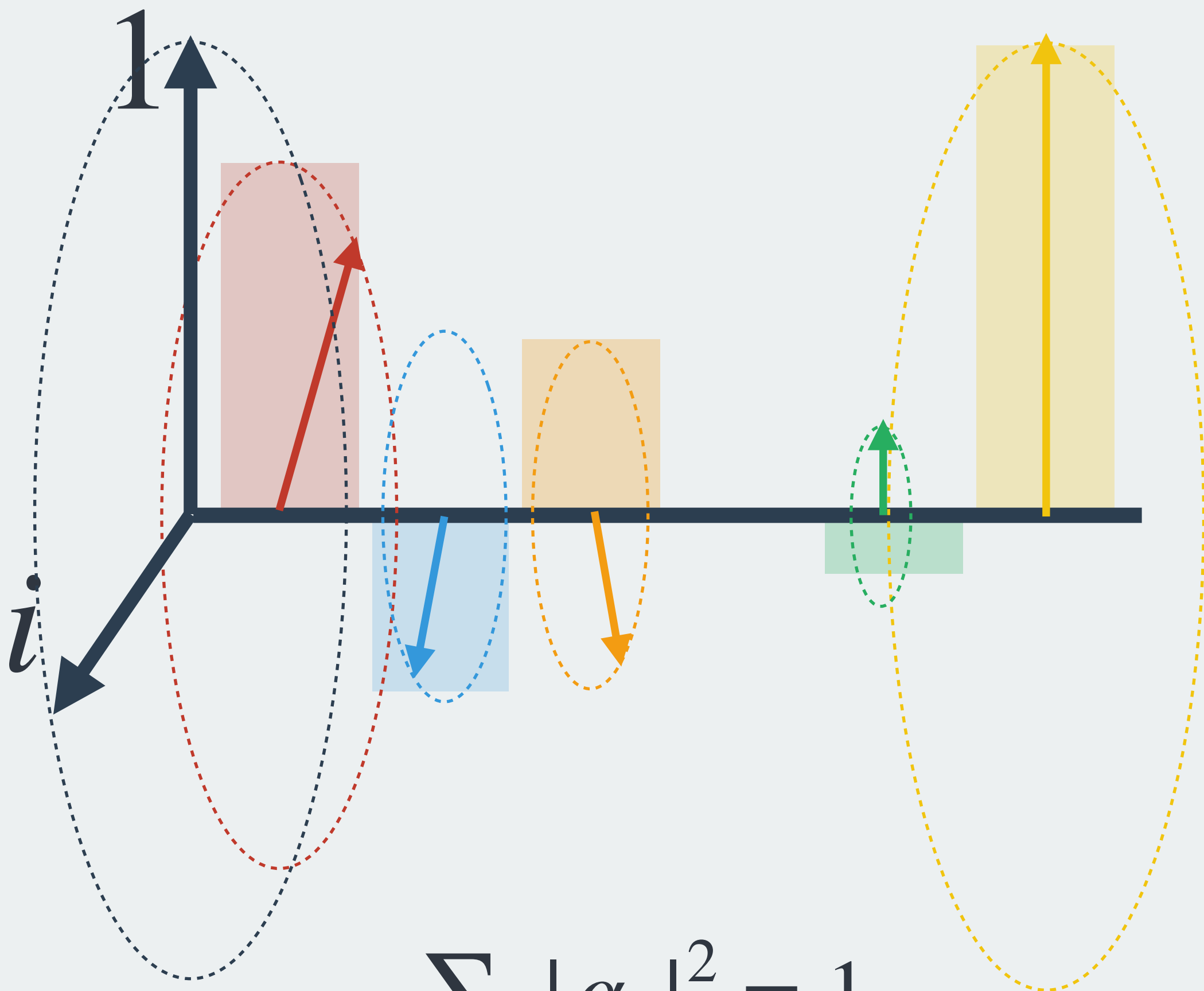












$$\sum_x |\alpha_x|^2 = 1$$







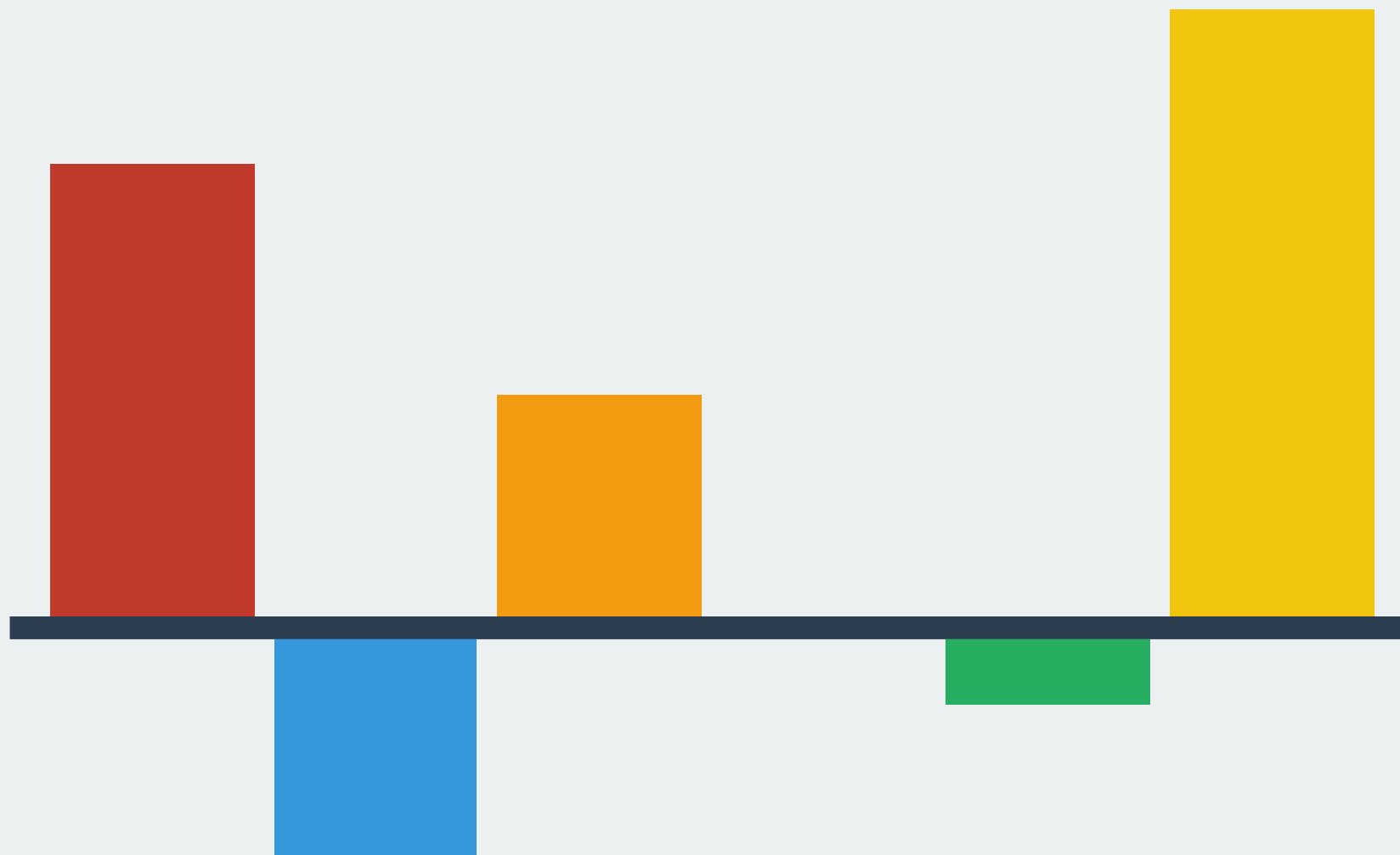


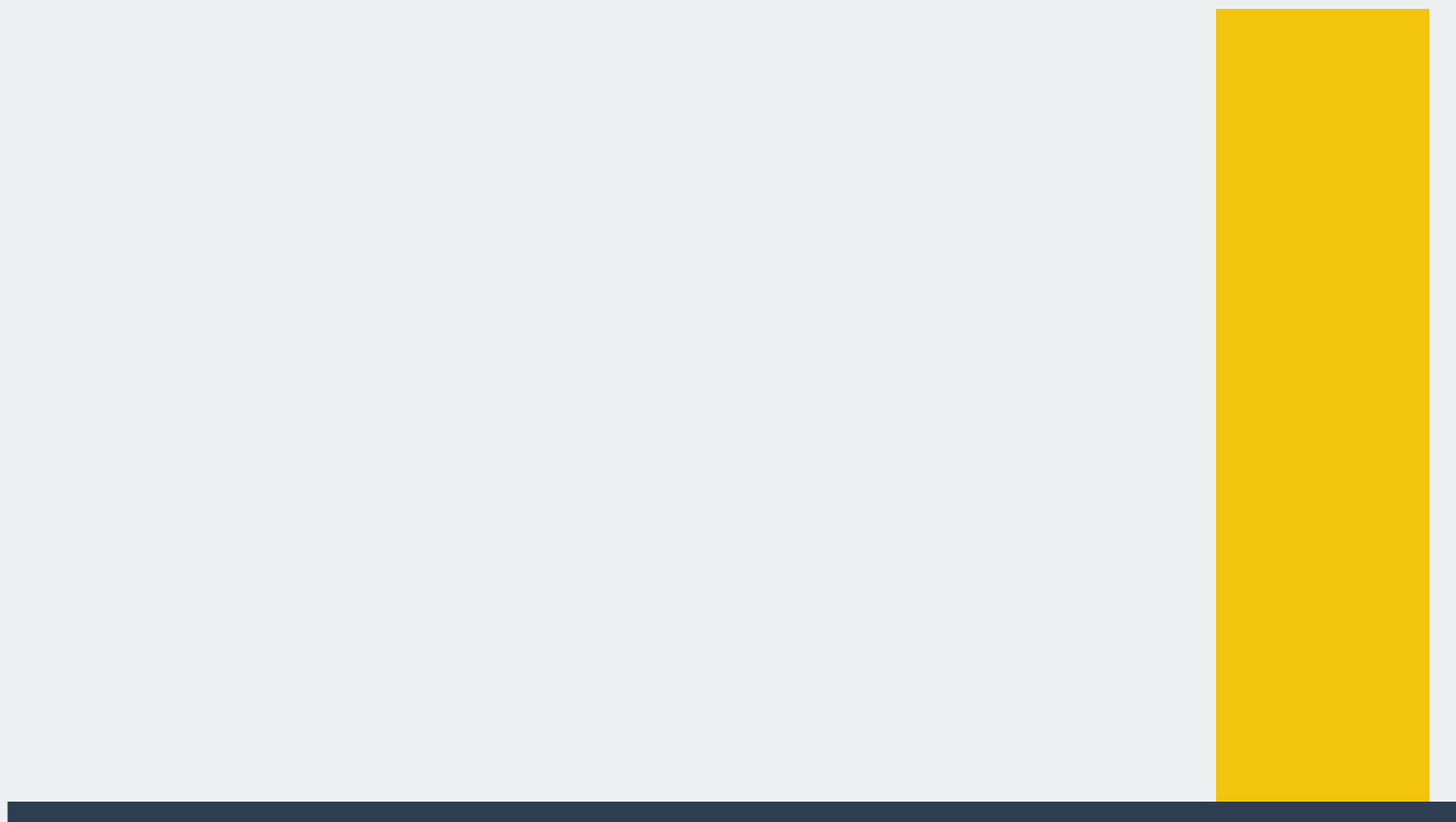


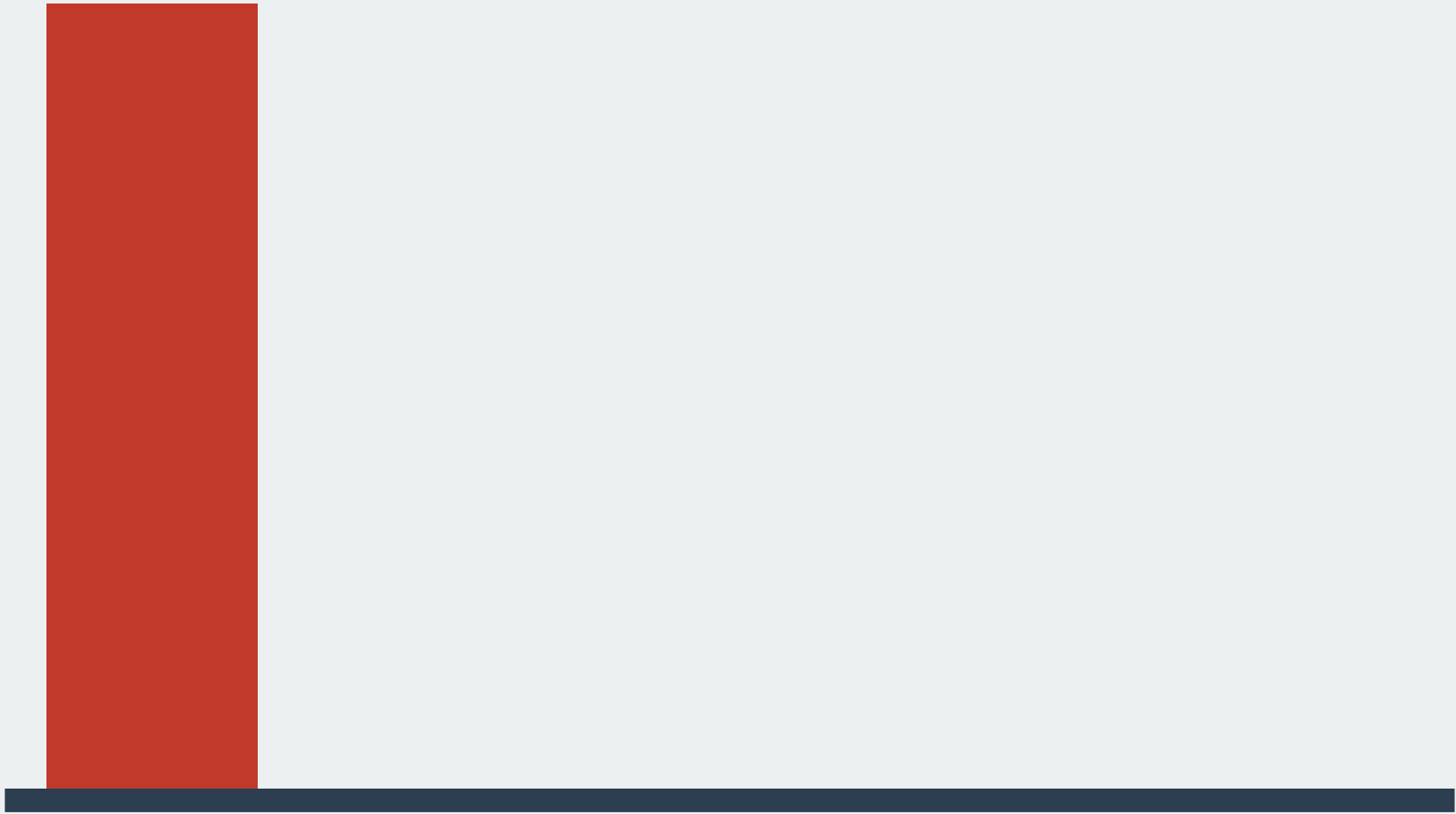


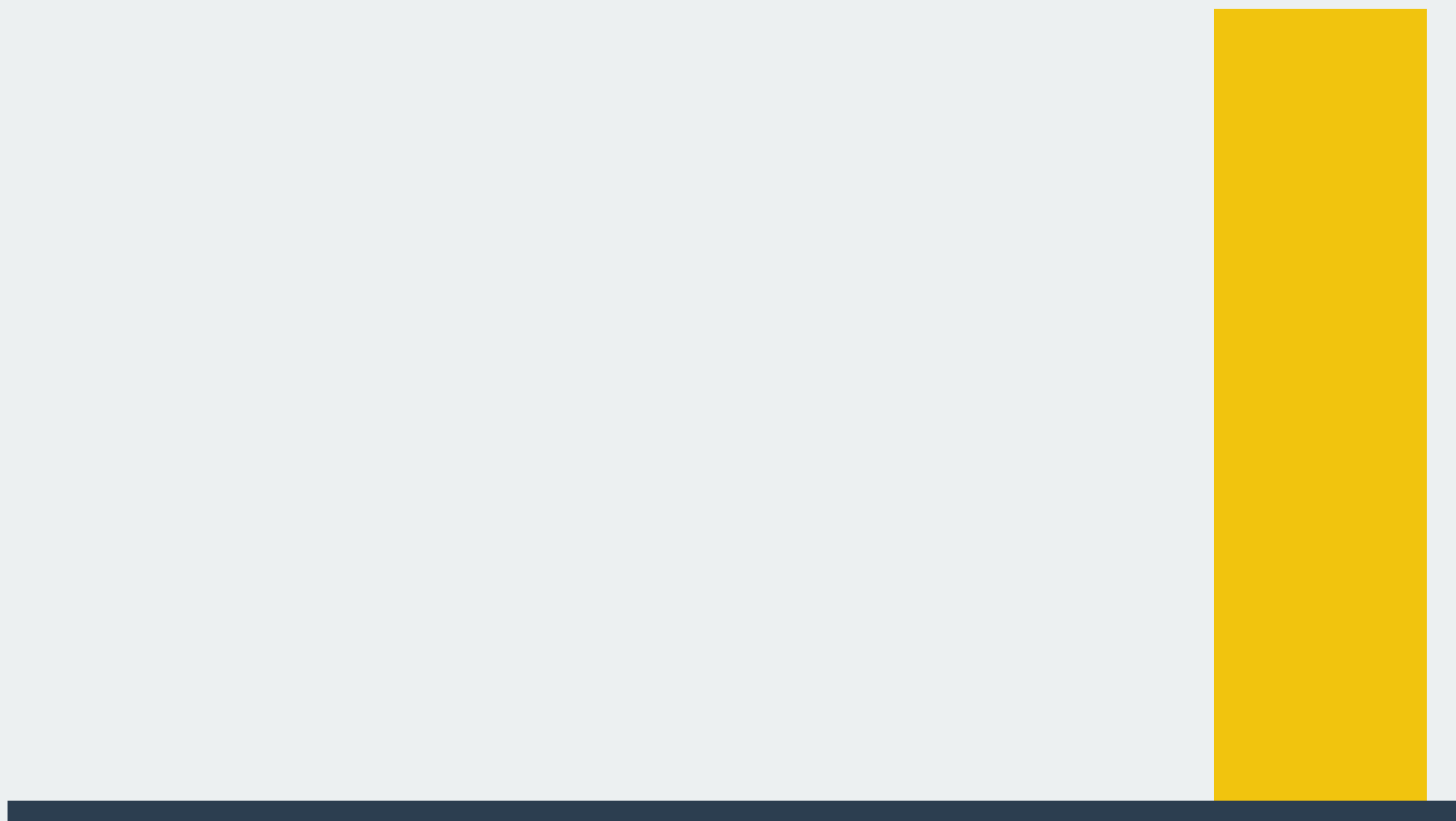


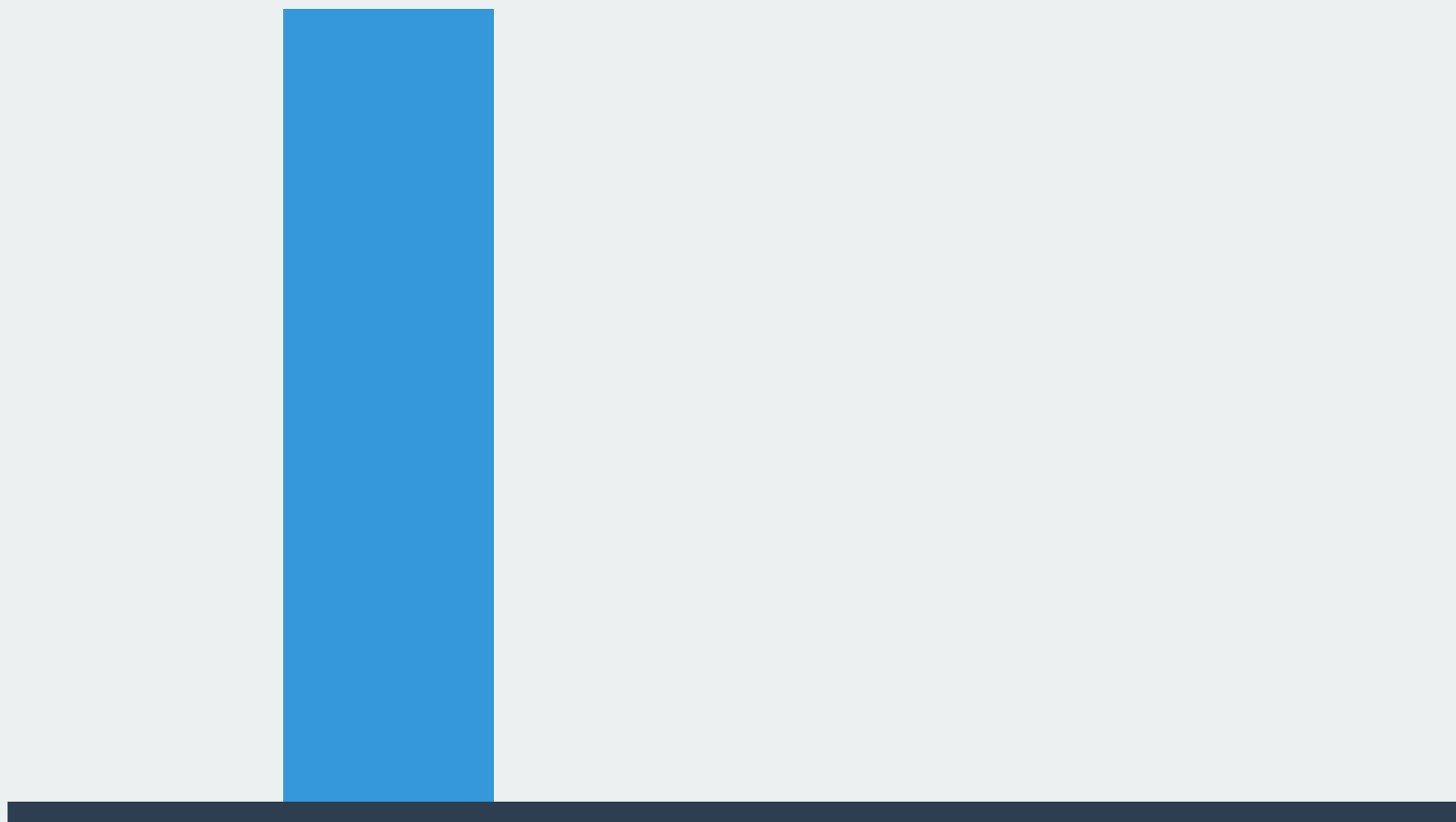


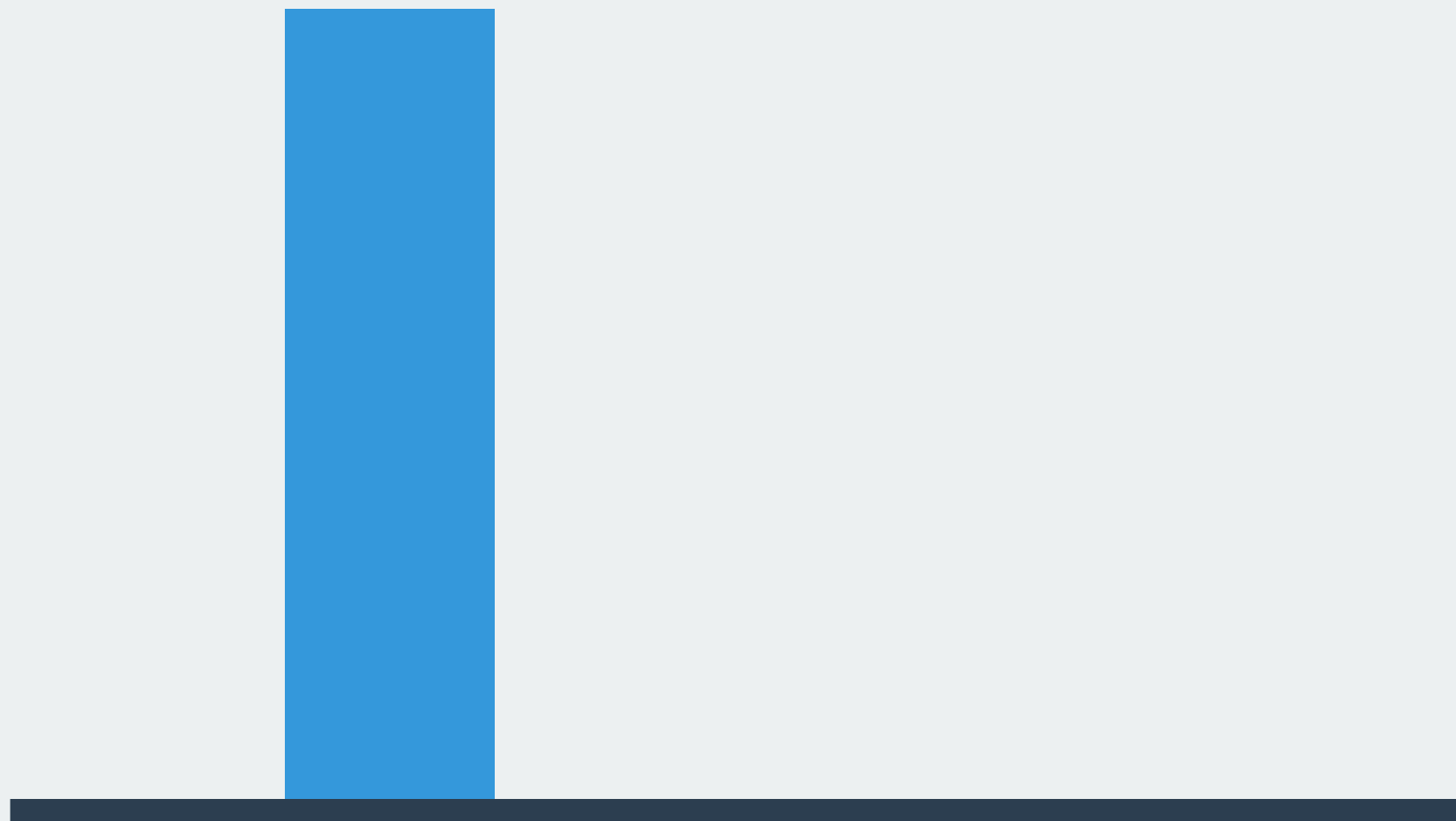




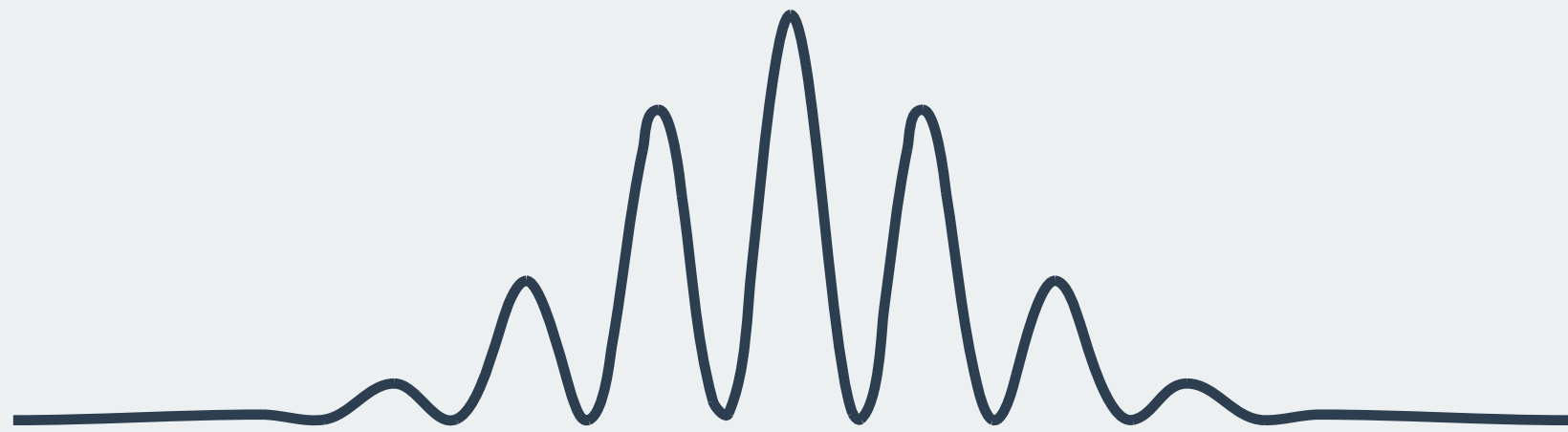


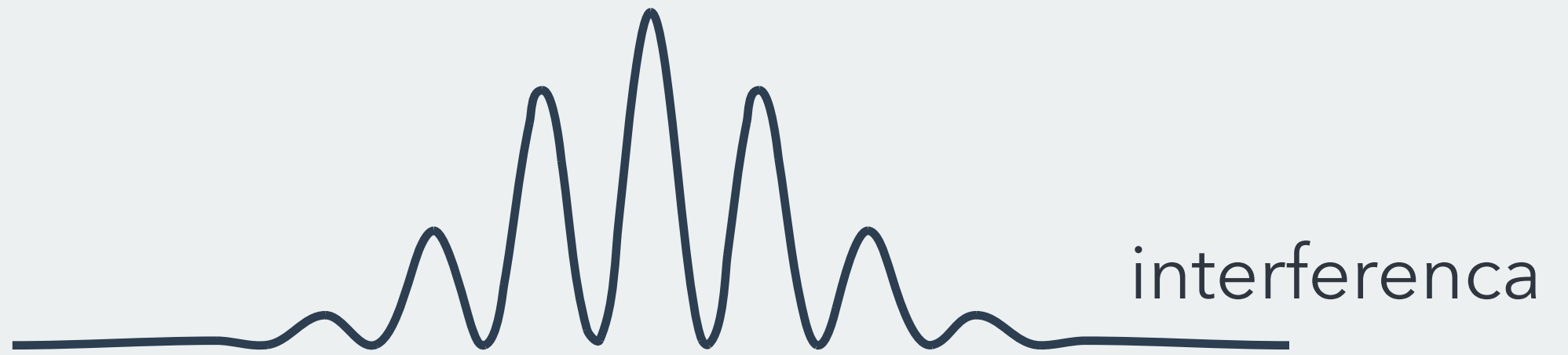


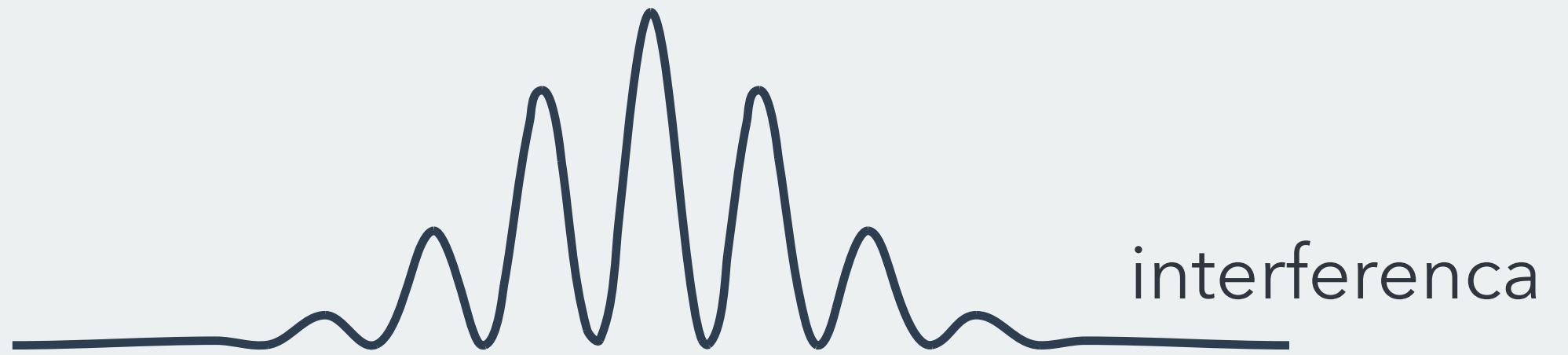


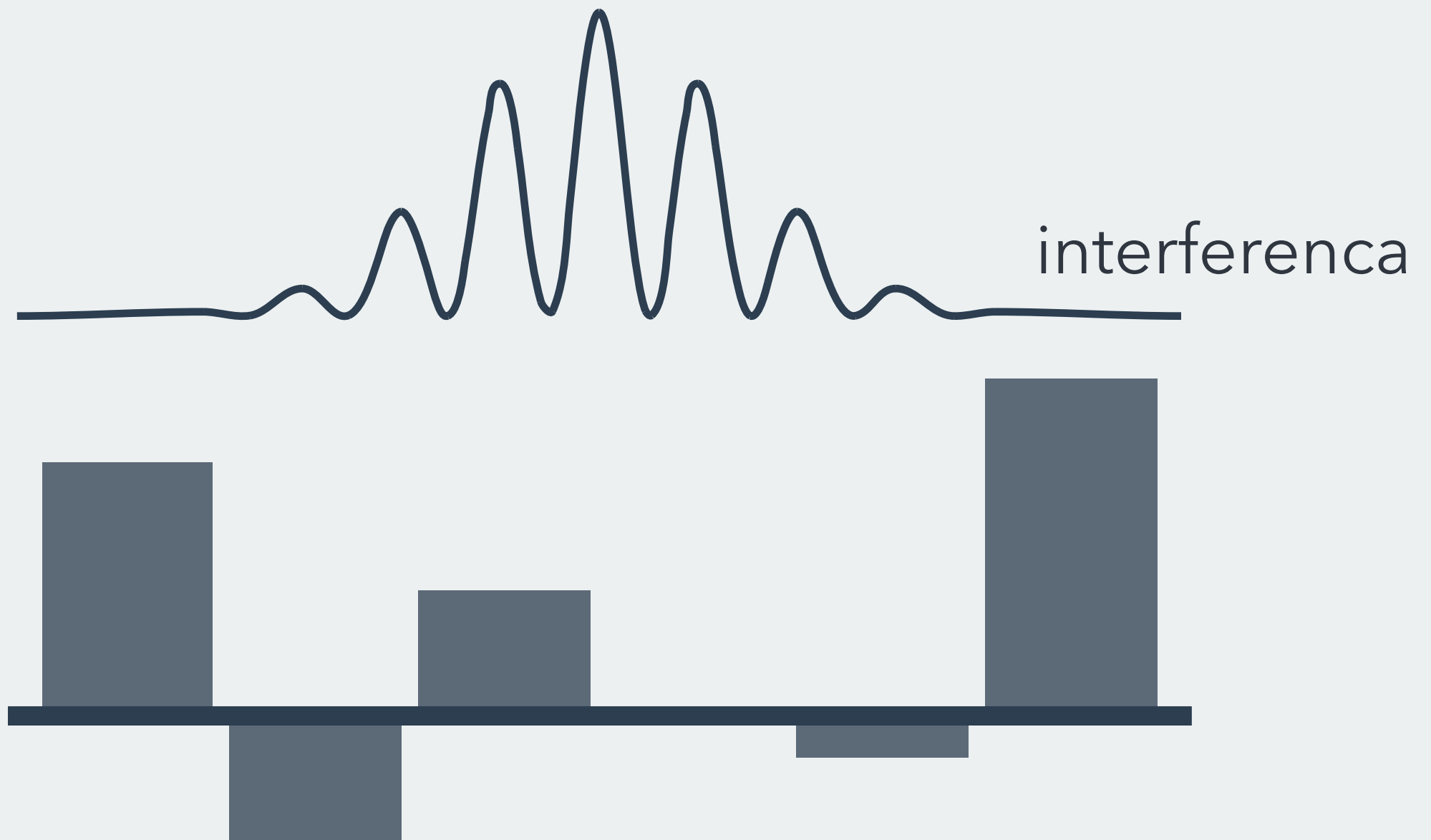


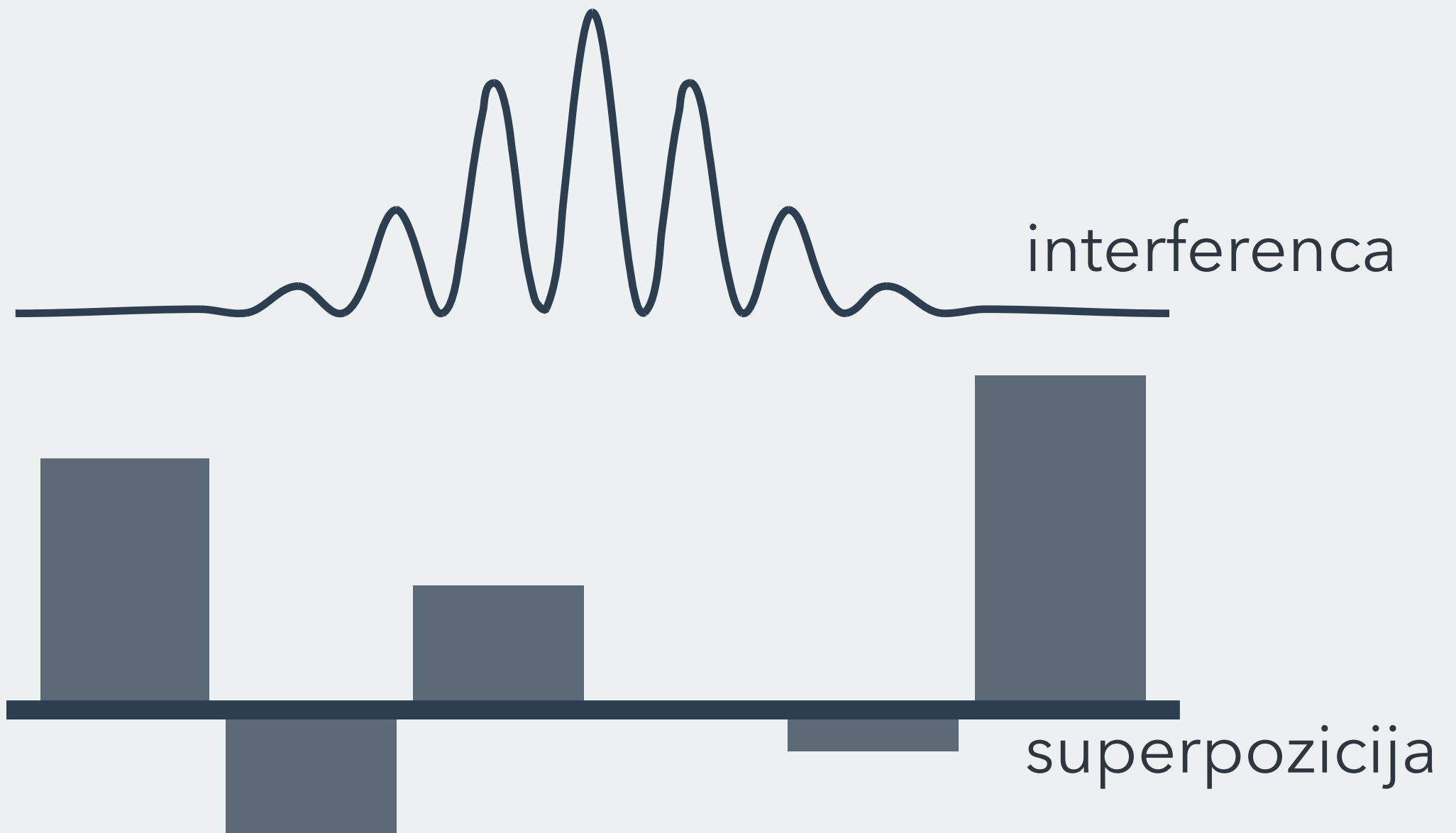
$$P(x) = |a_x|^2$$

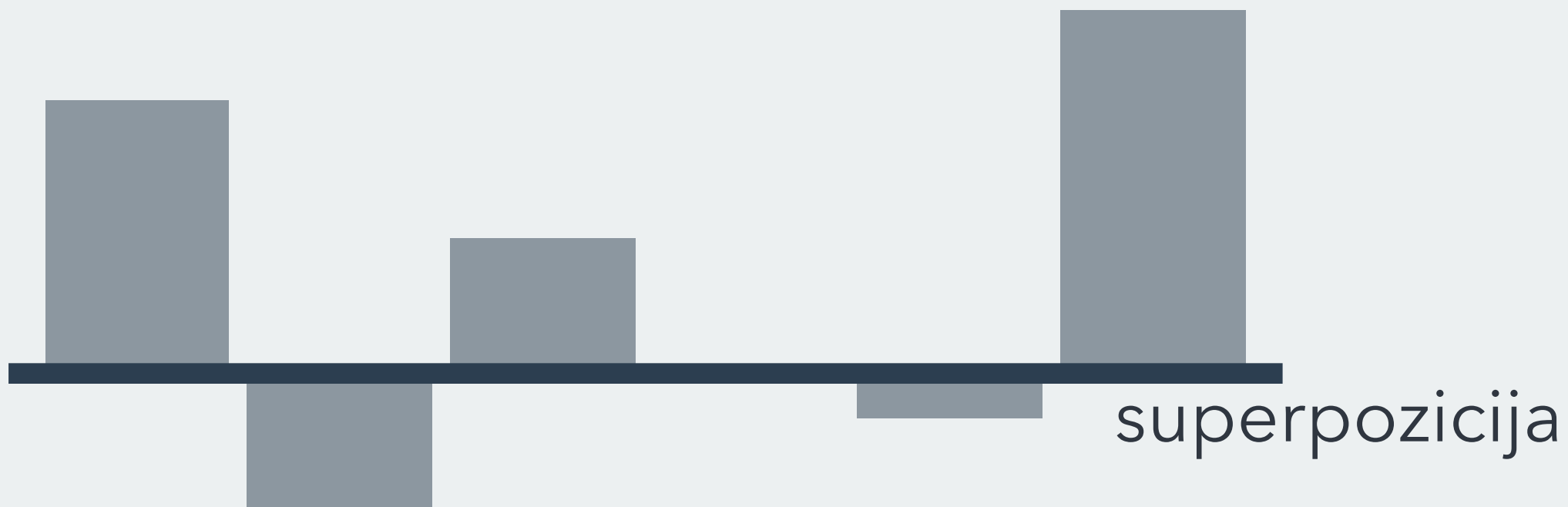
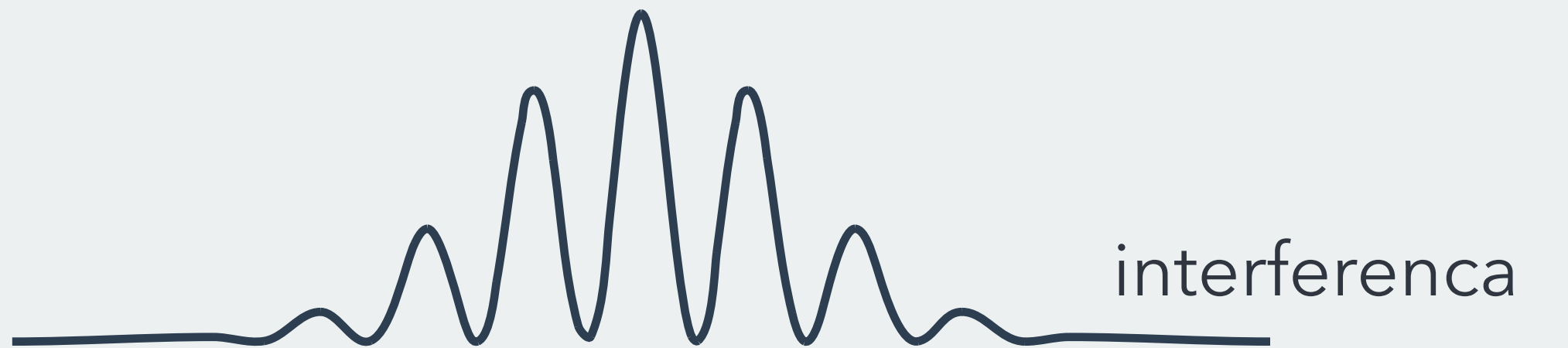


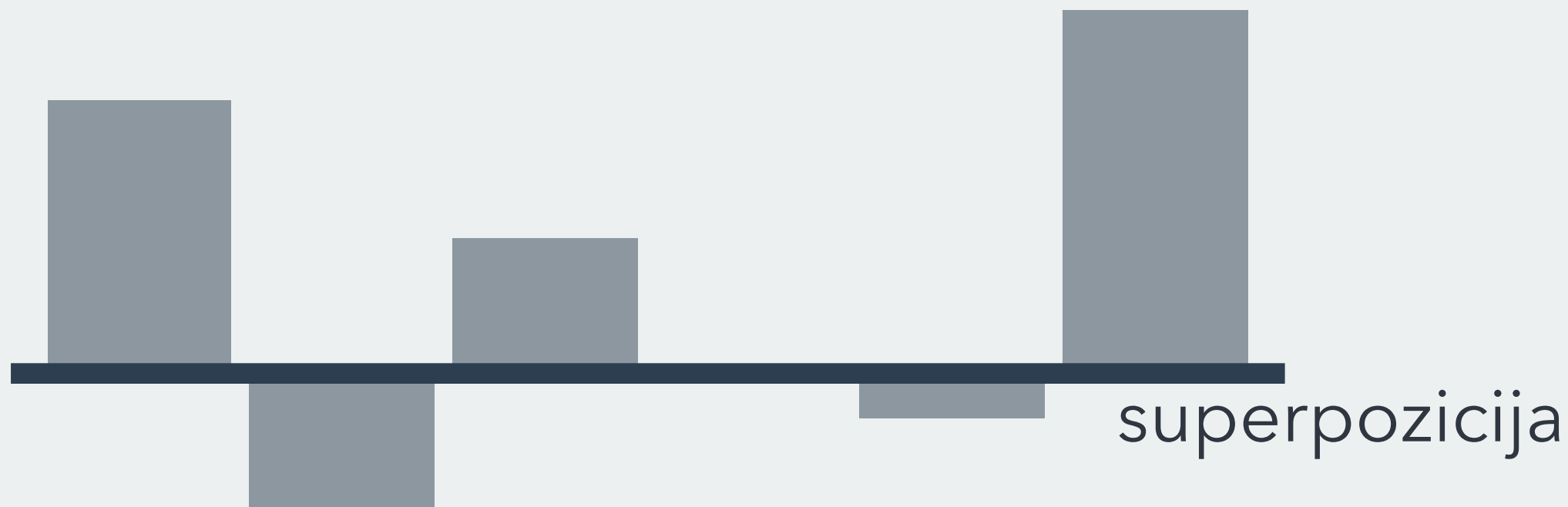
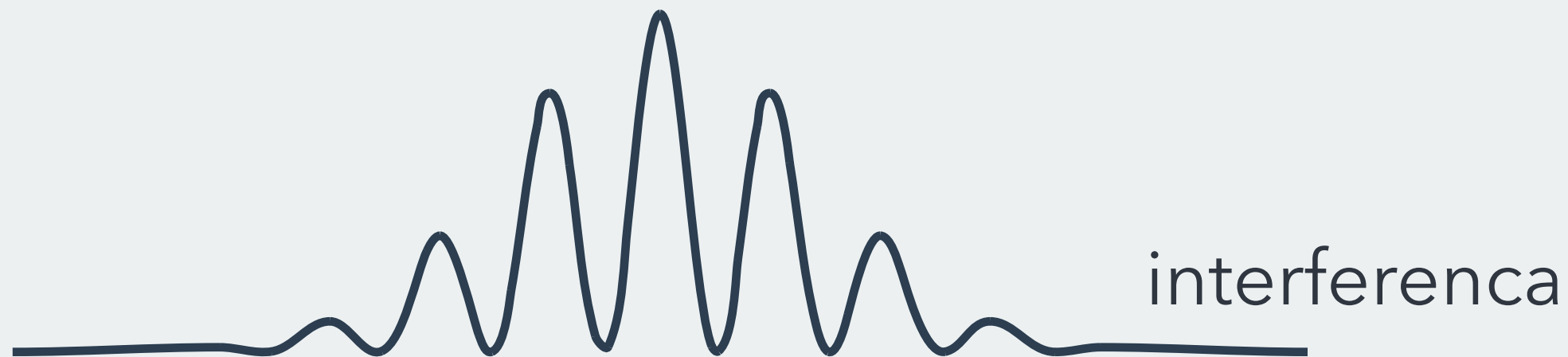


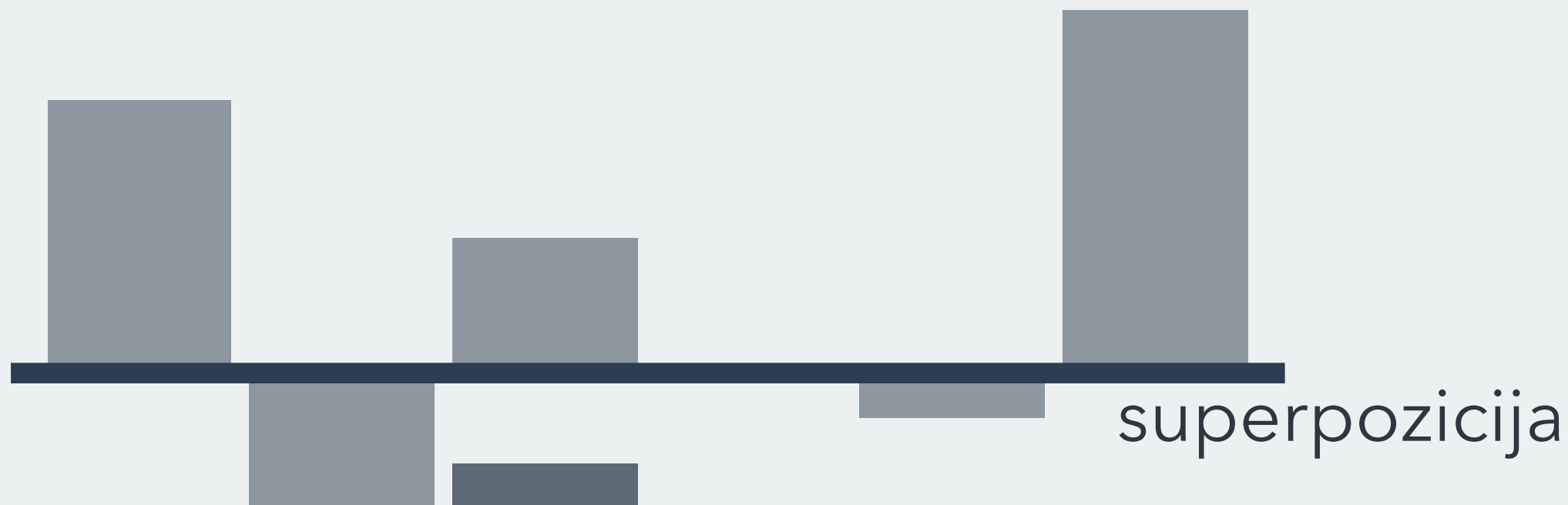
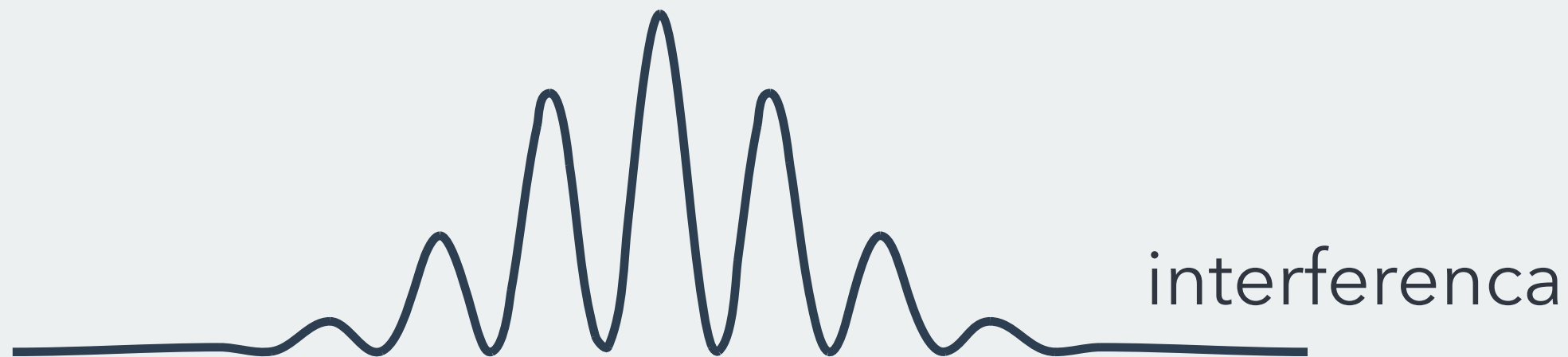


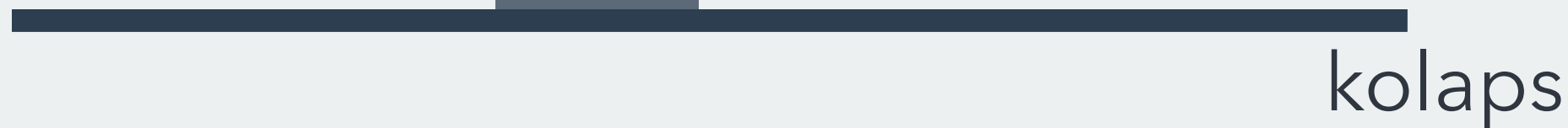
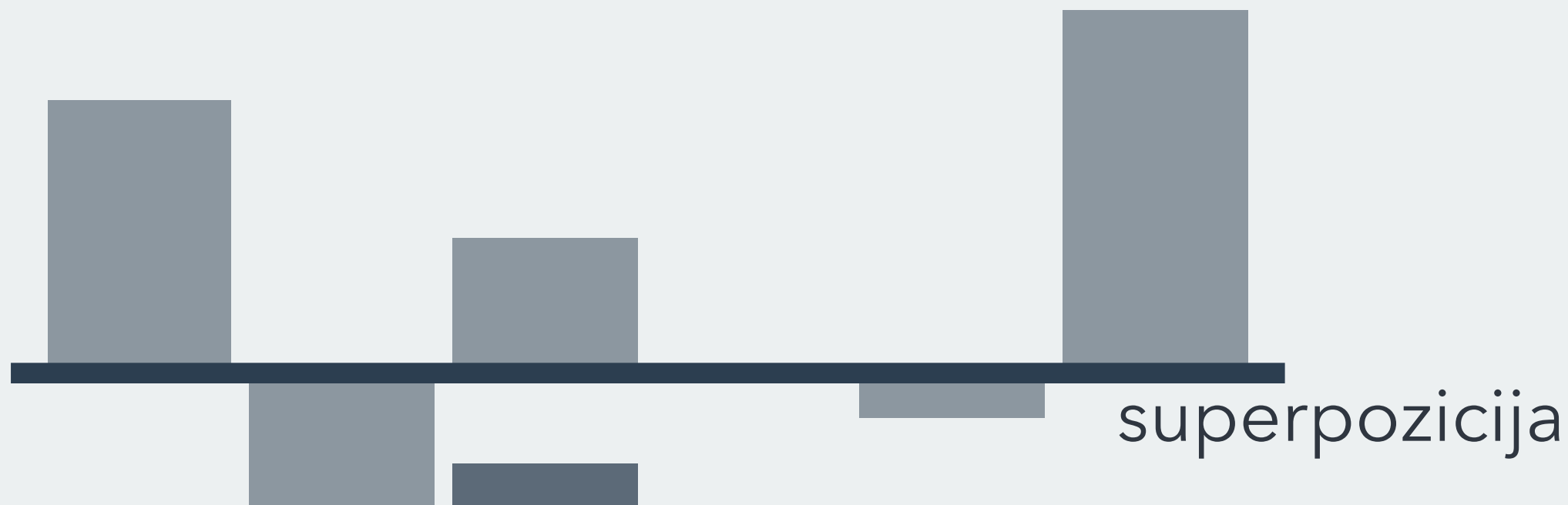
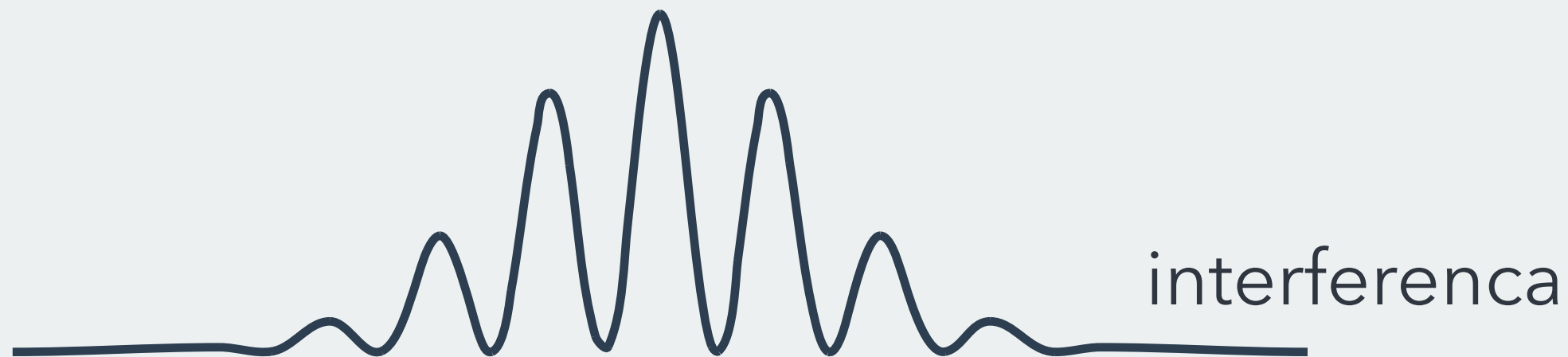






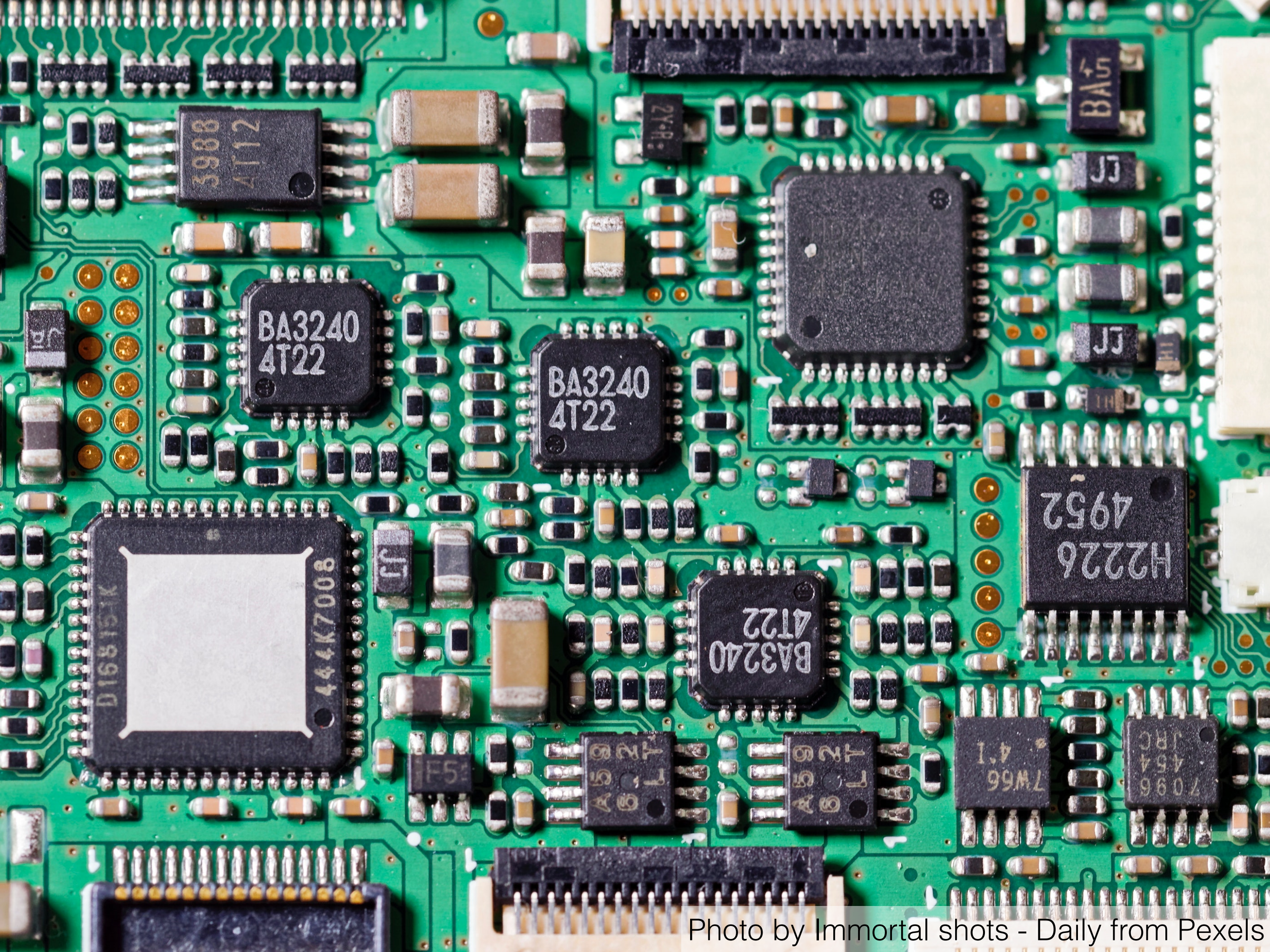


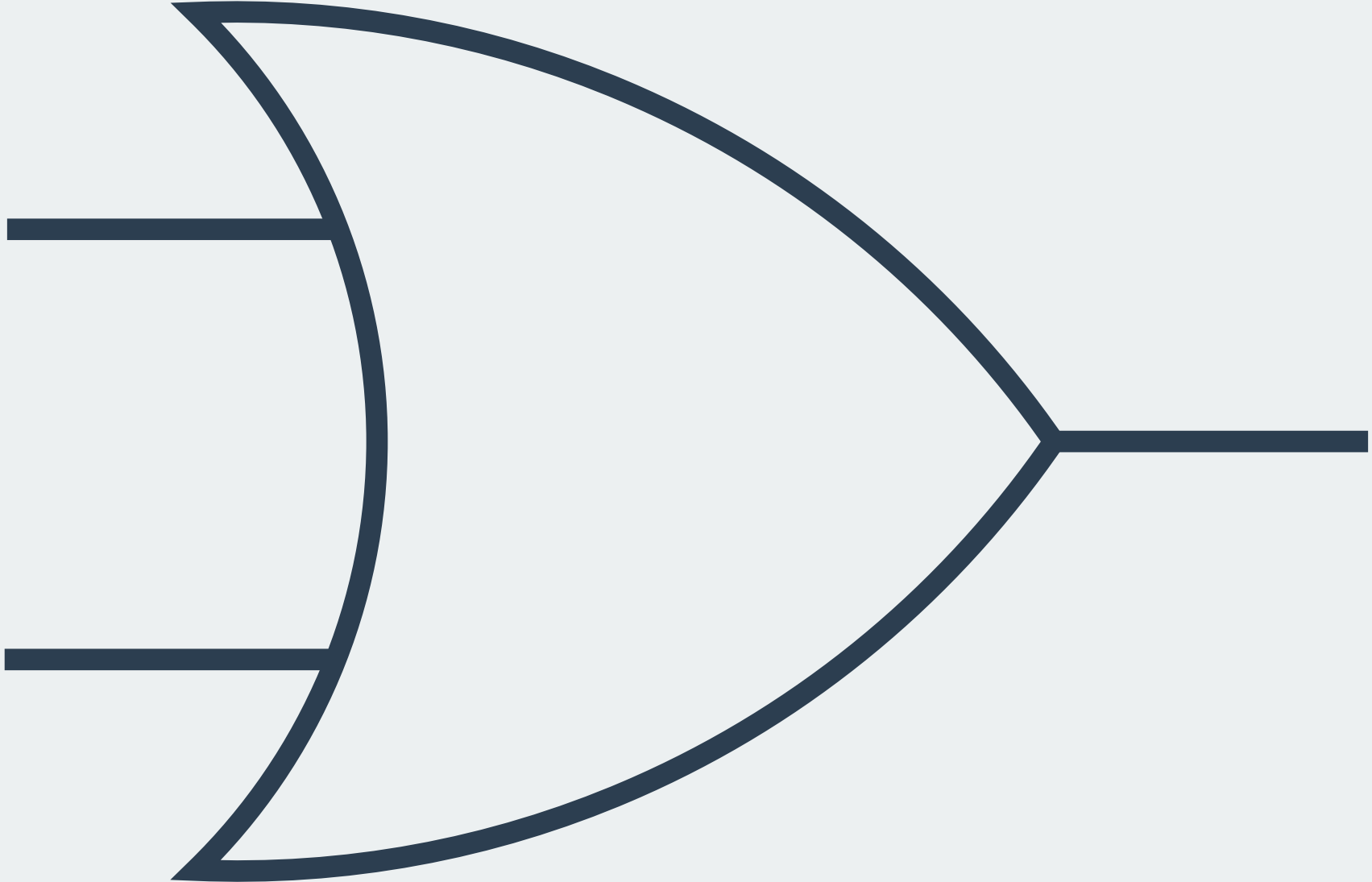


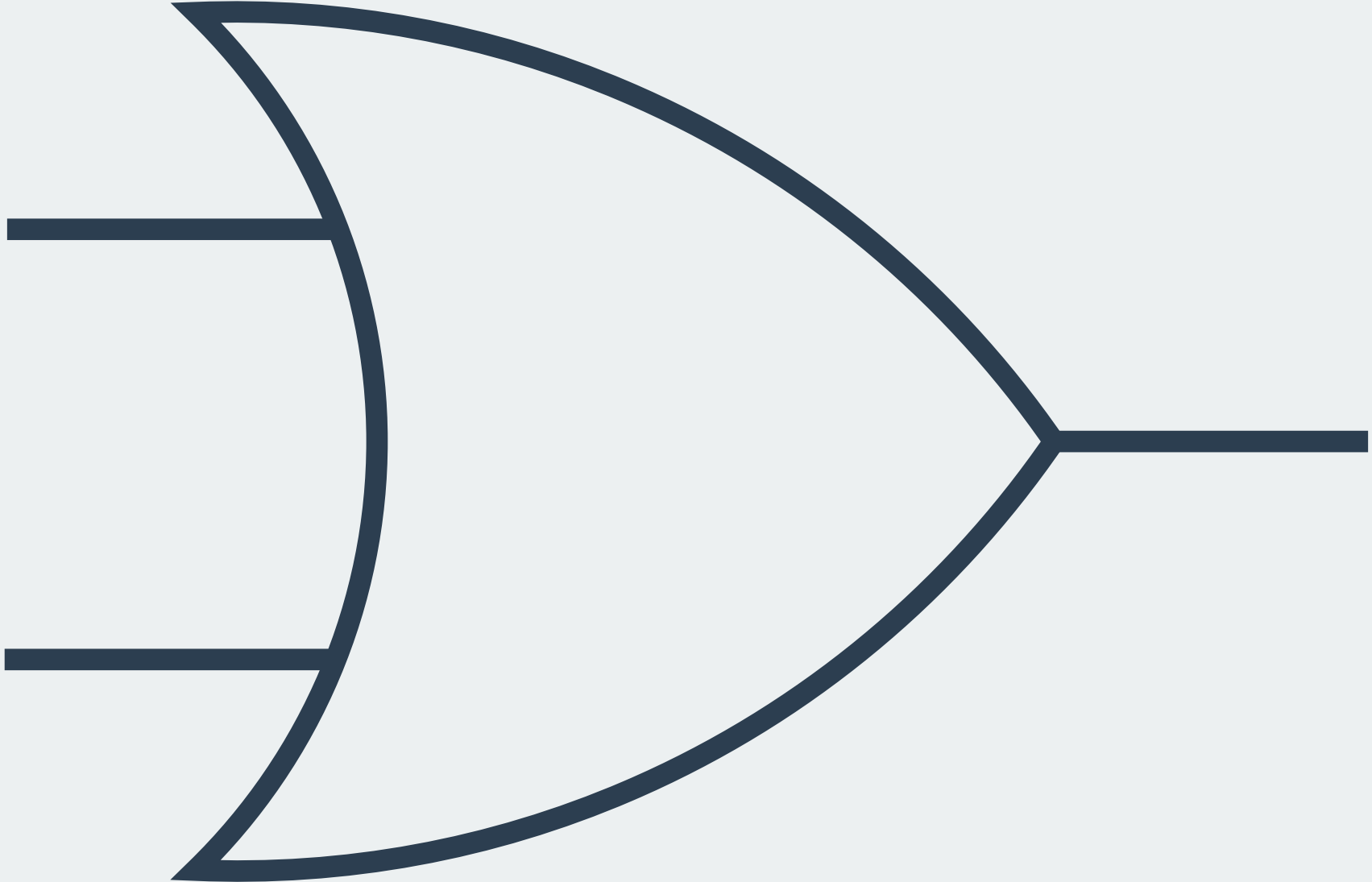


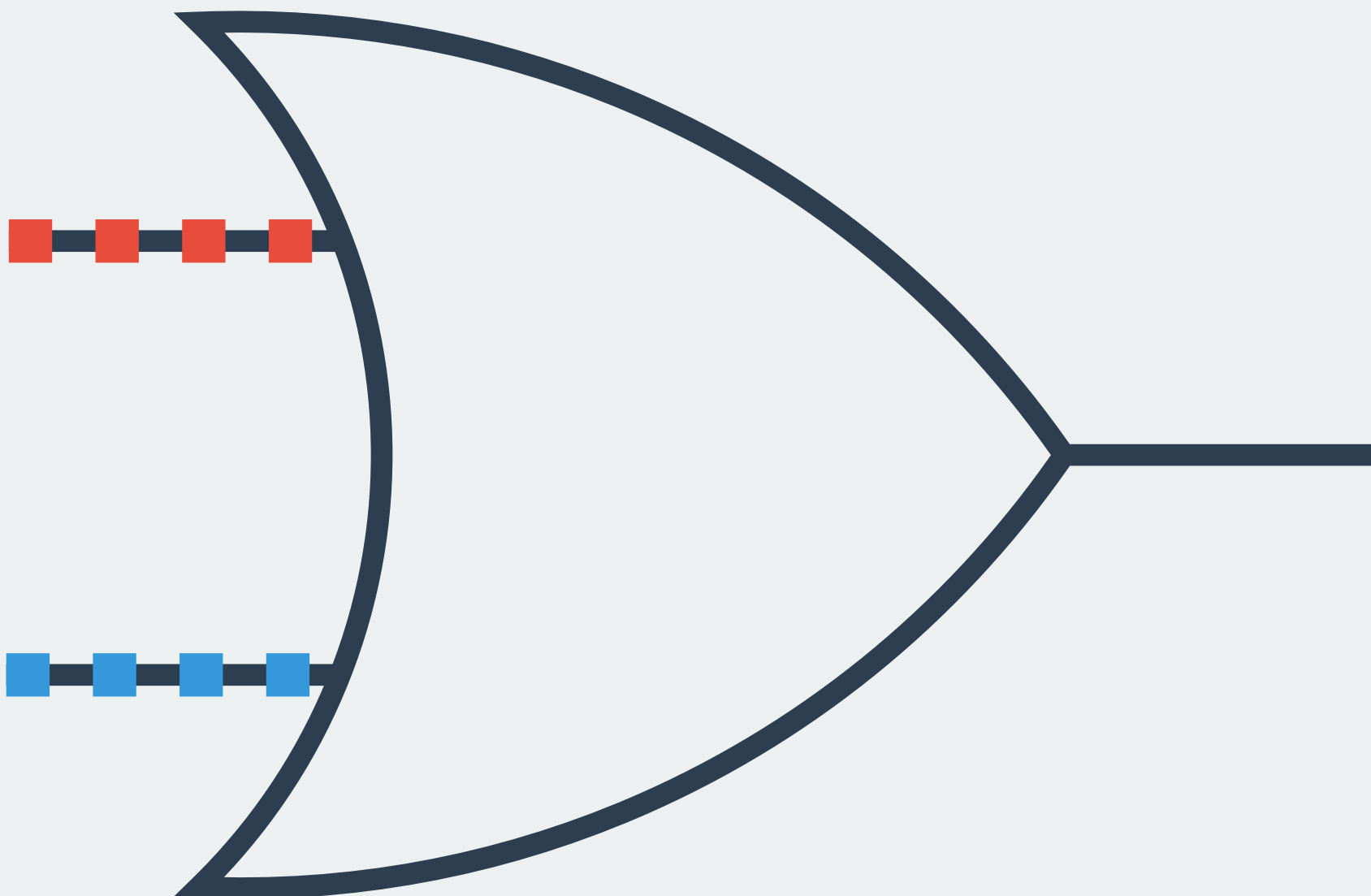
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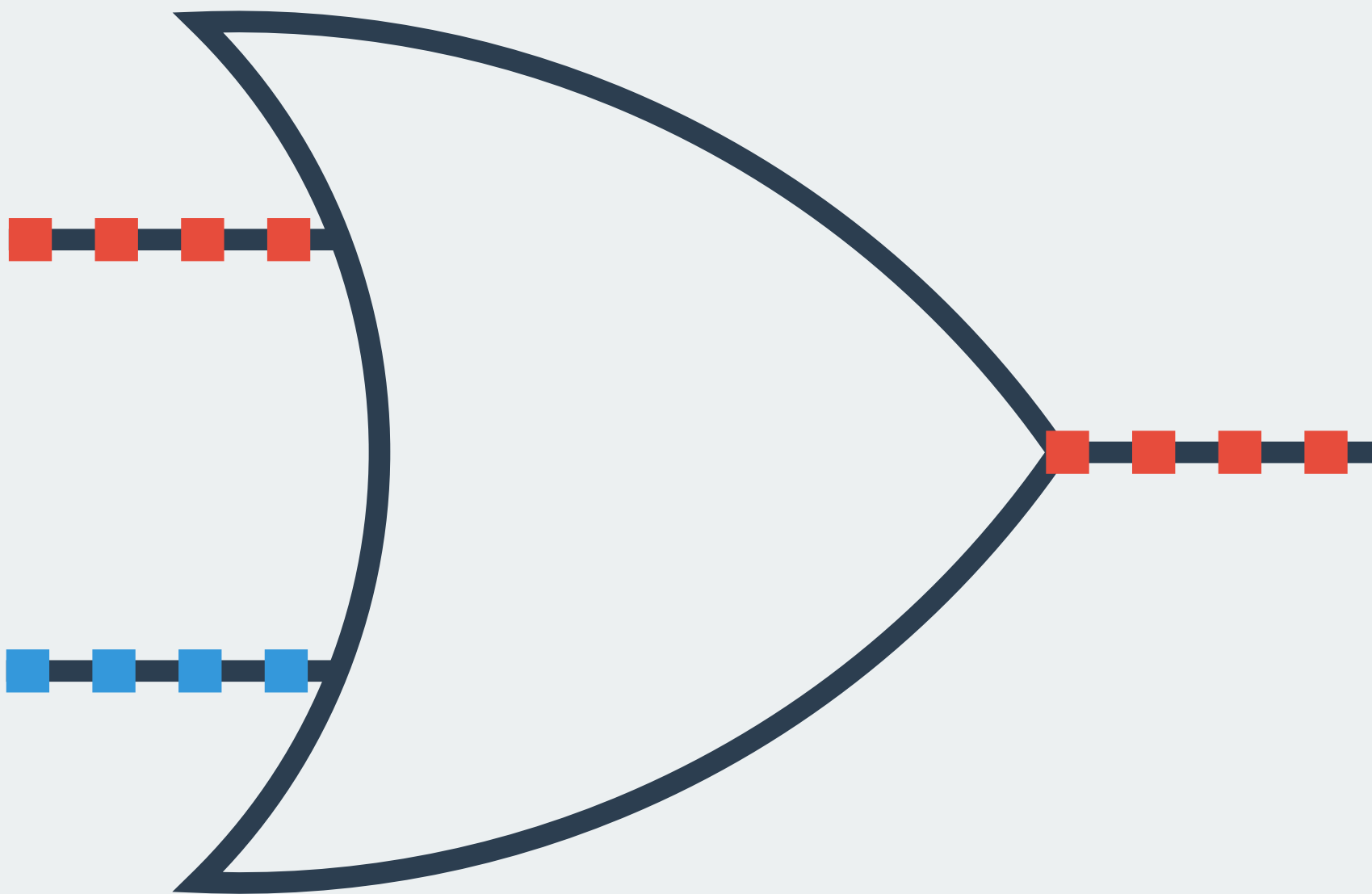
PRISTOP

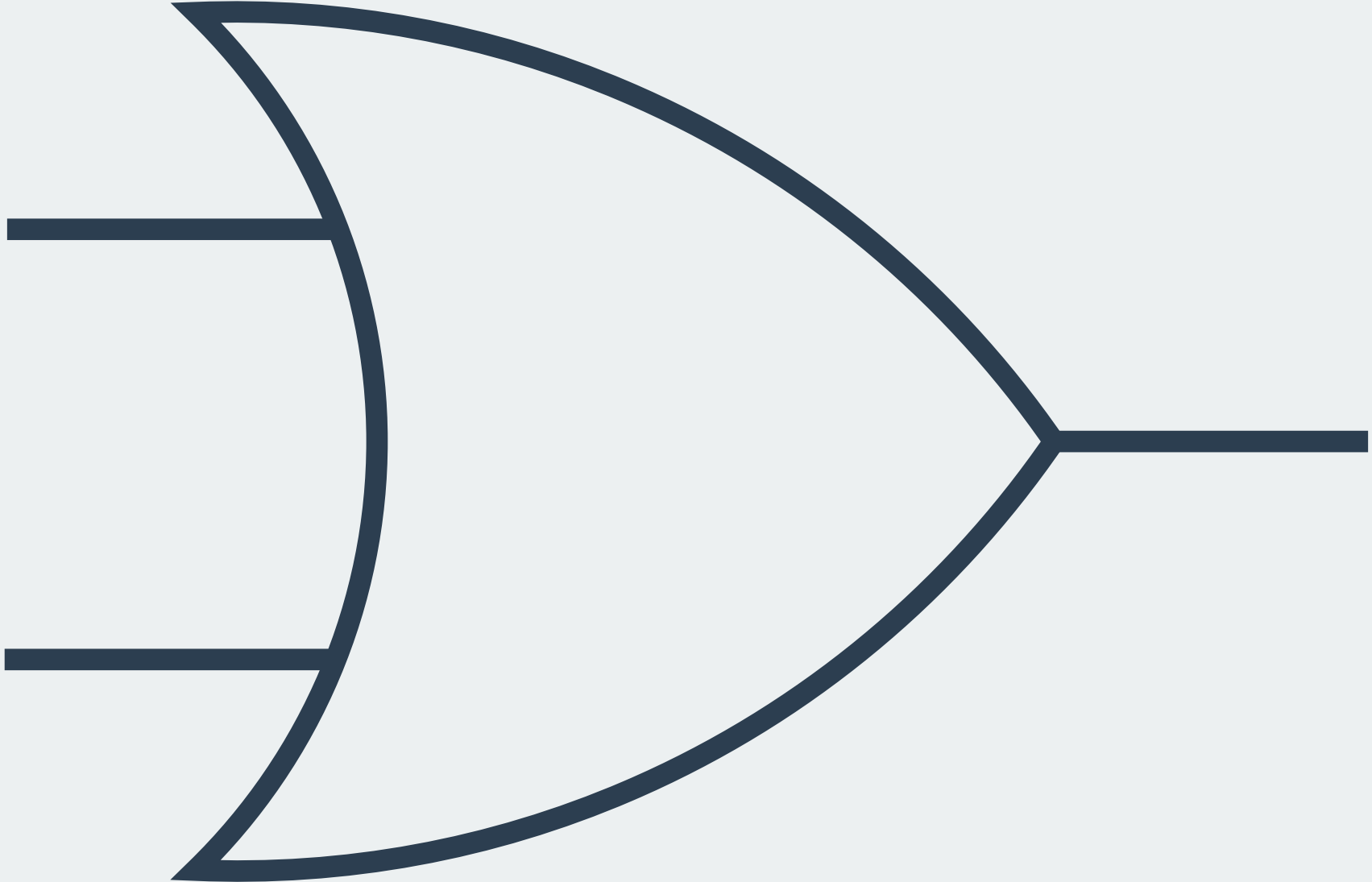


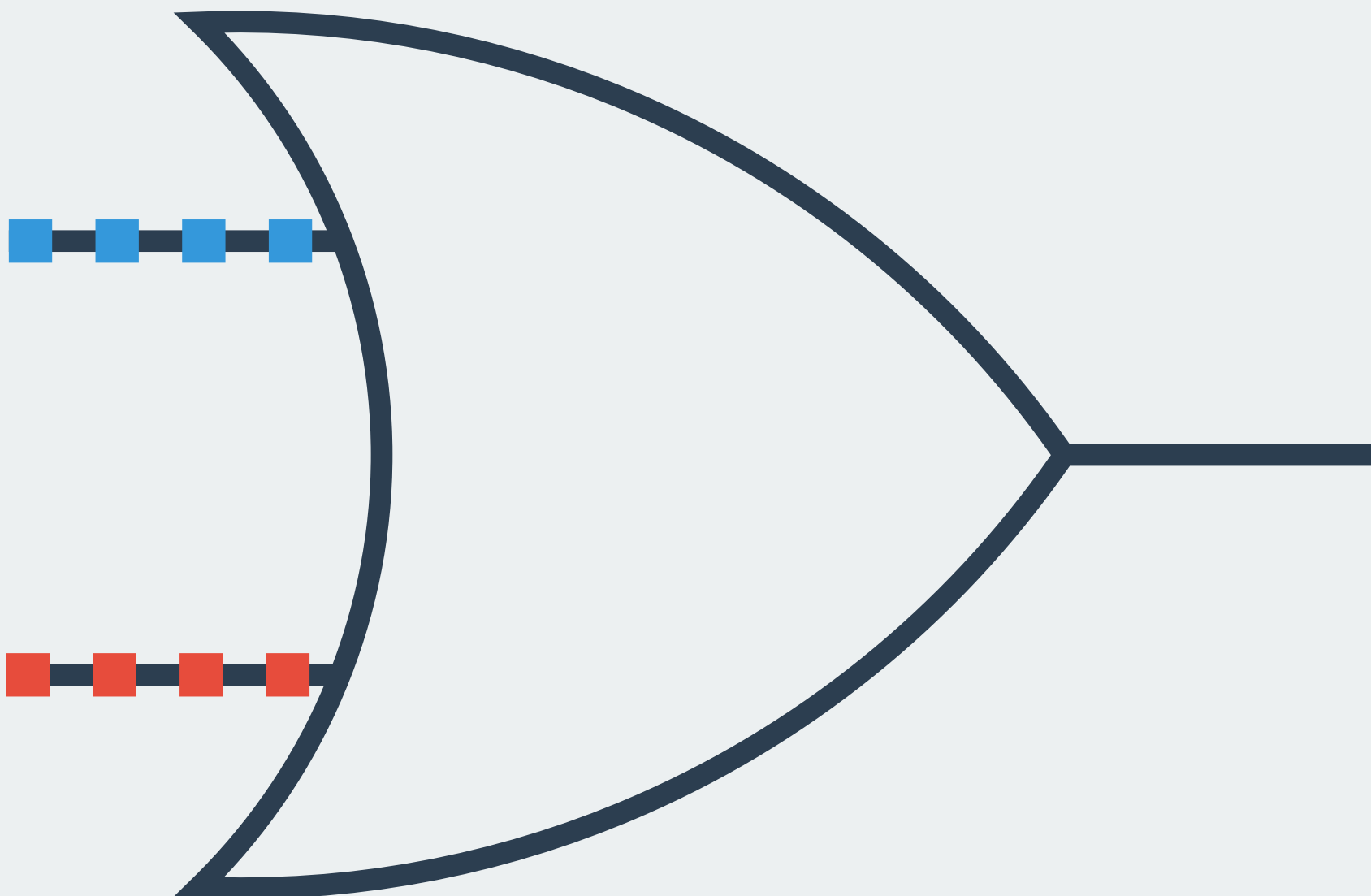


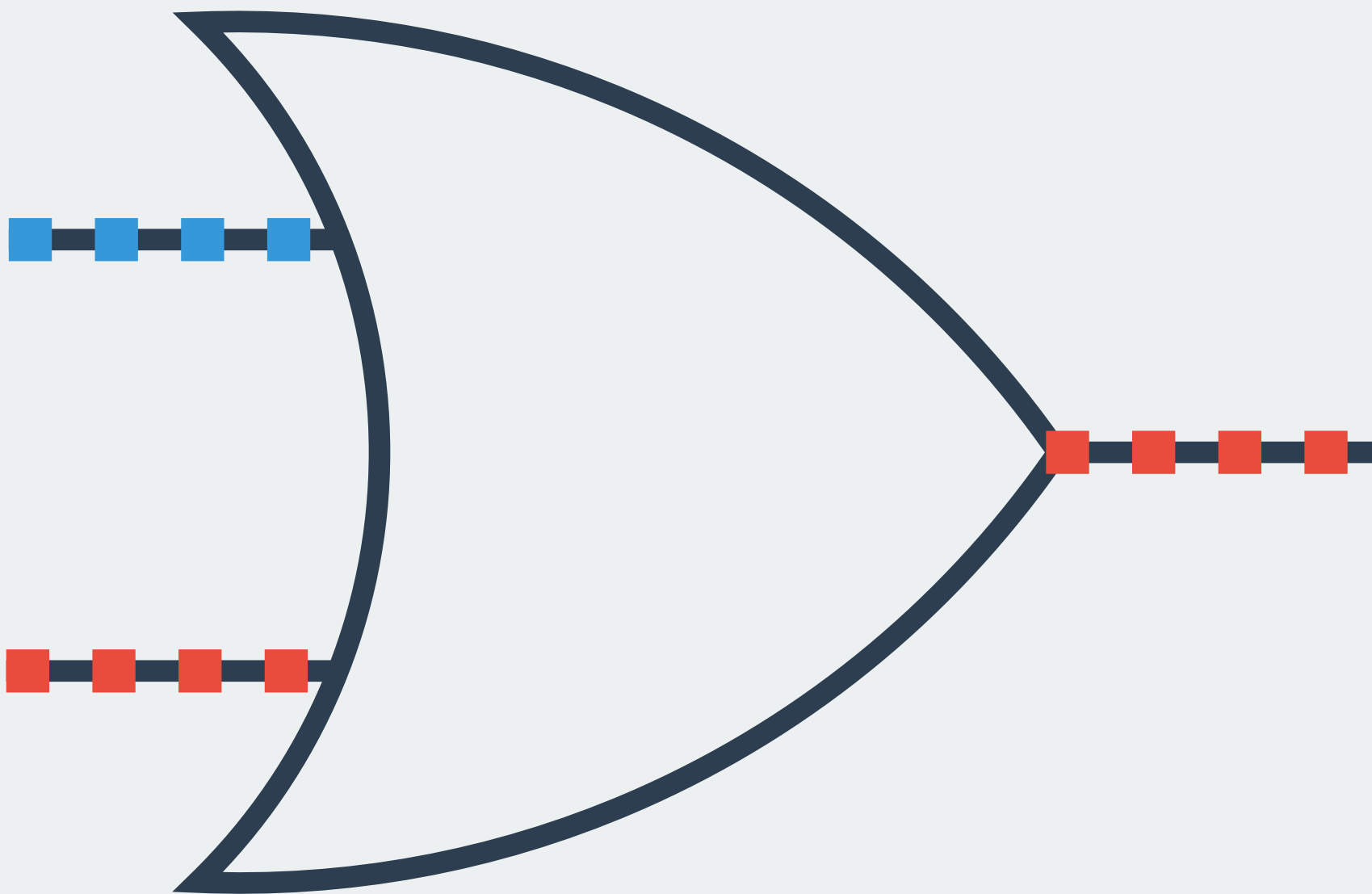


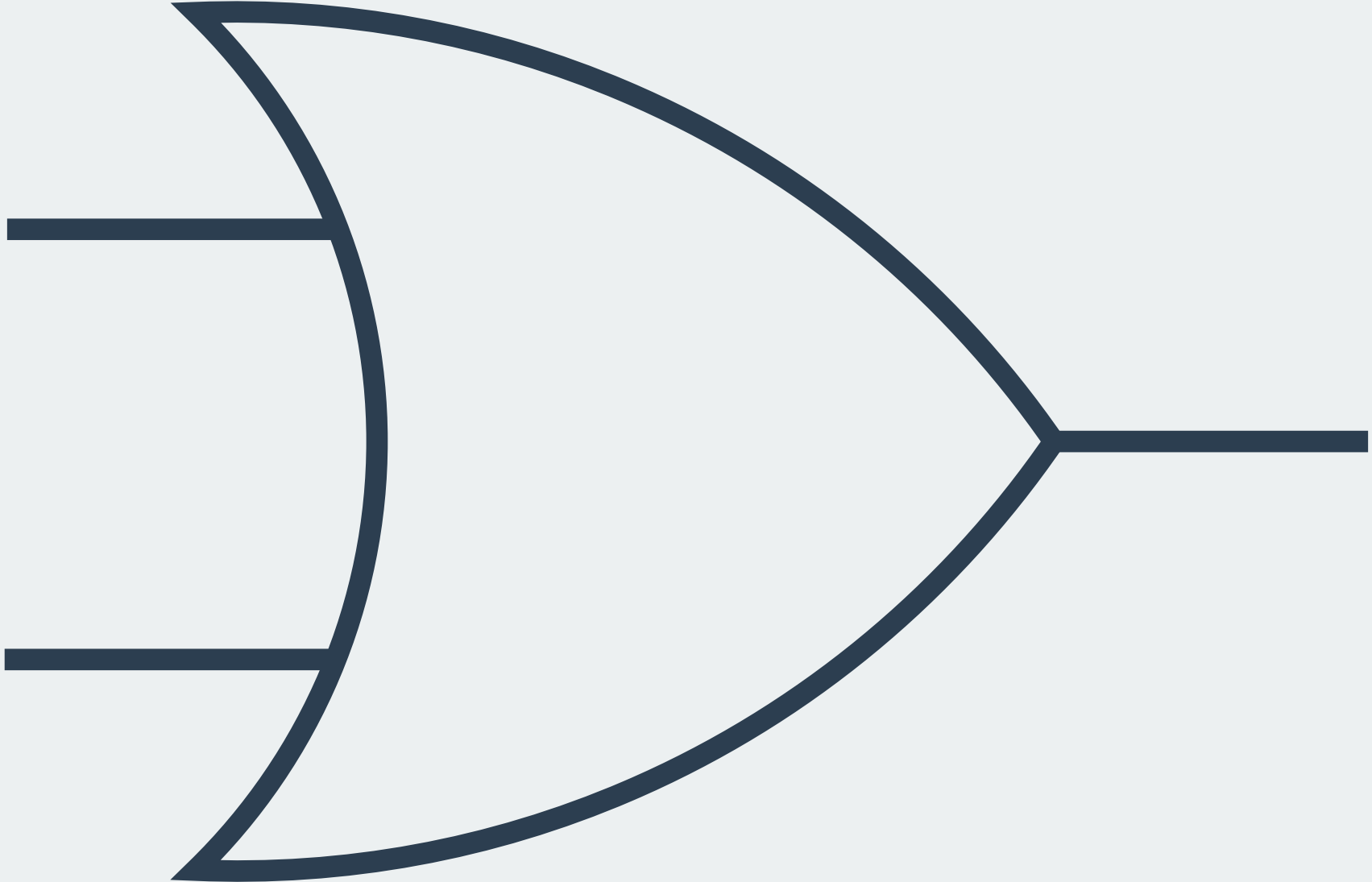


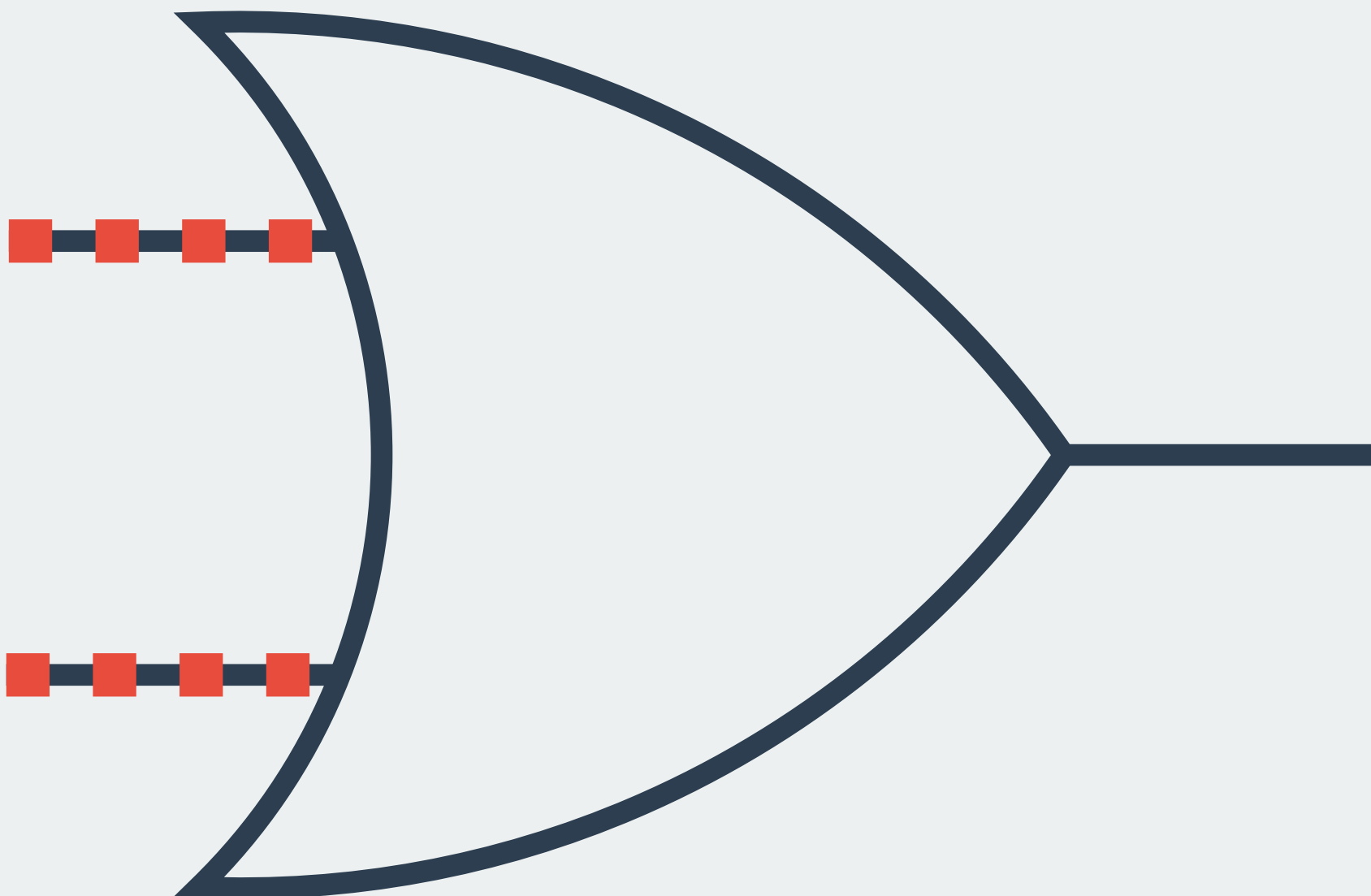


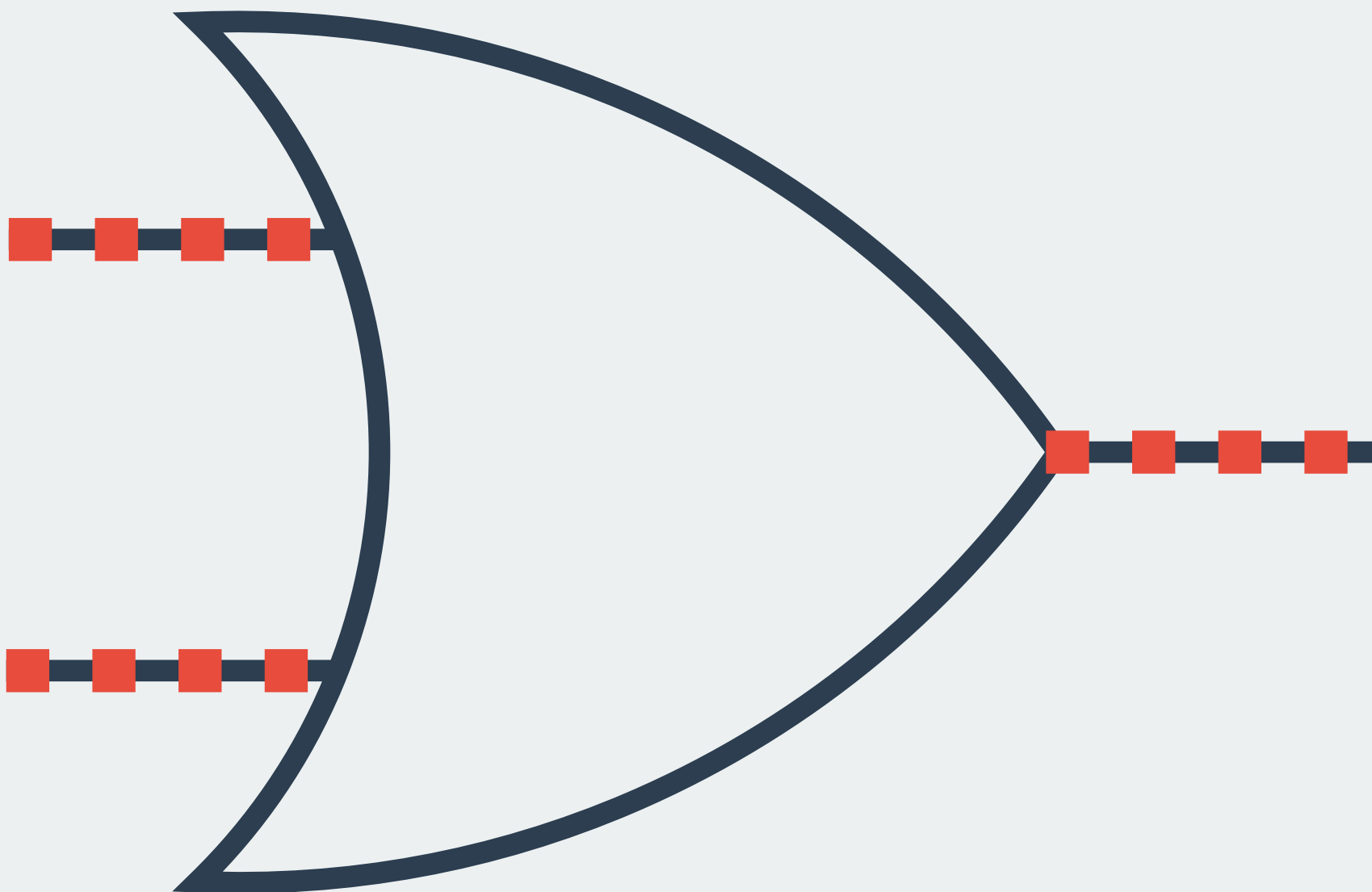


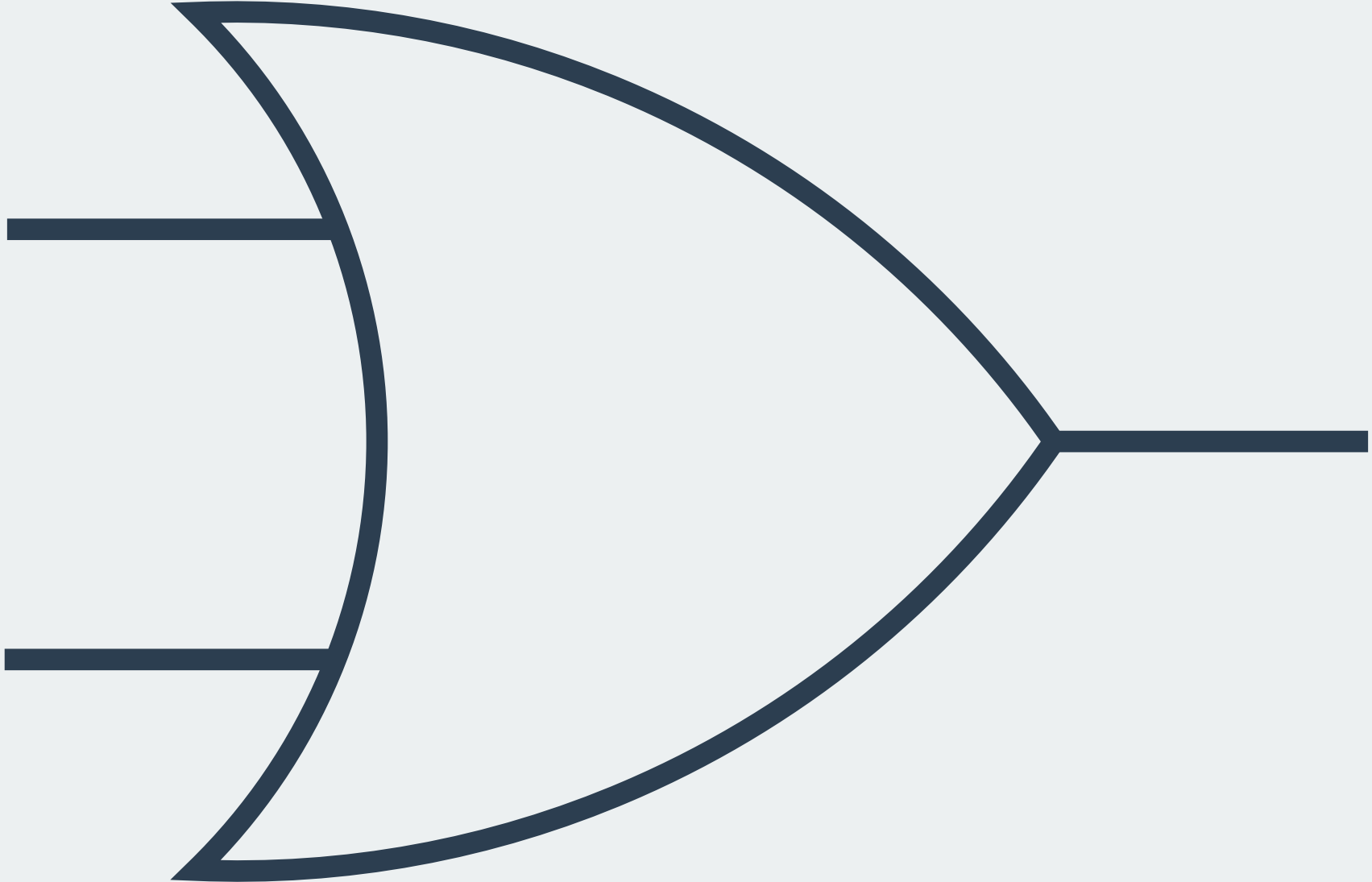


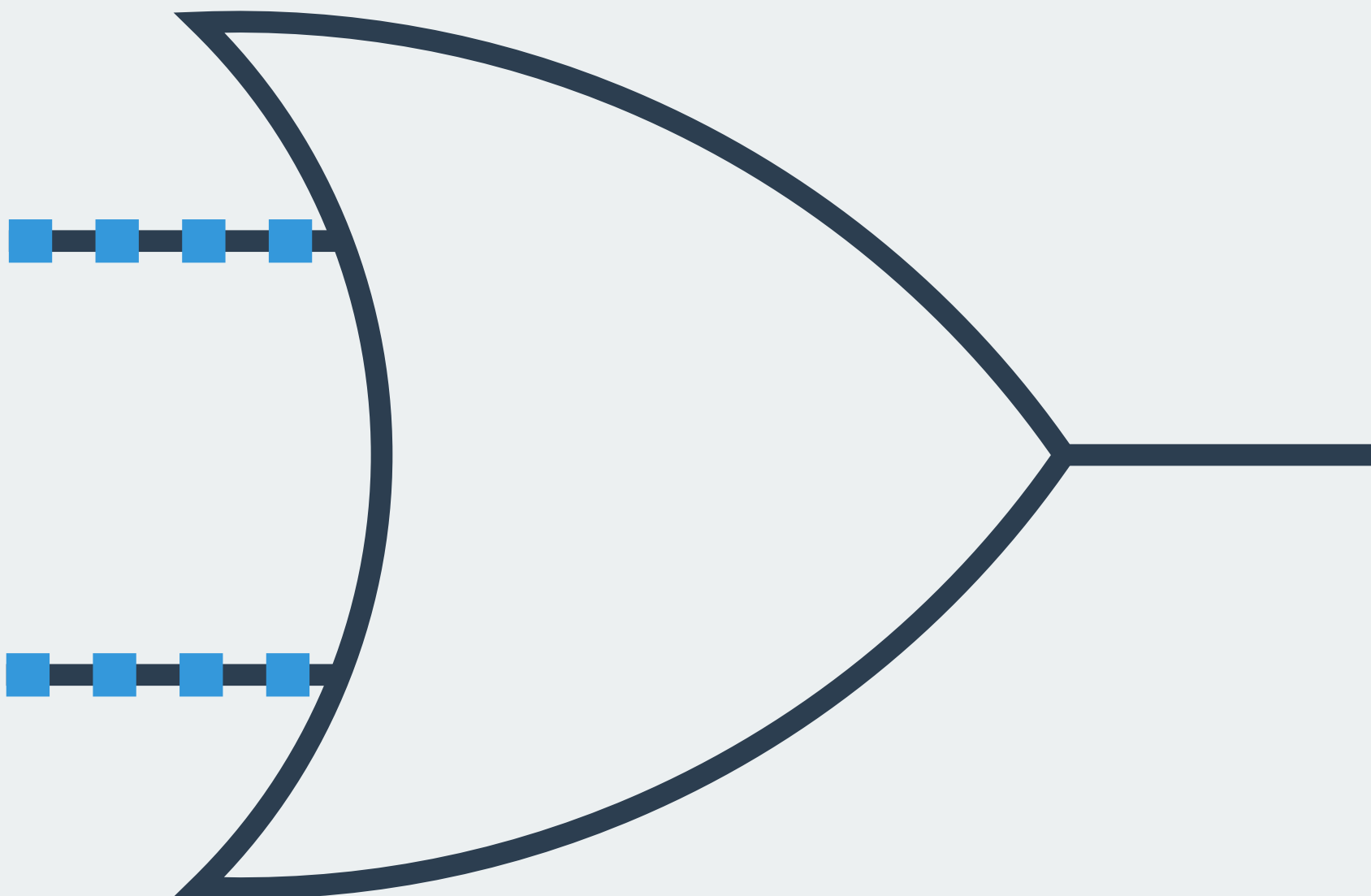


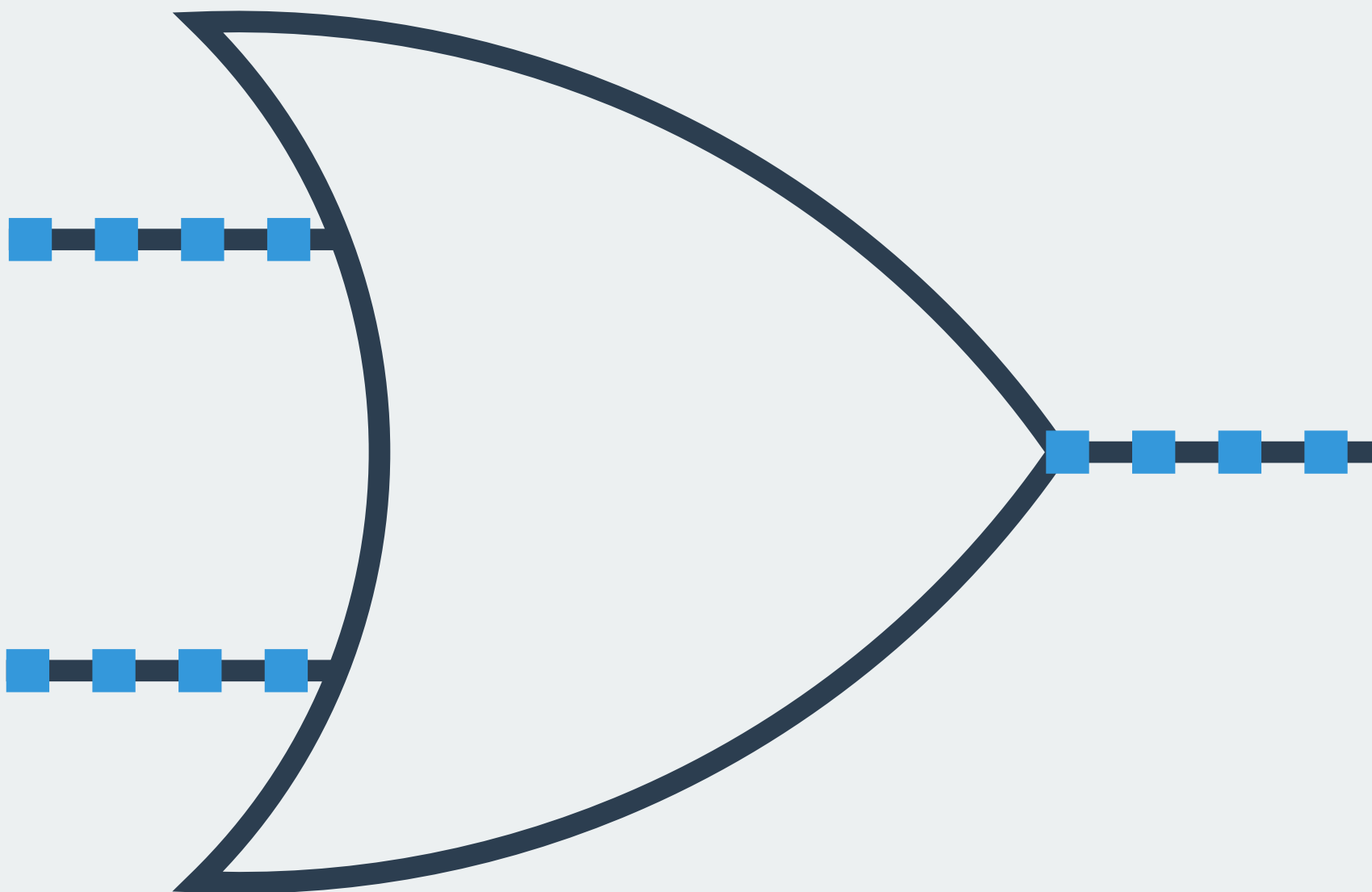


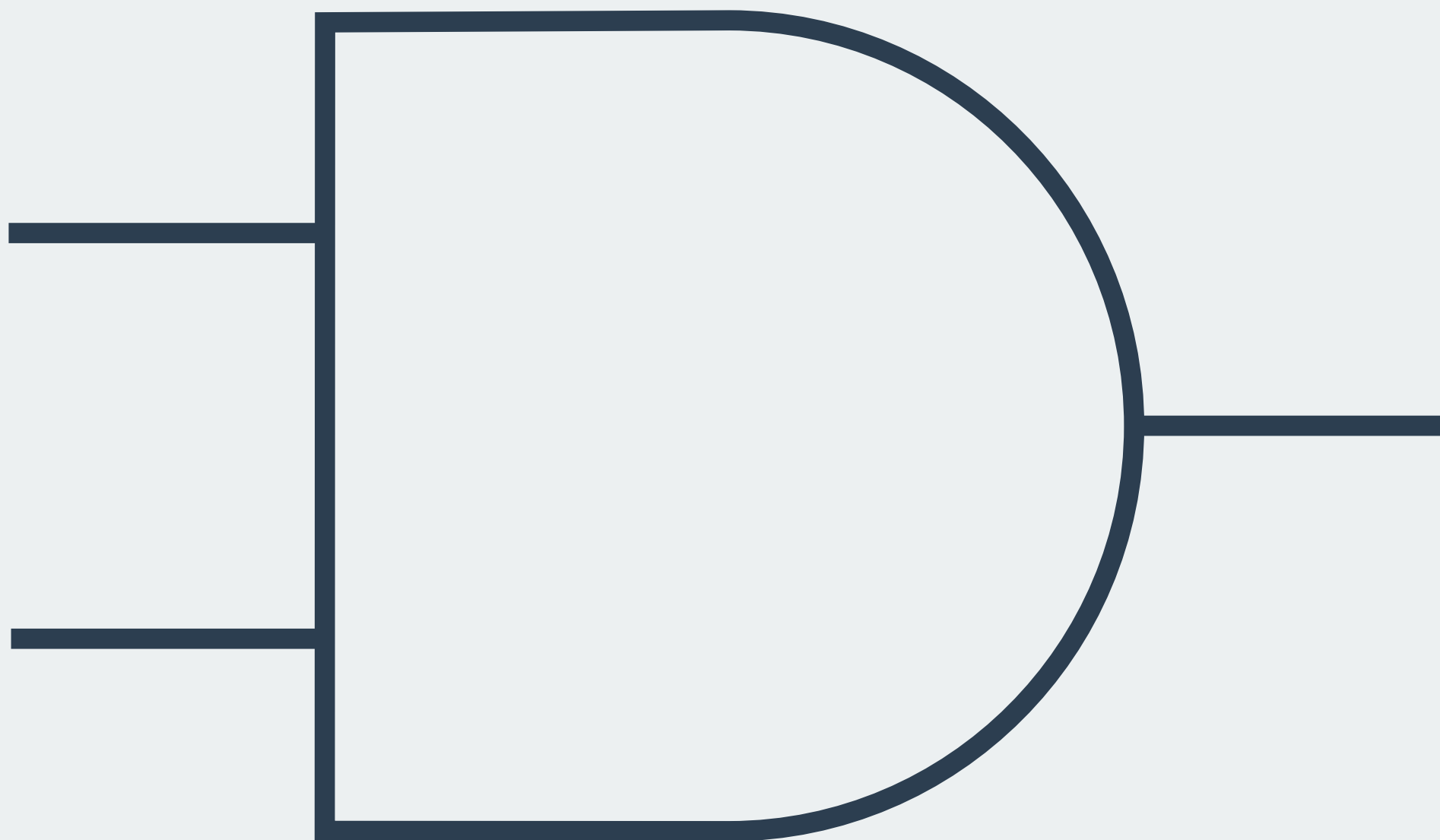


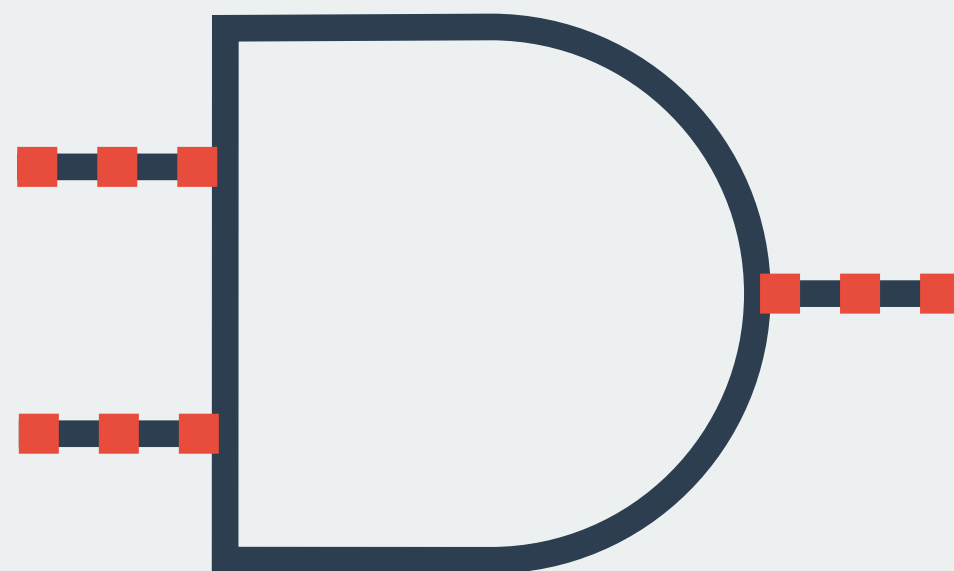
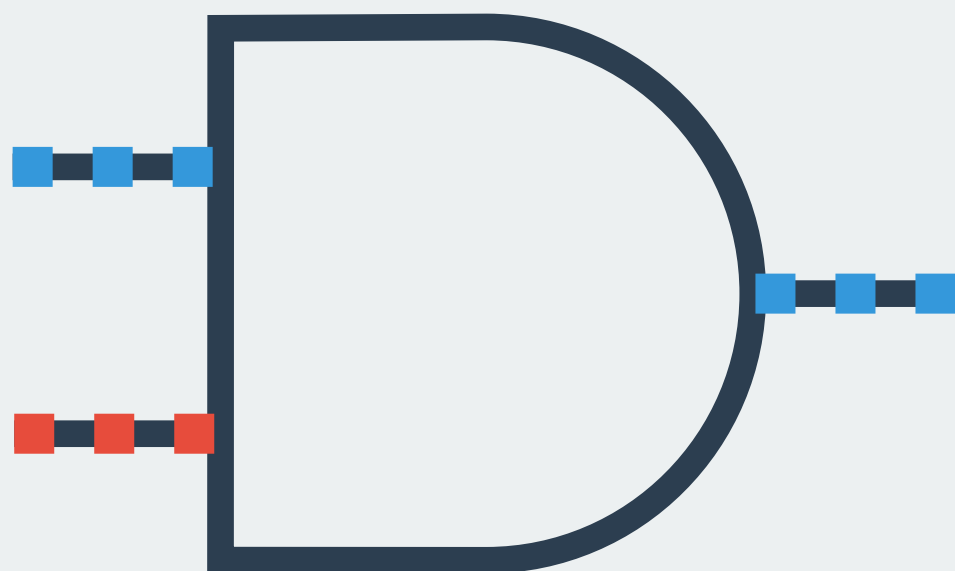
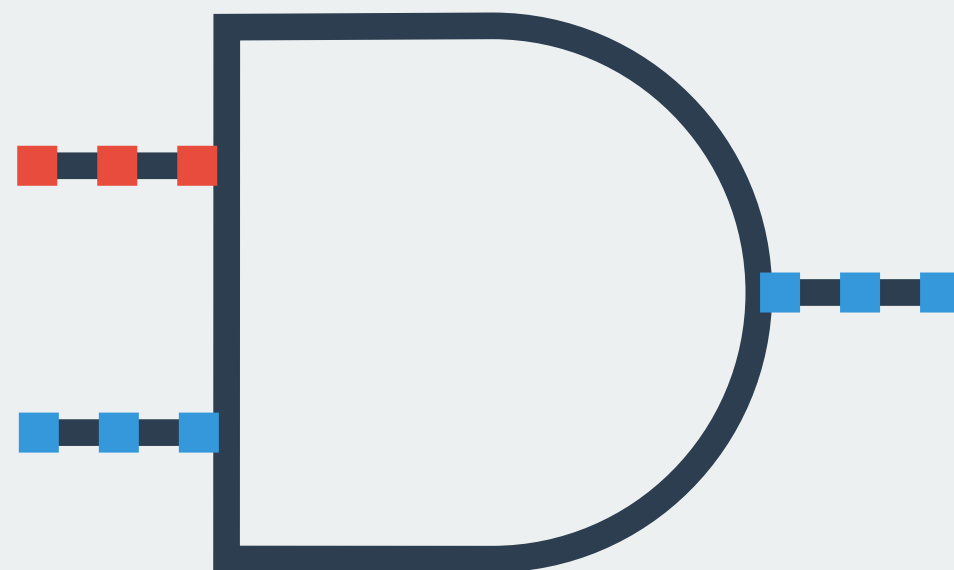
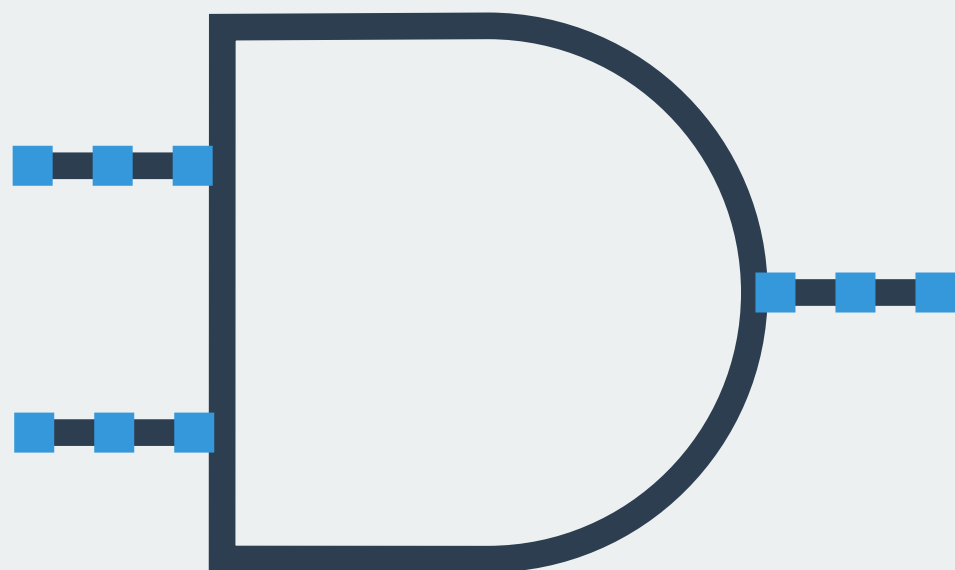


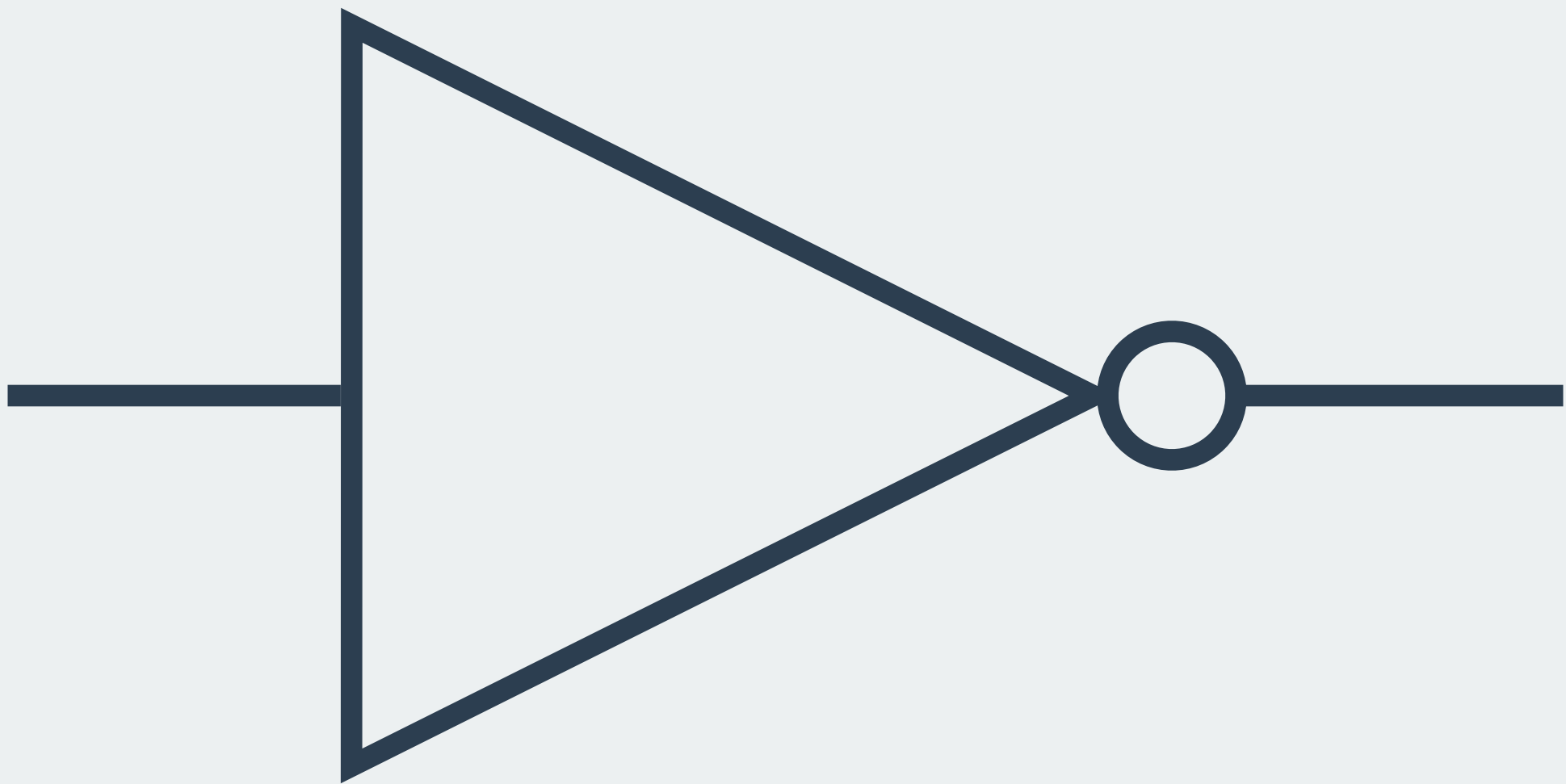


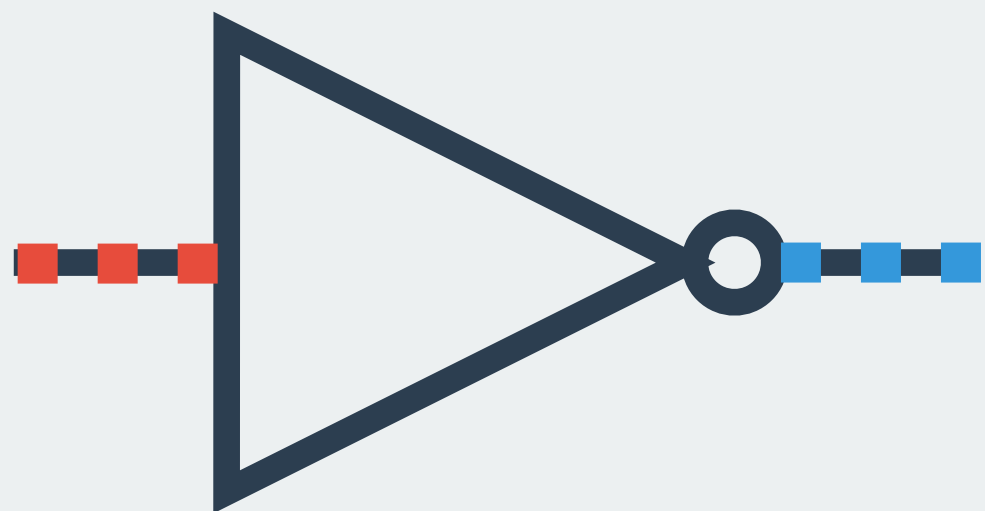
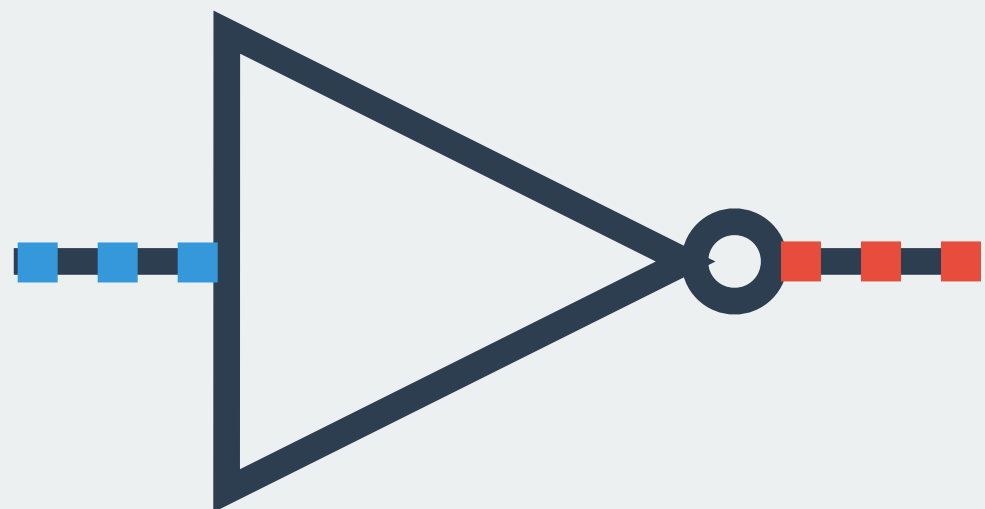


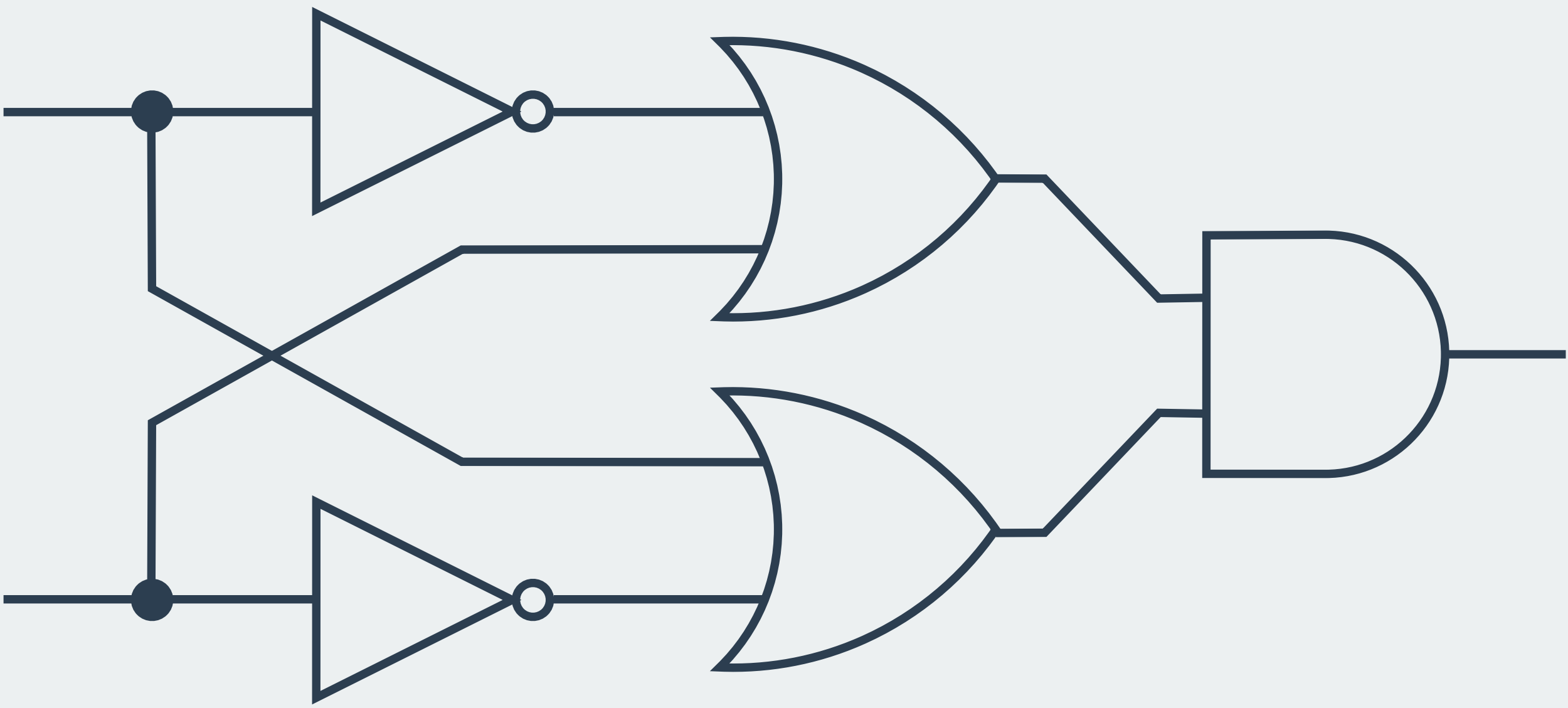


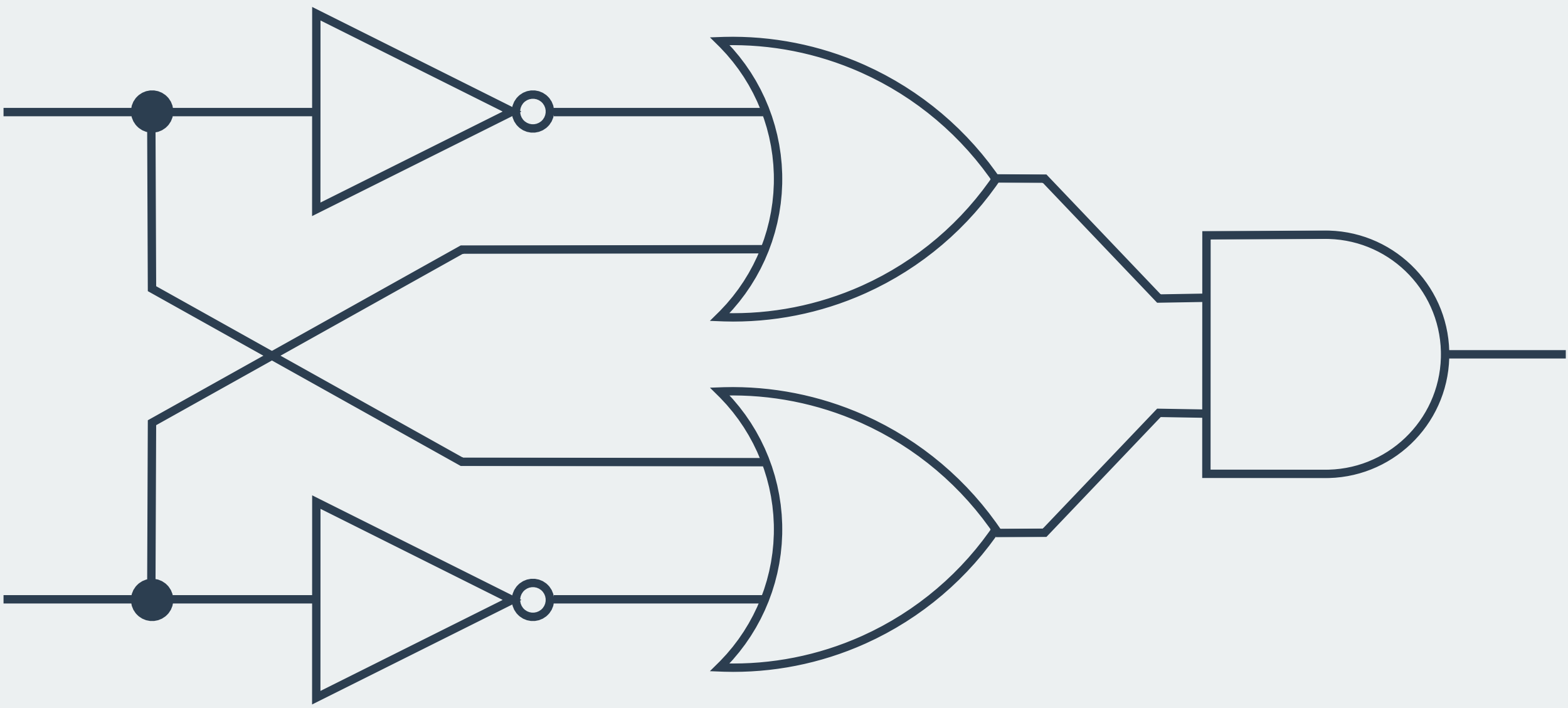


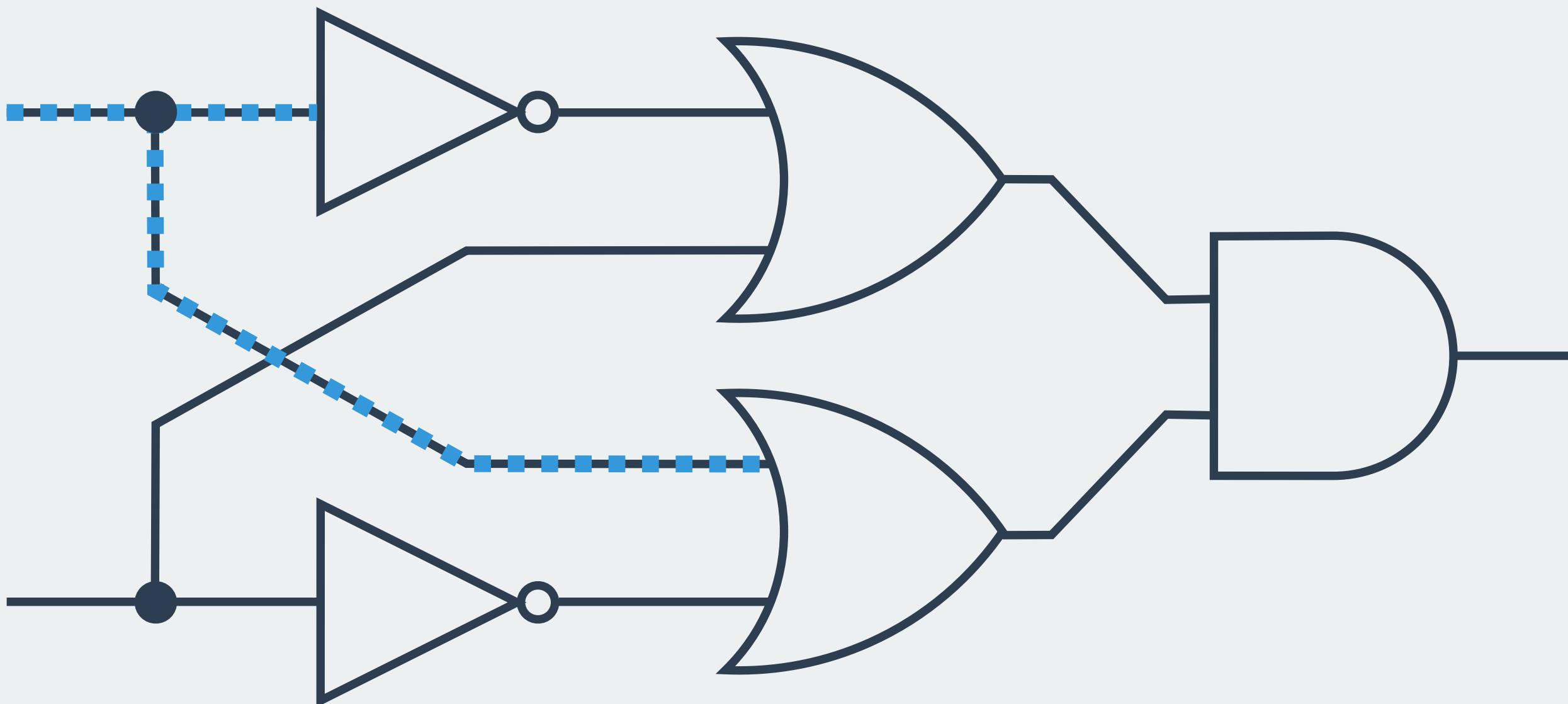


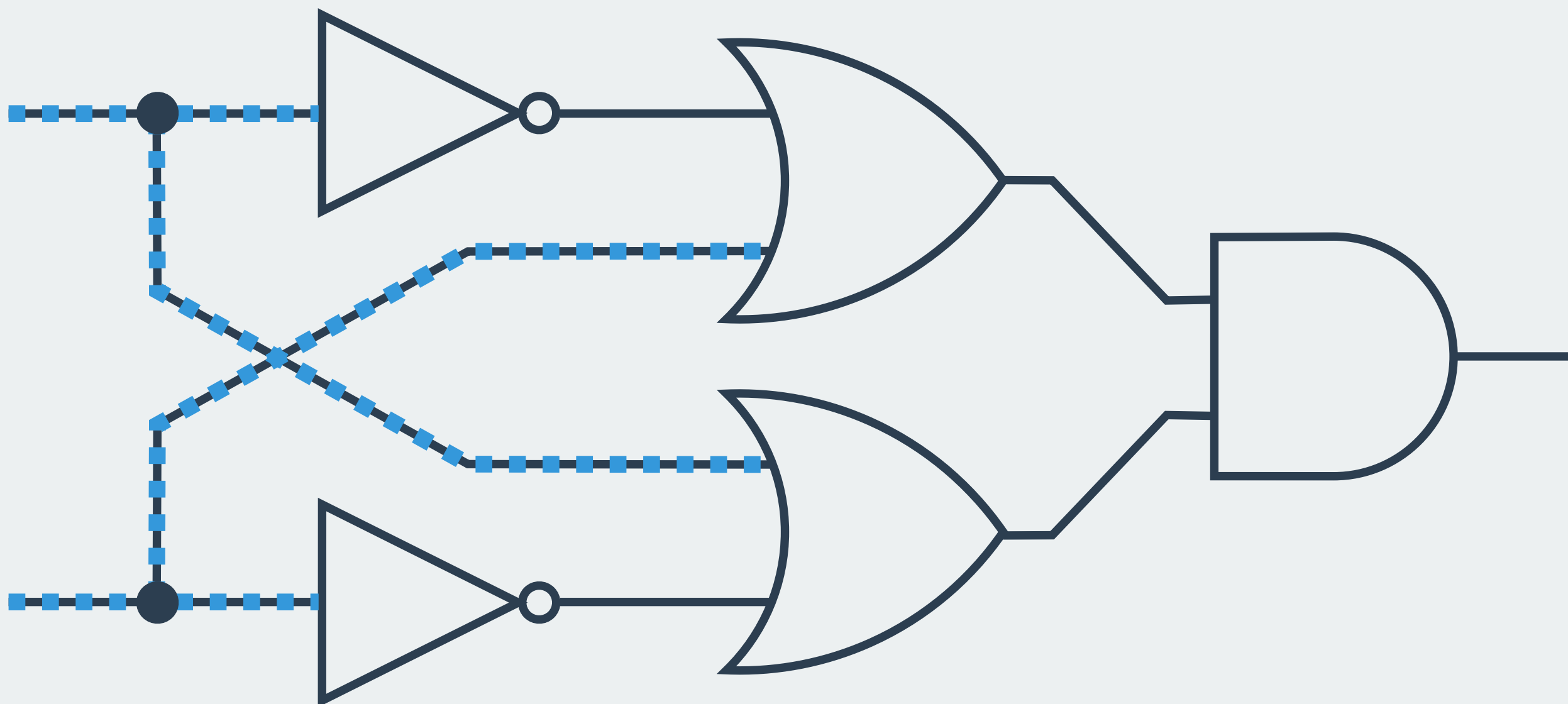


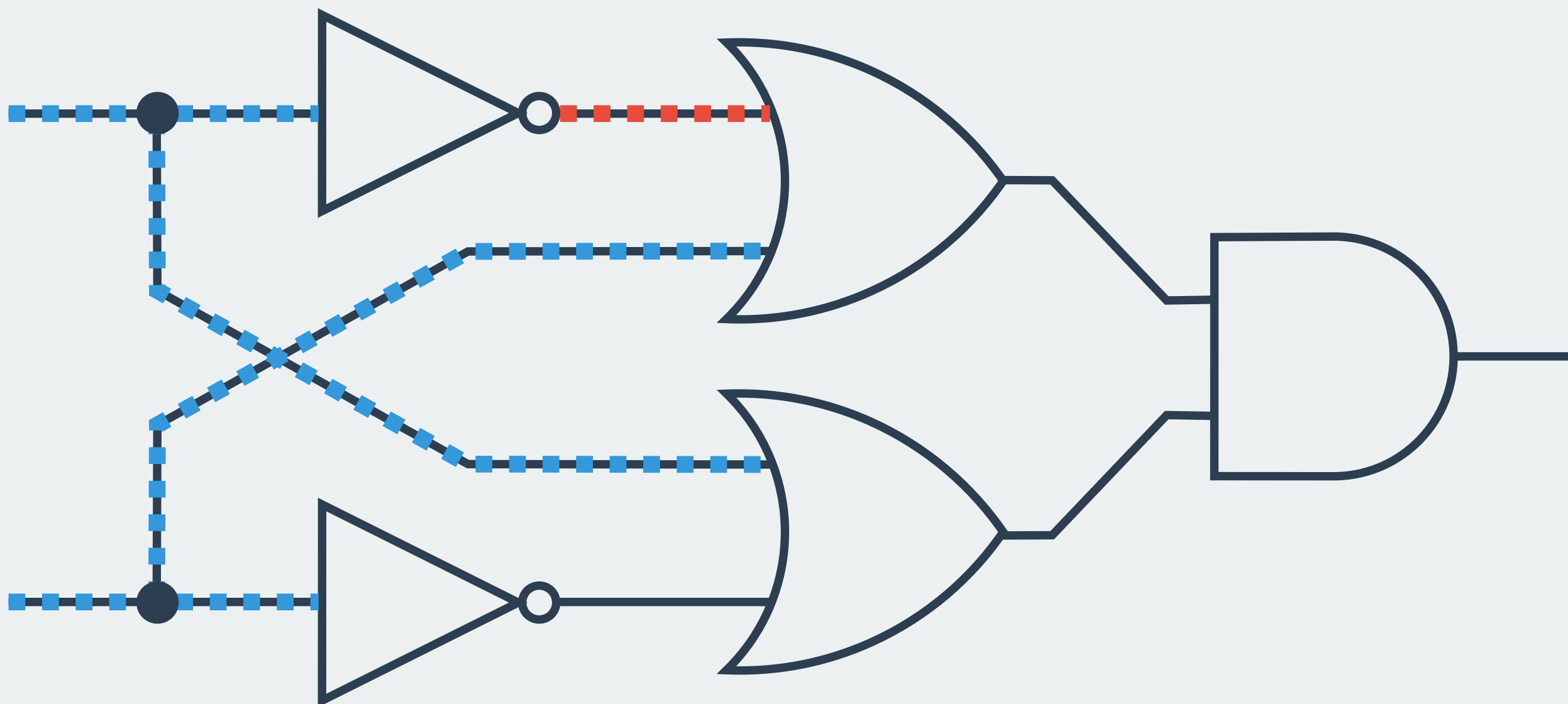


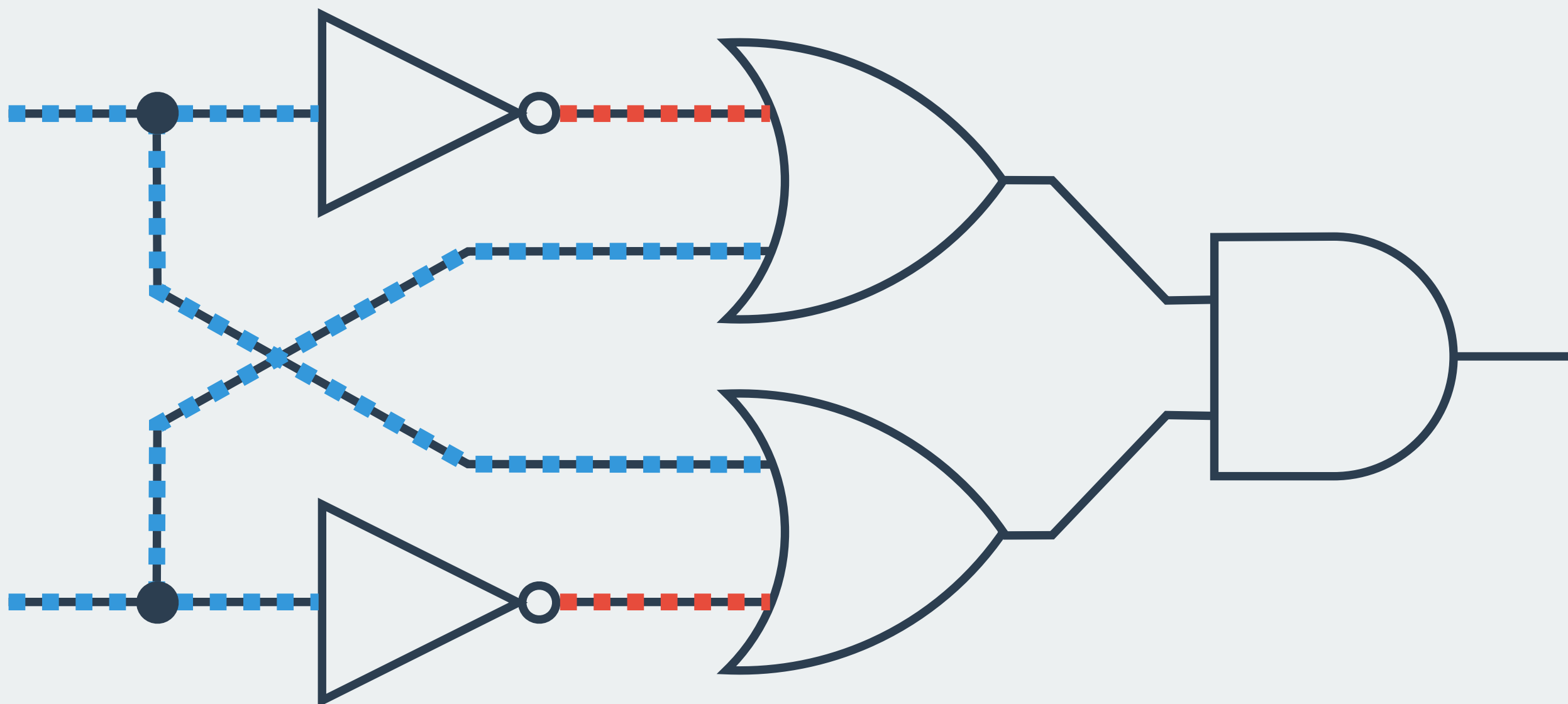


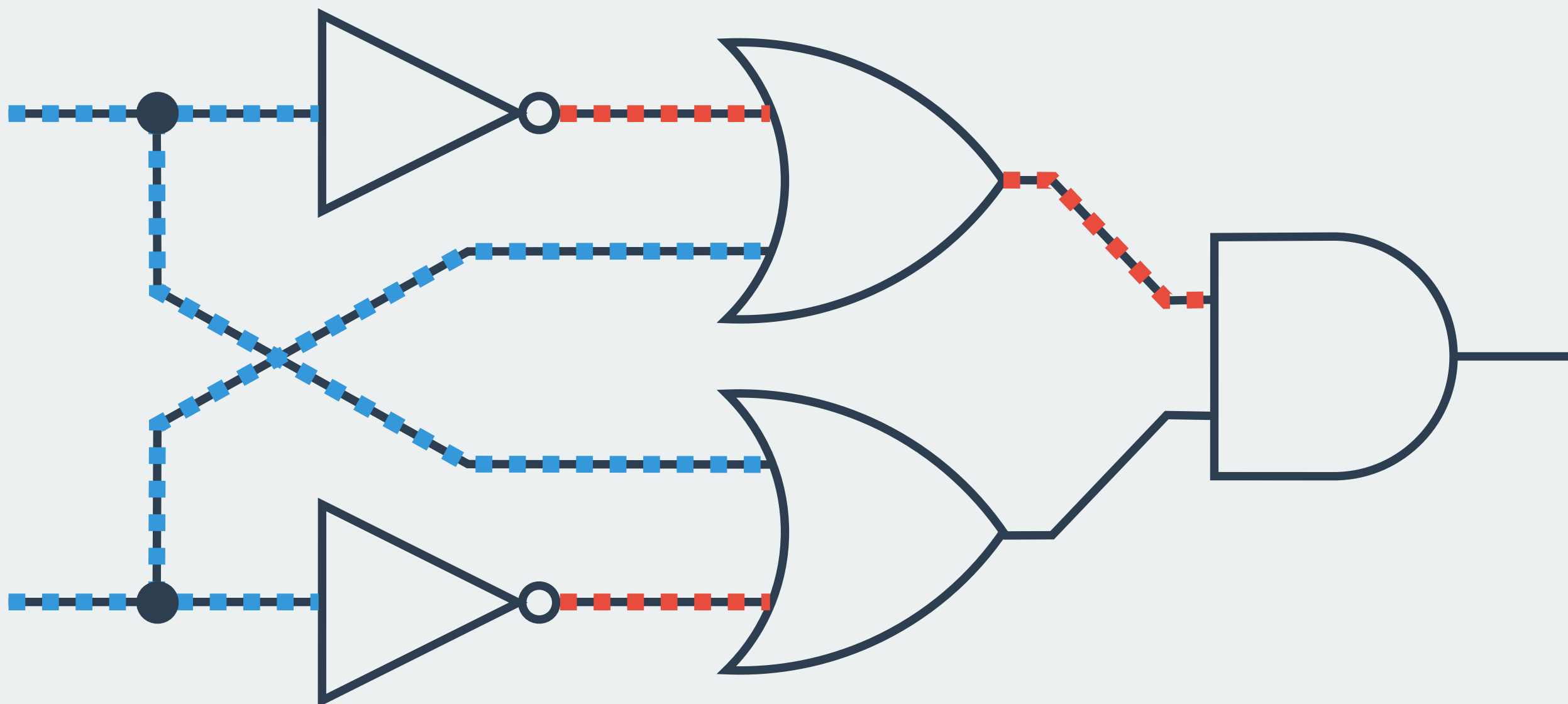


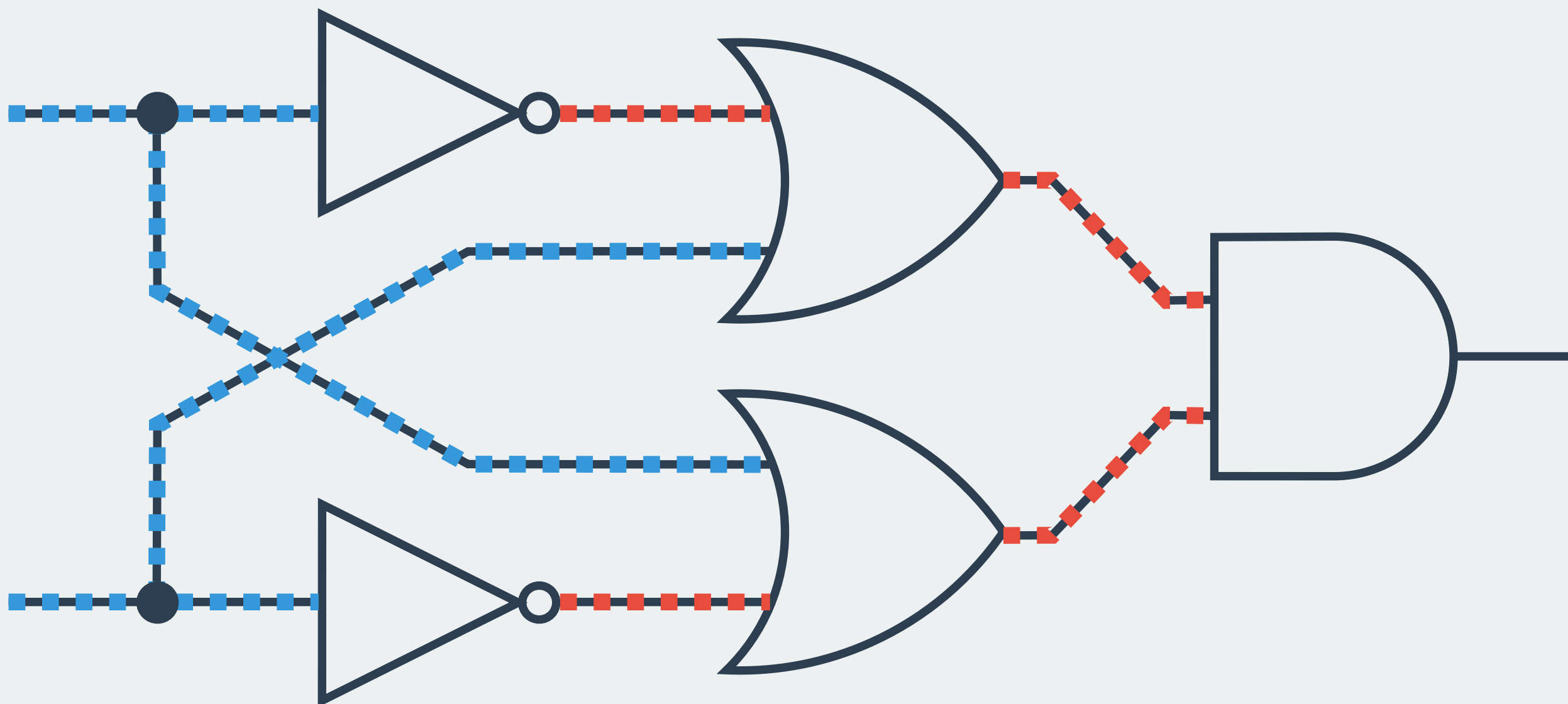


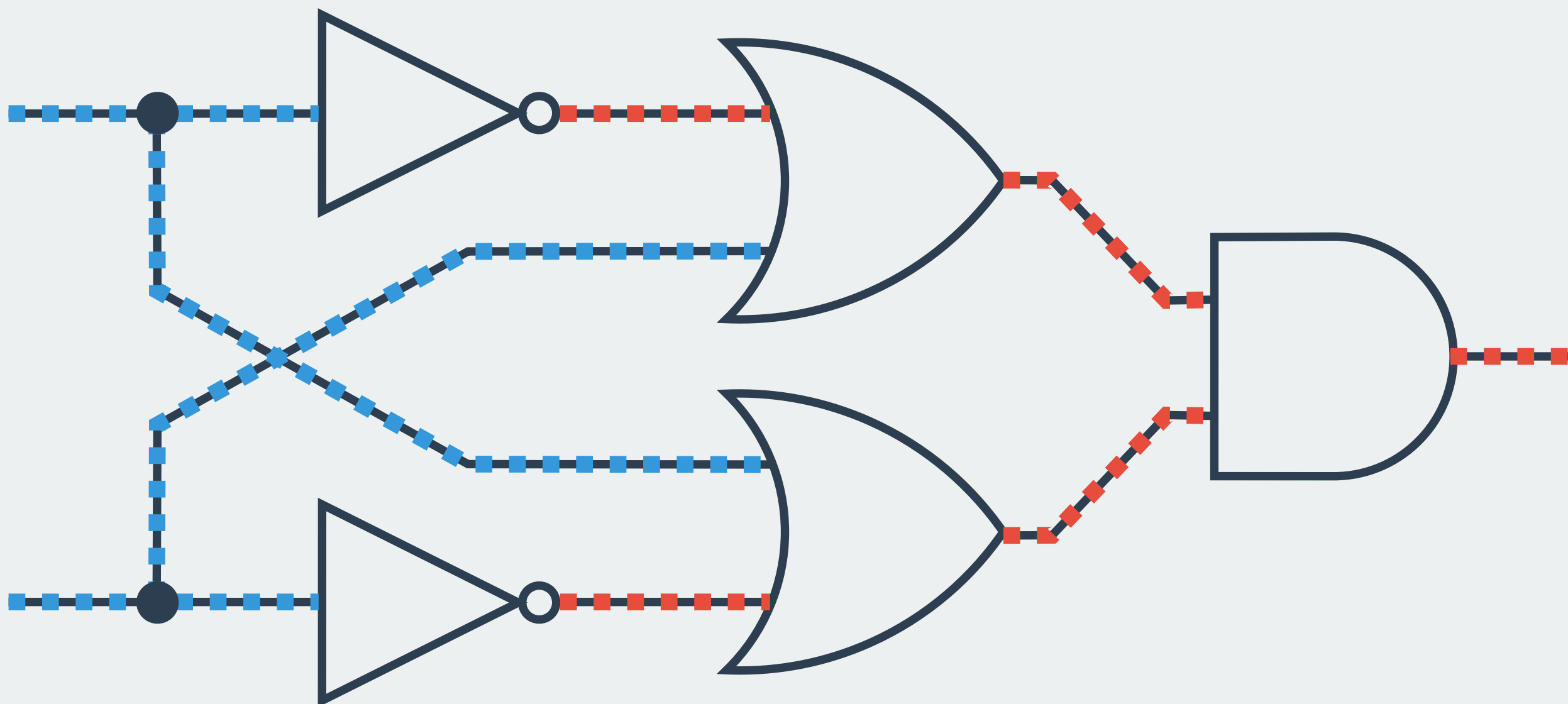


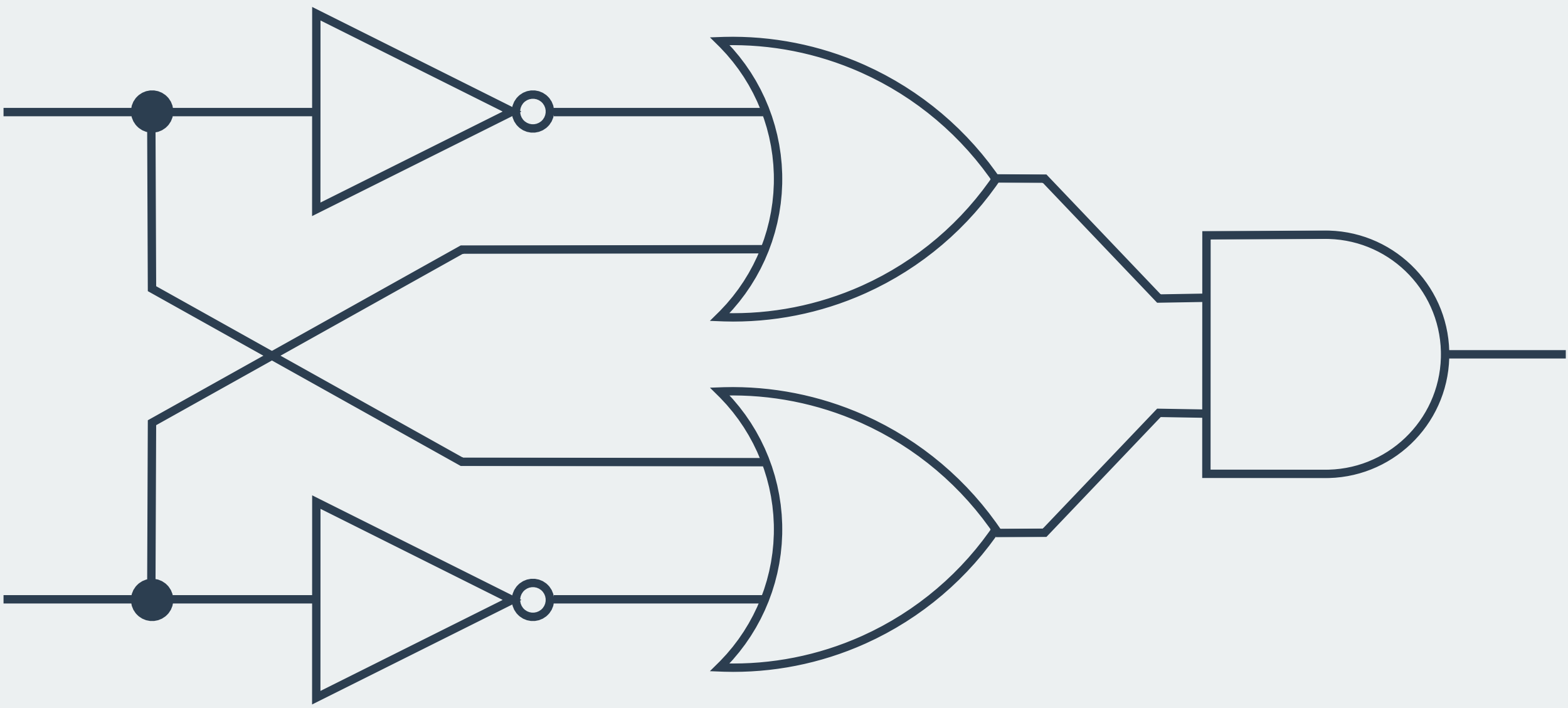


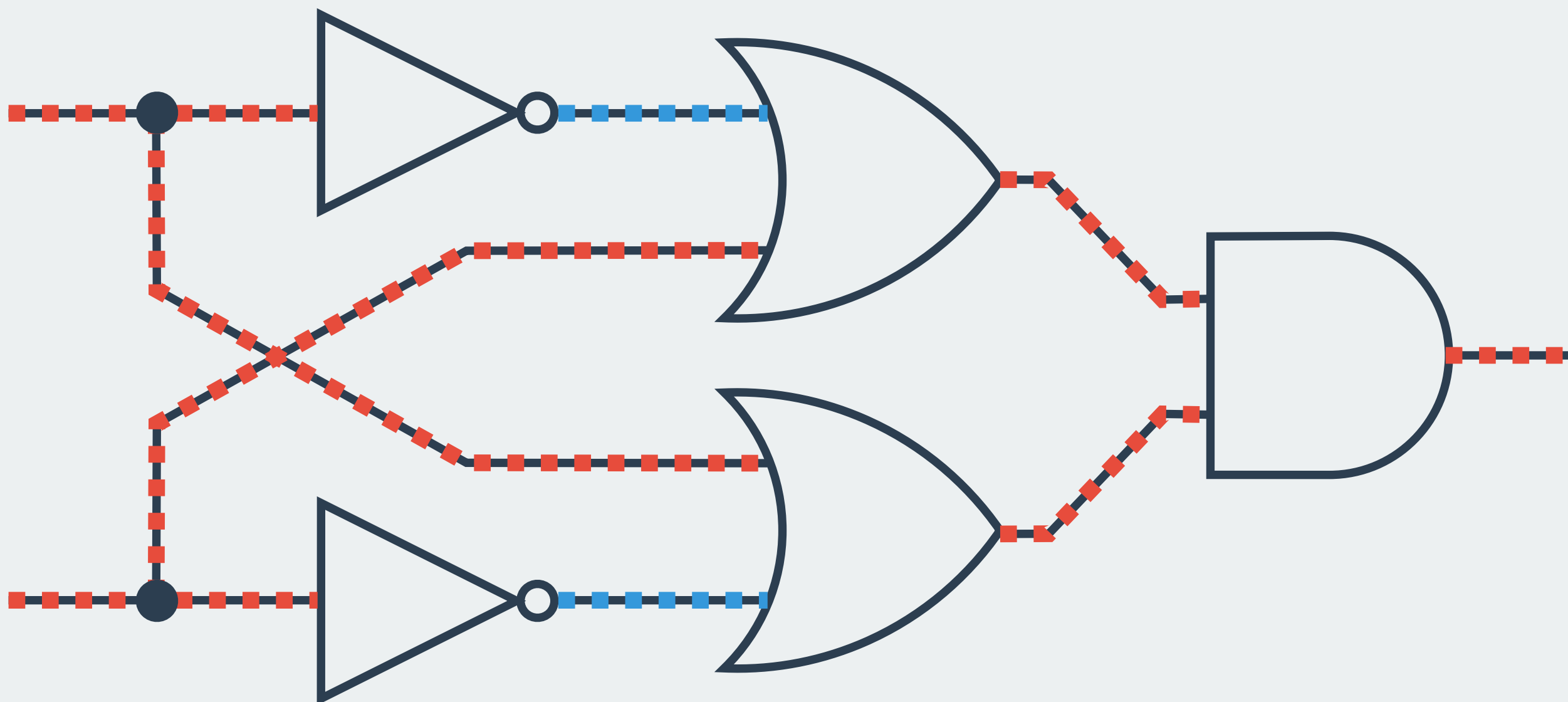


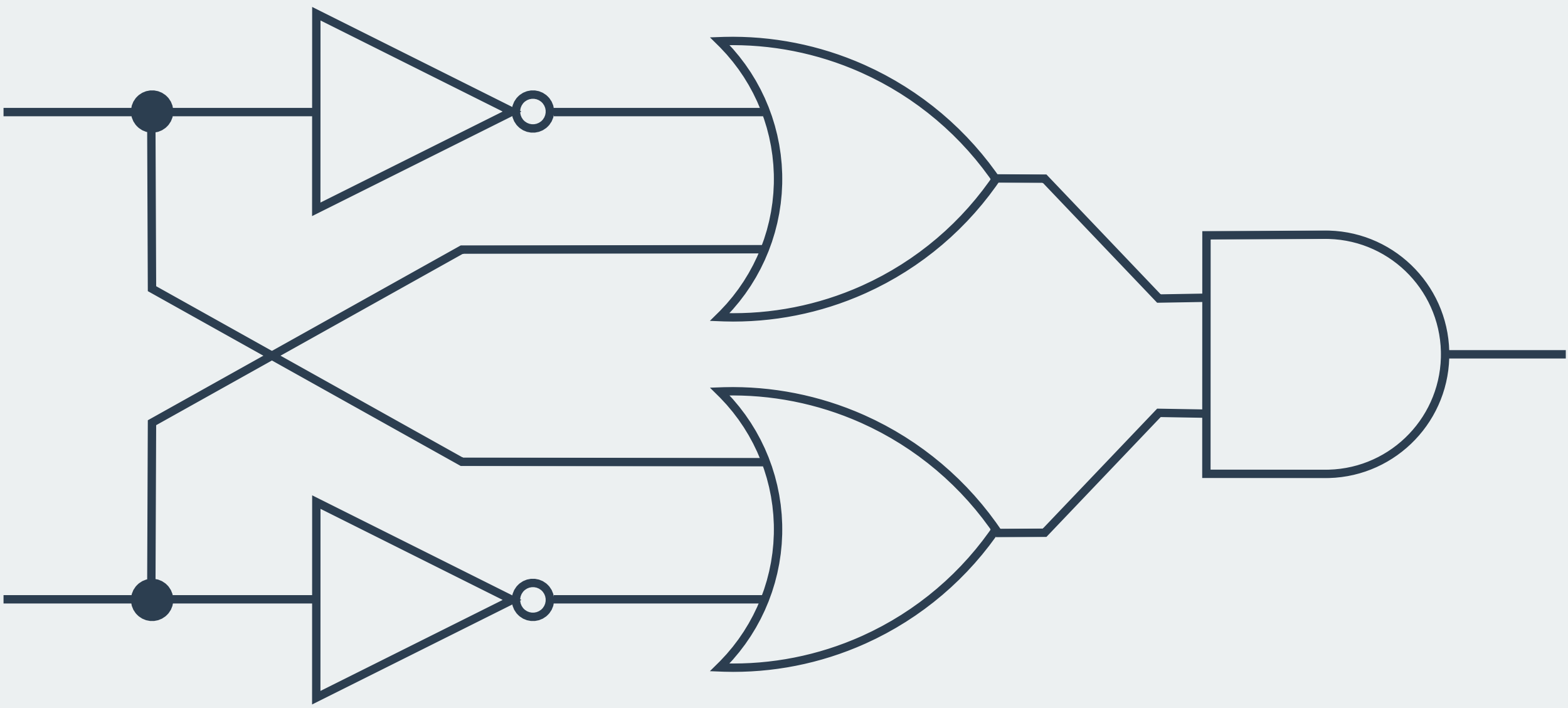


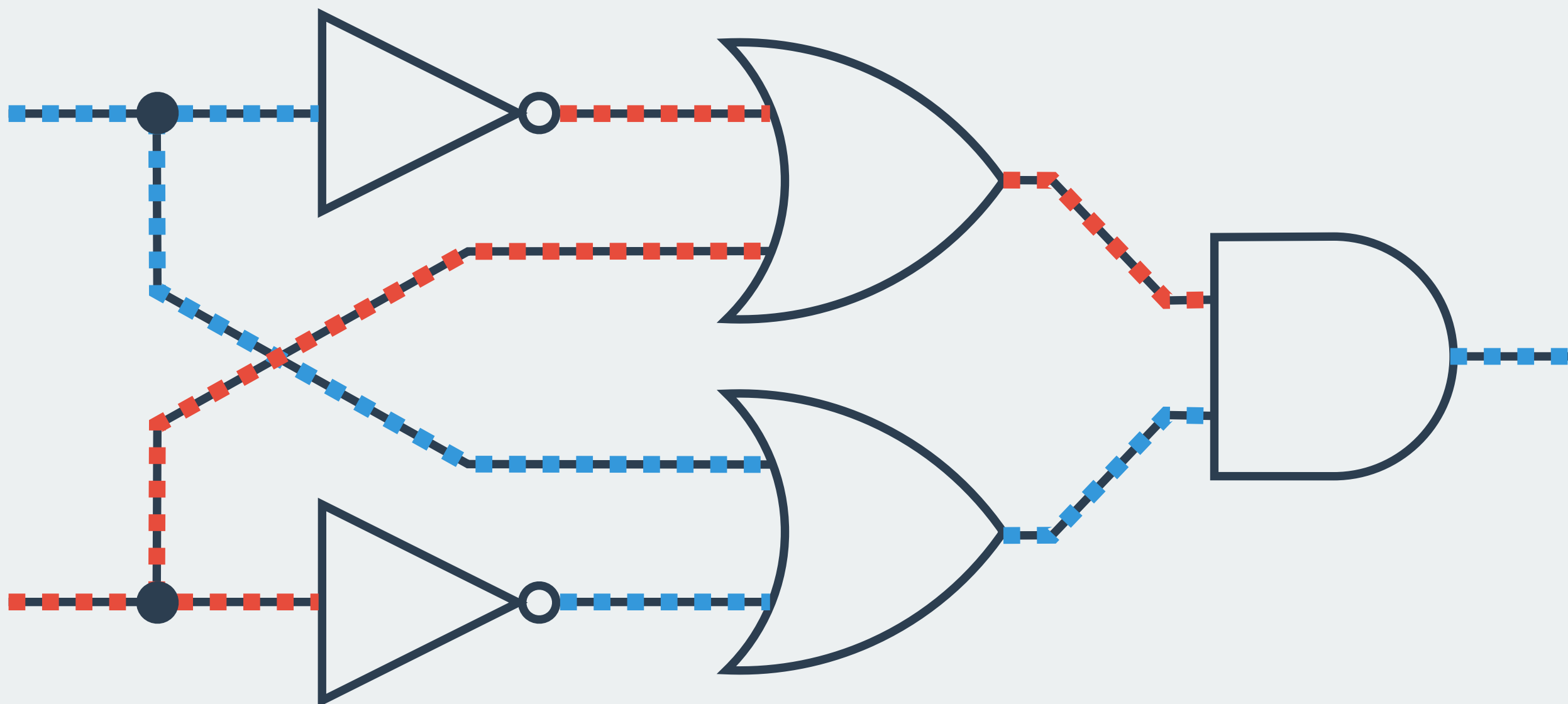


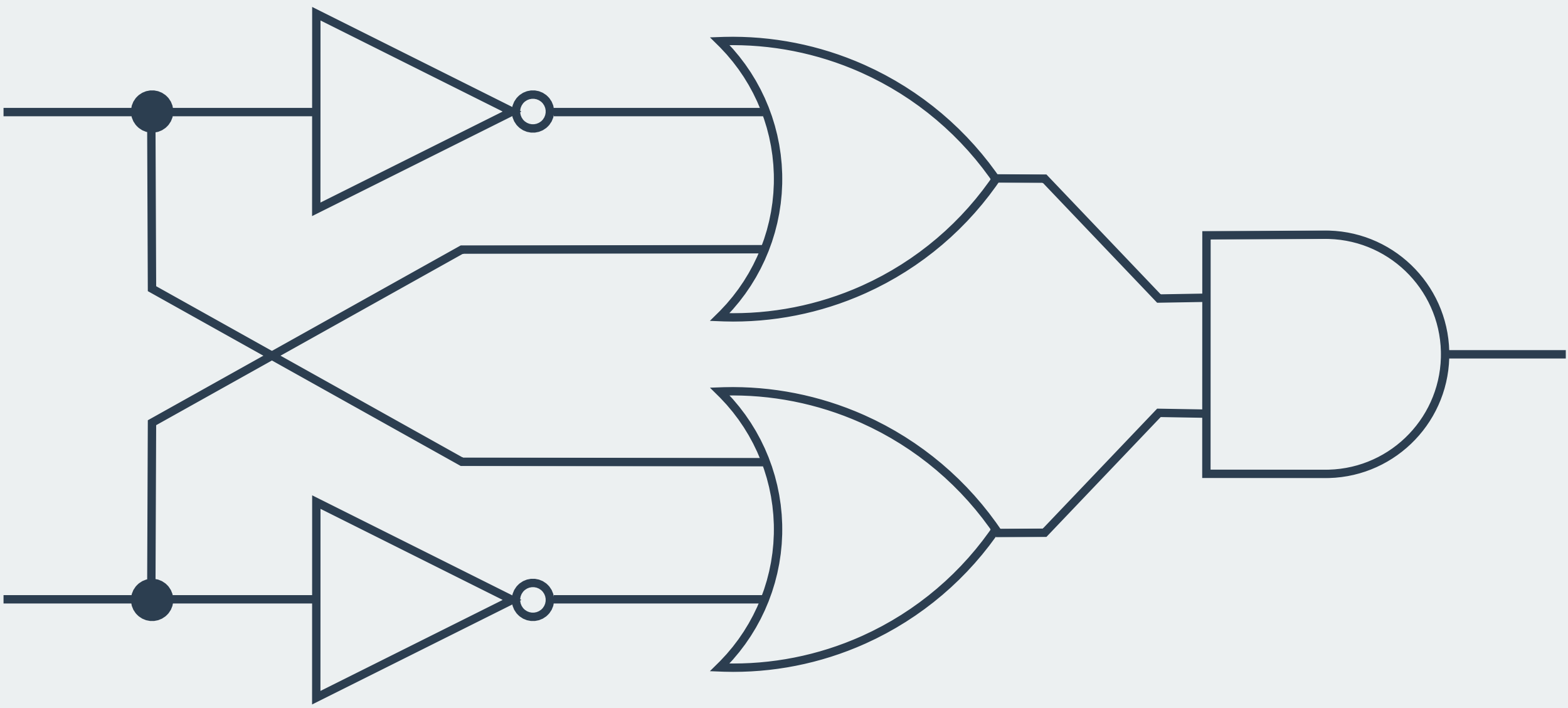


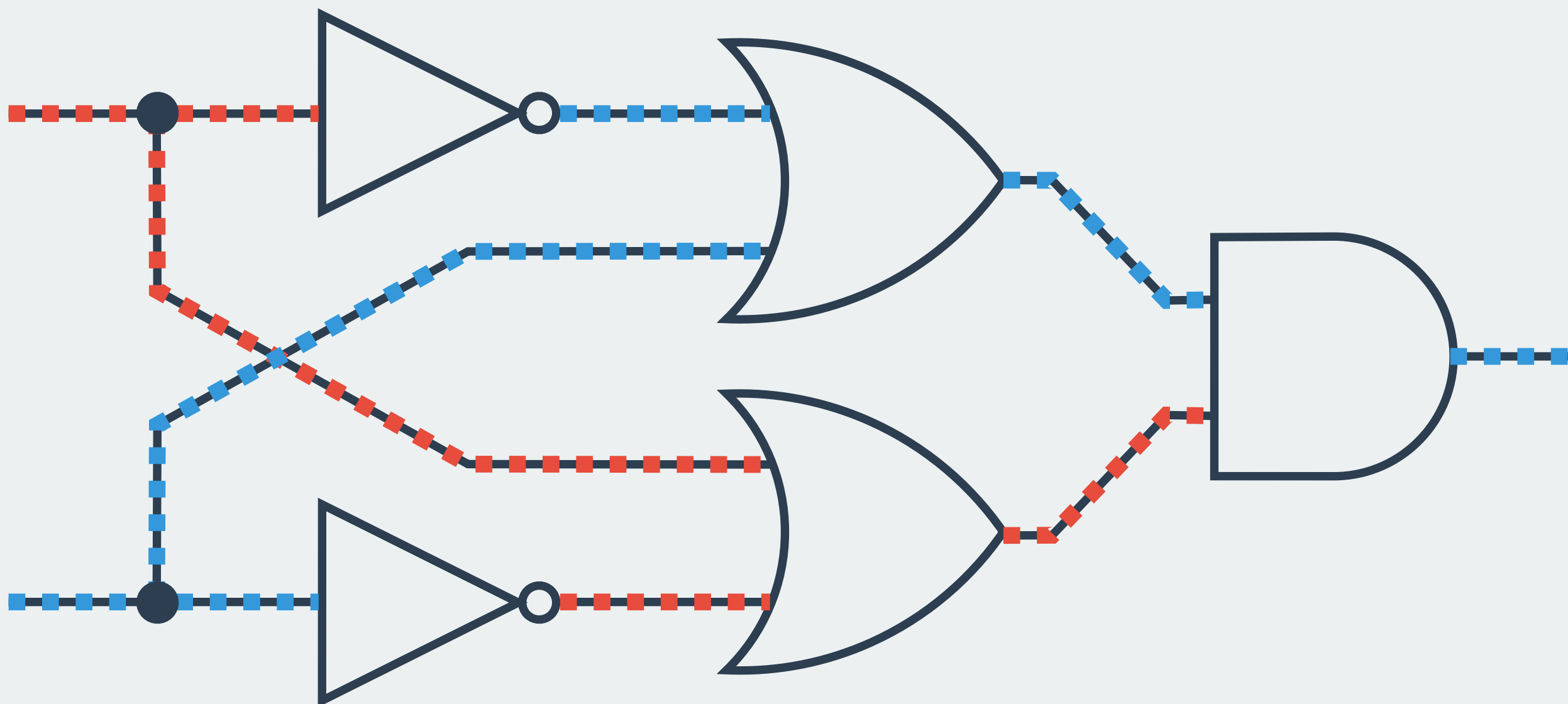


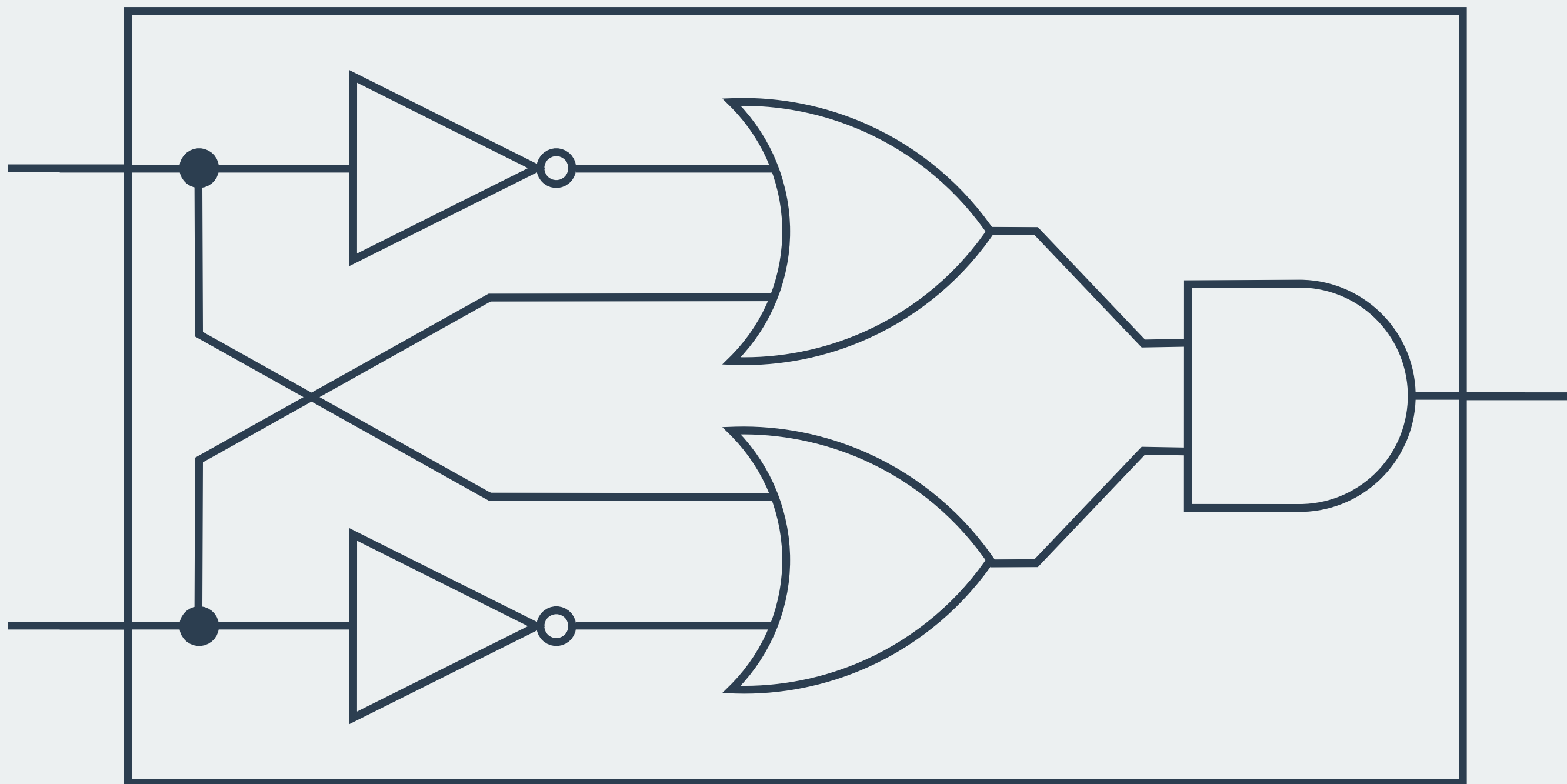


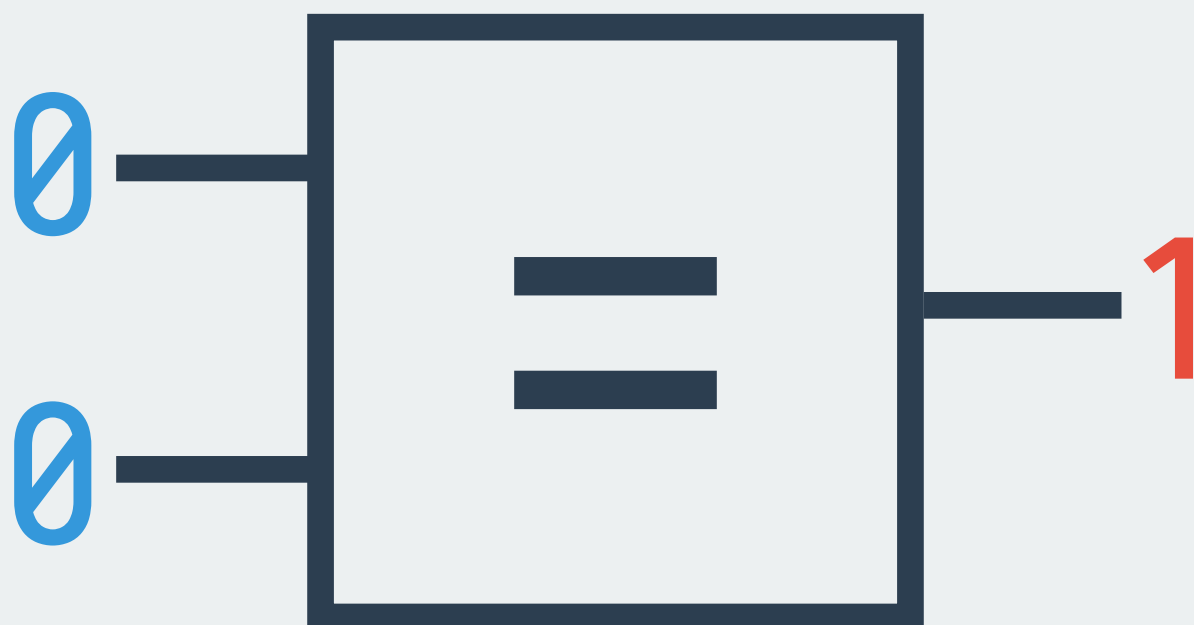


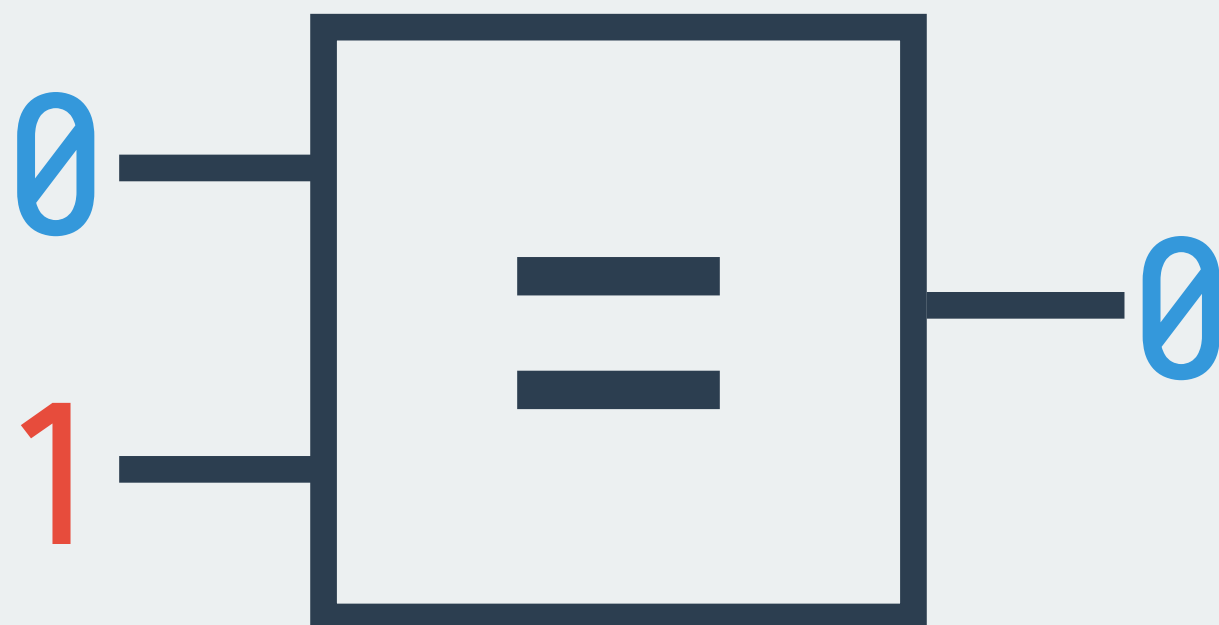














000

001

010

011

100

101

110

111

$$000 = 0$$

$$001 = 1$$

$$010 = 2$$

$$011 = 3$$

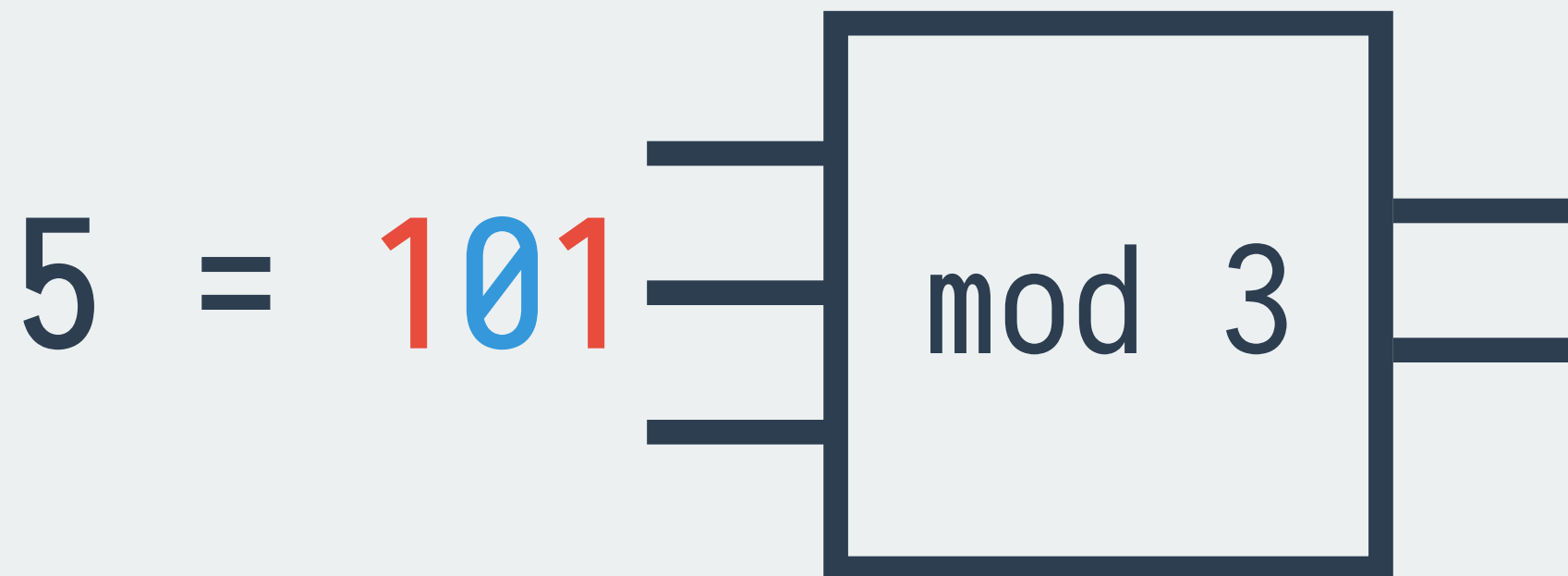
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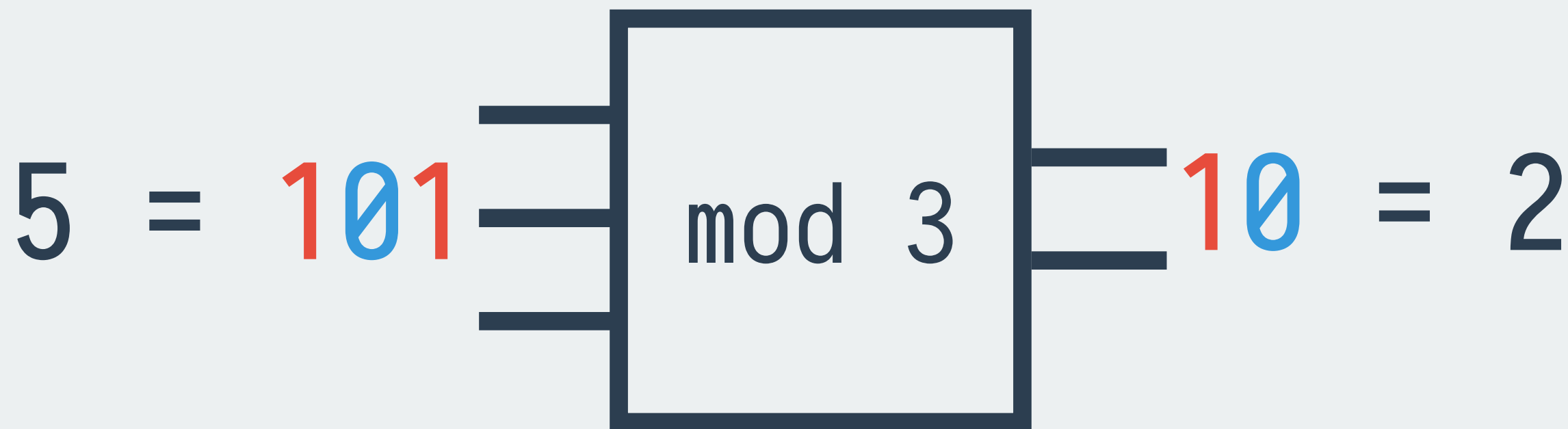
$$101 = 5$$

$$110 = 6$$

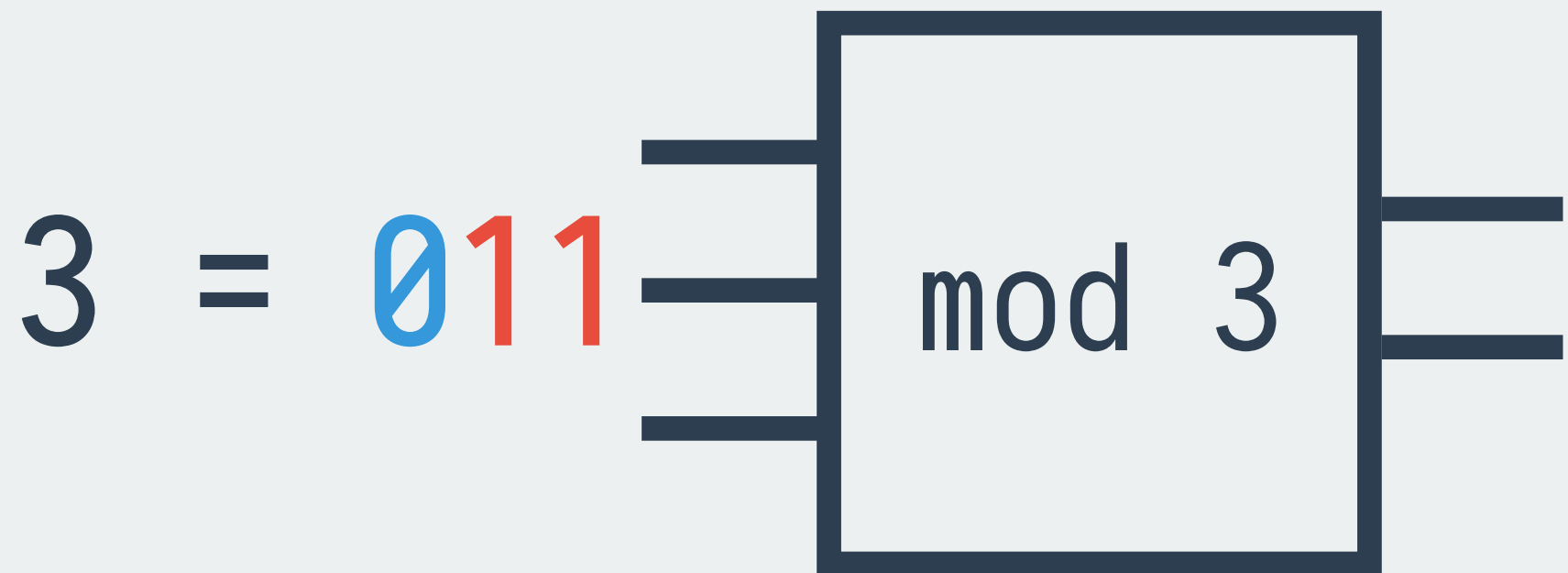
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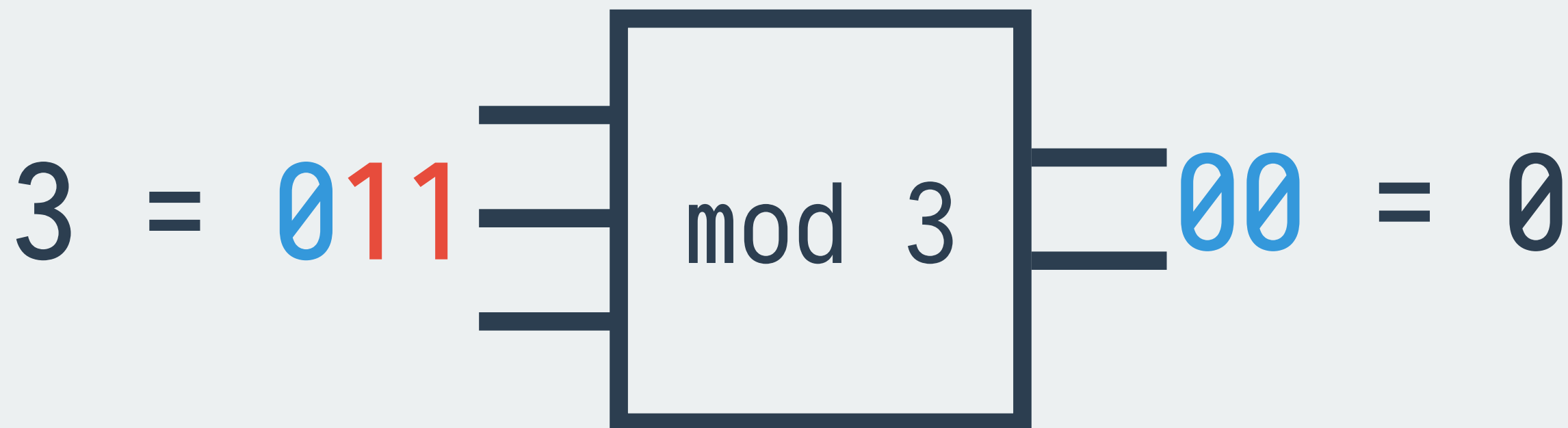


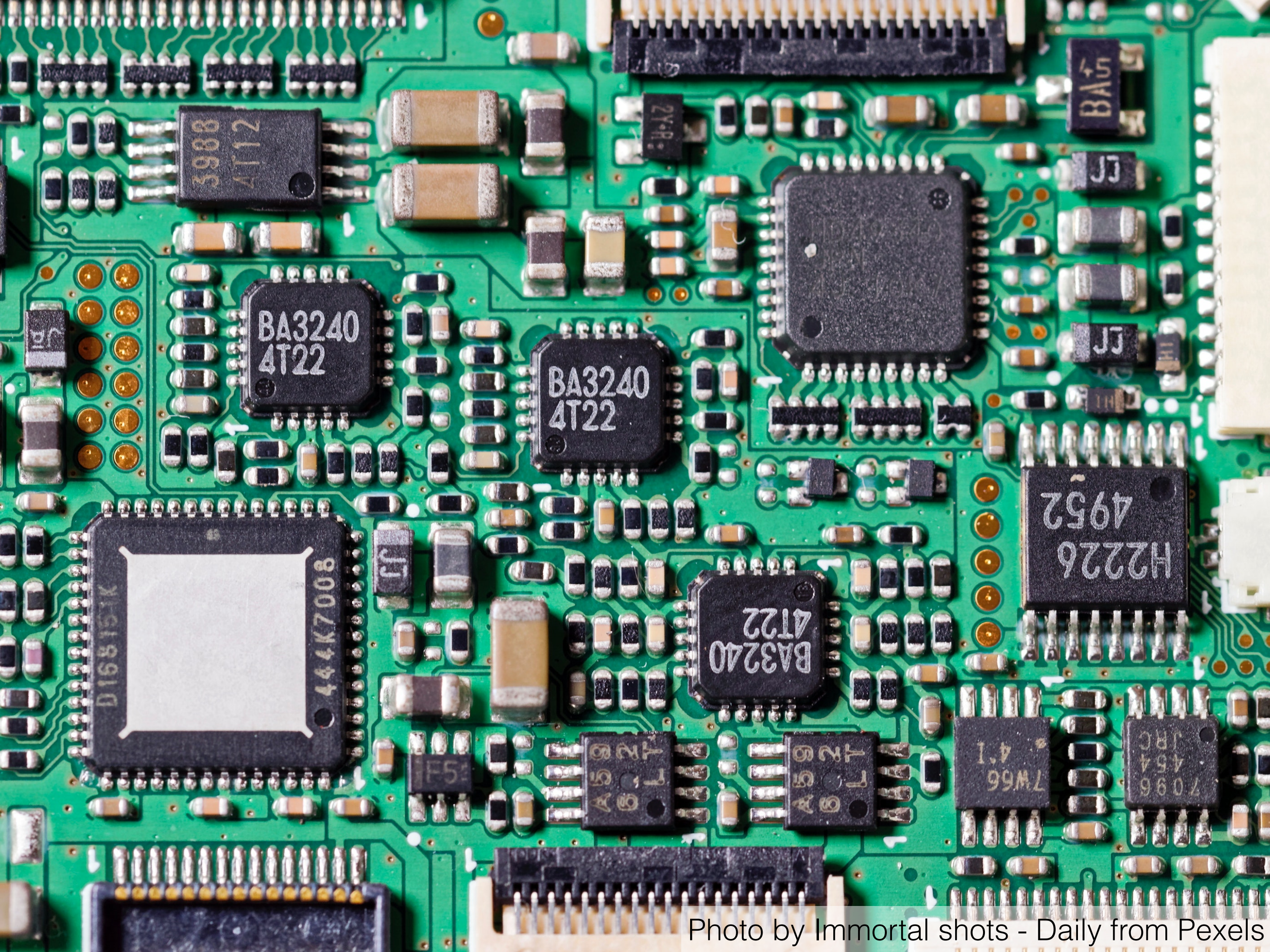


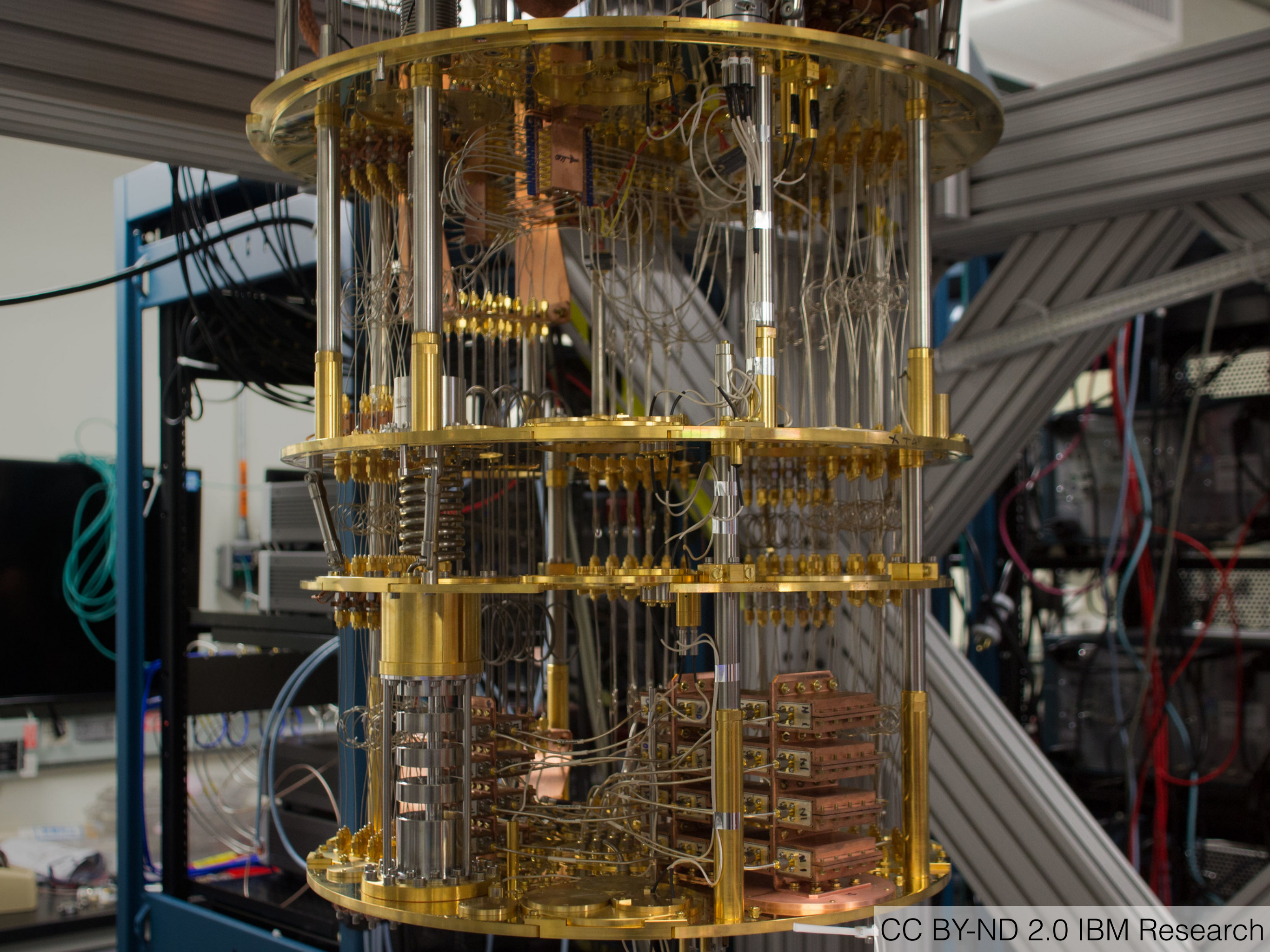


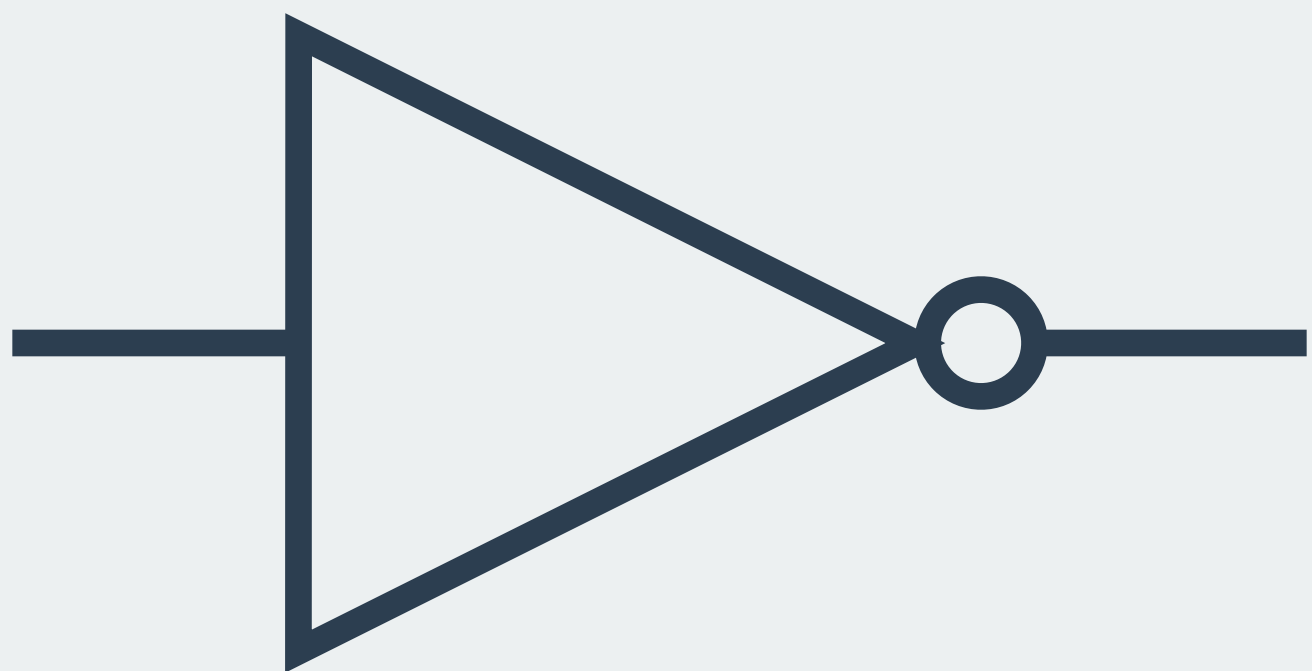


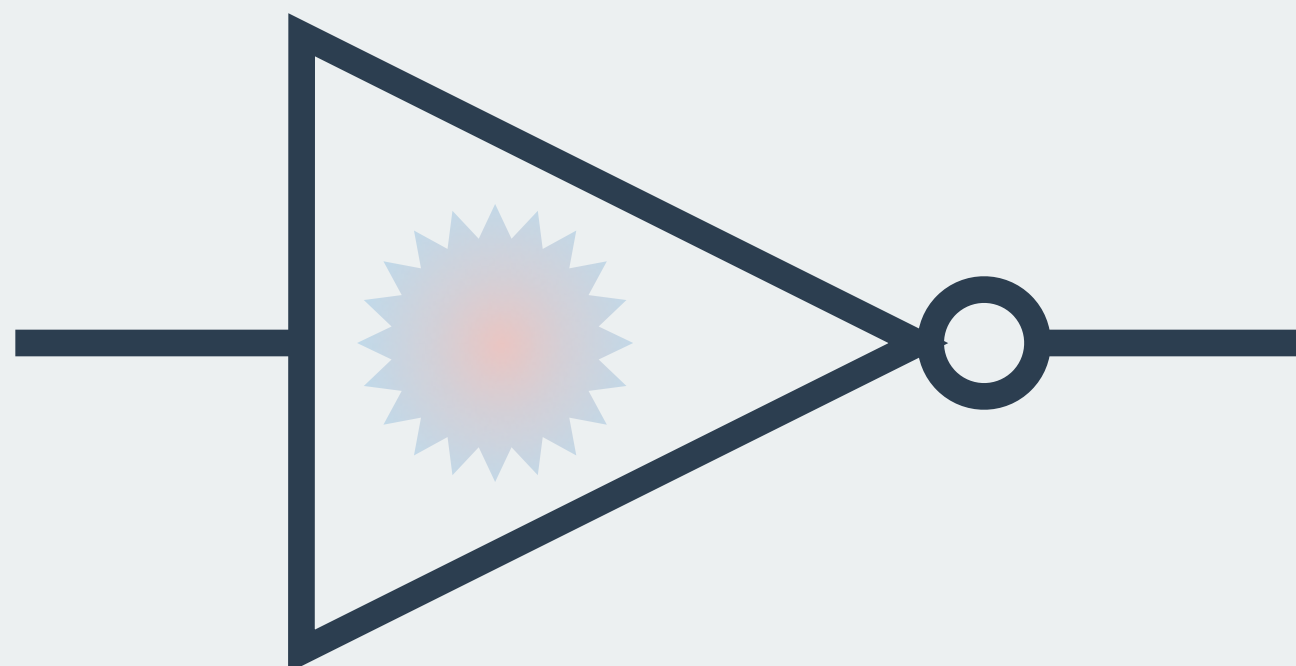


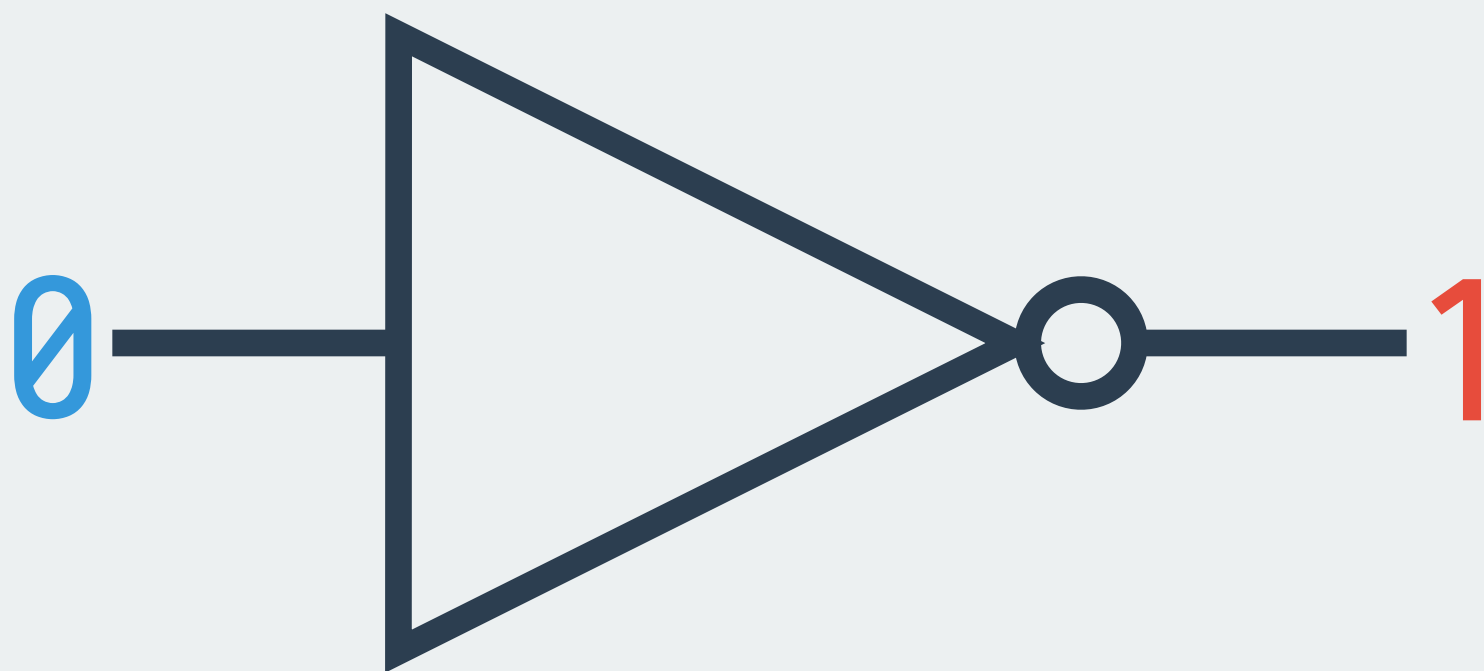


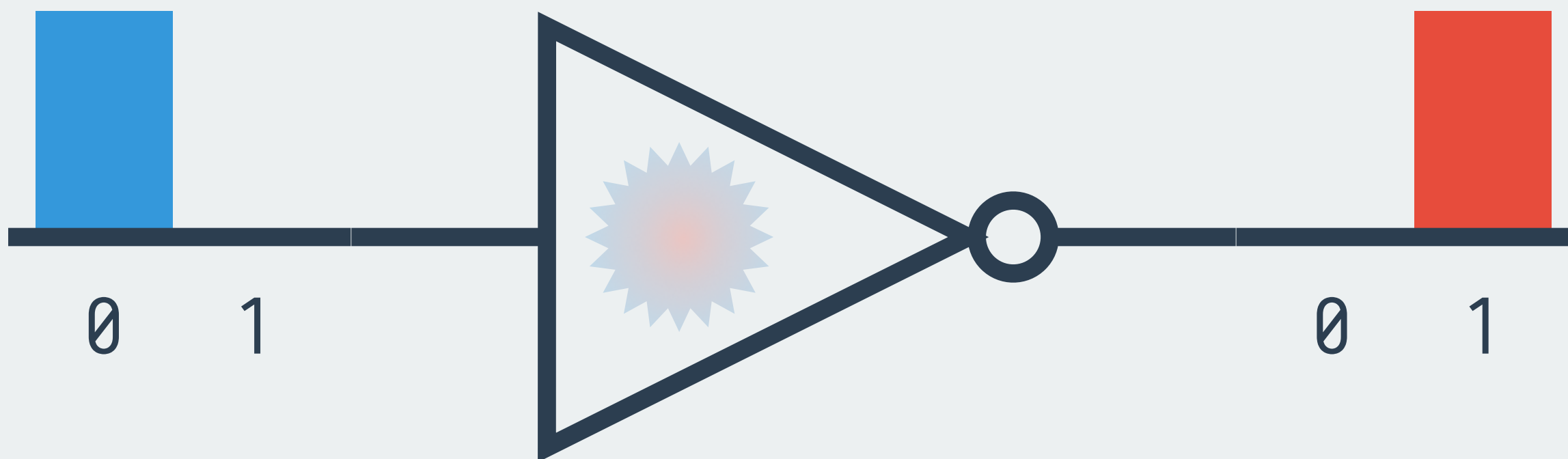


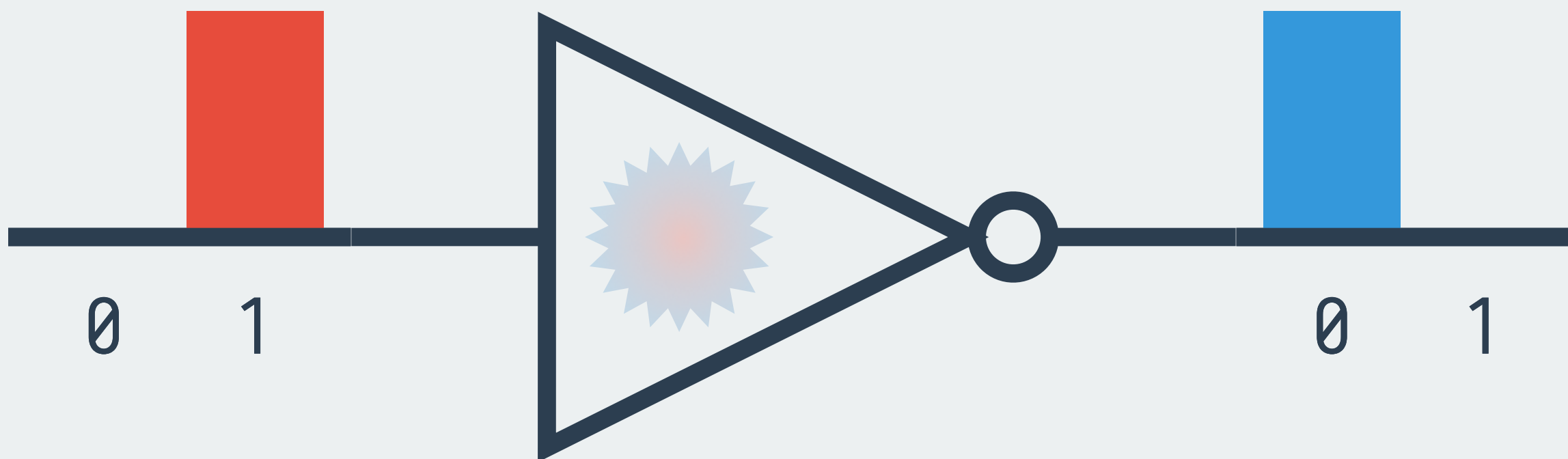


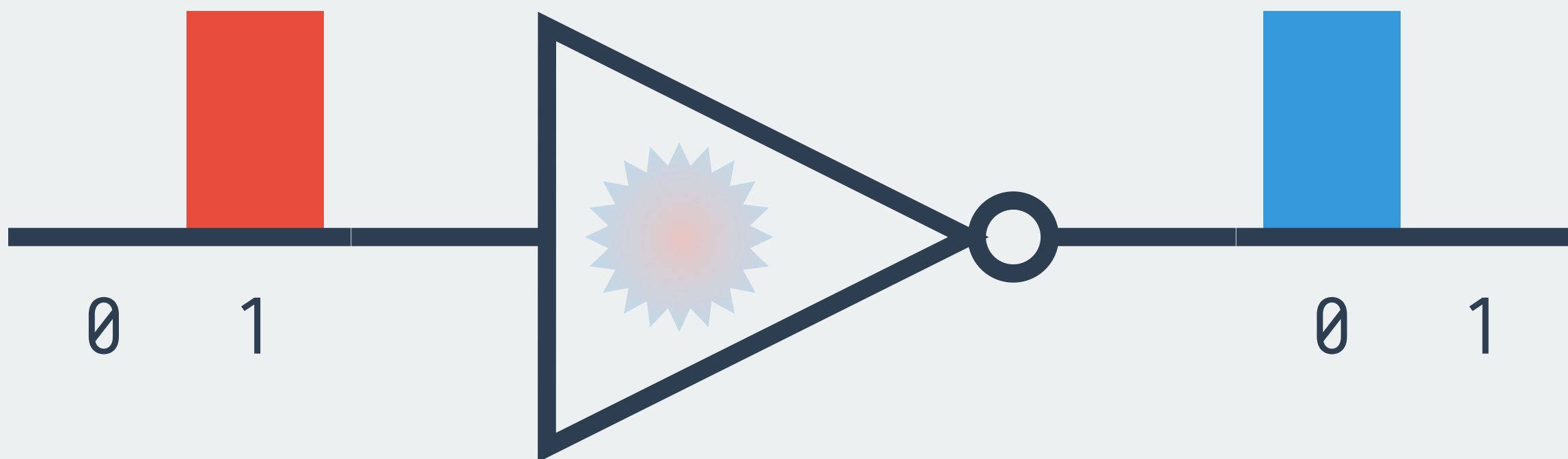


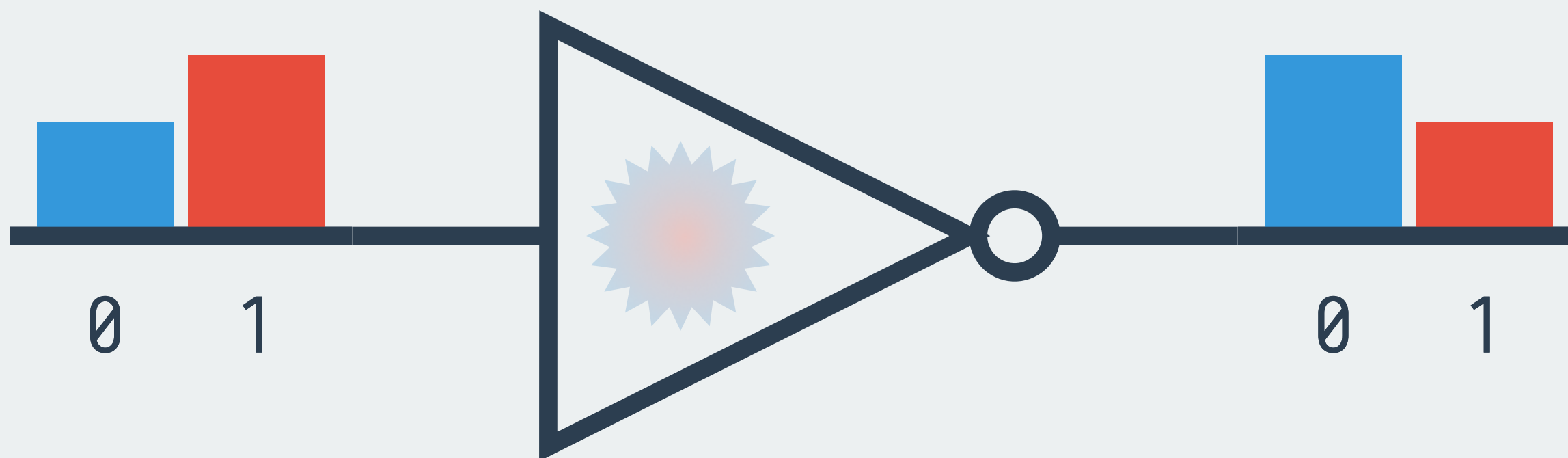


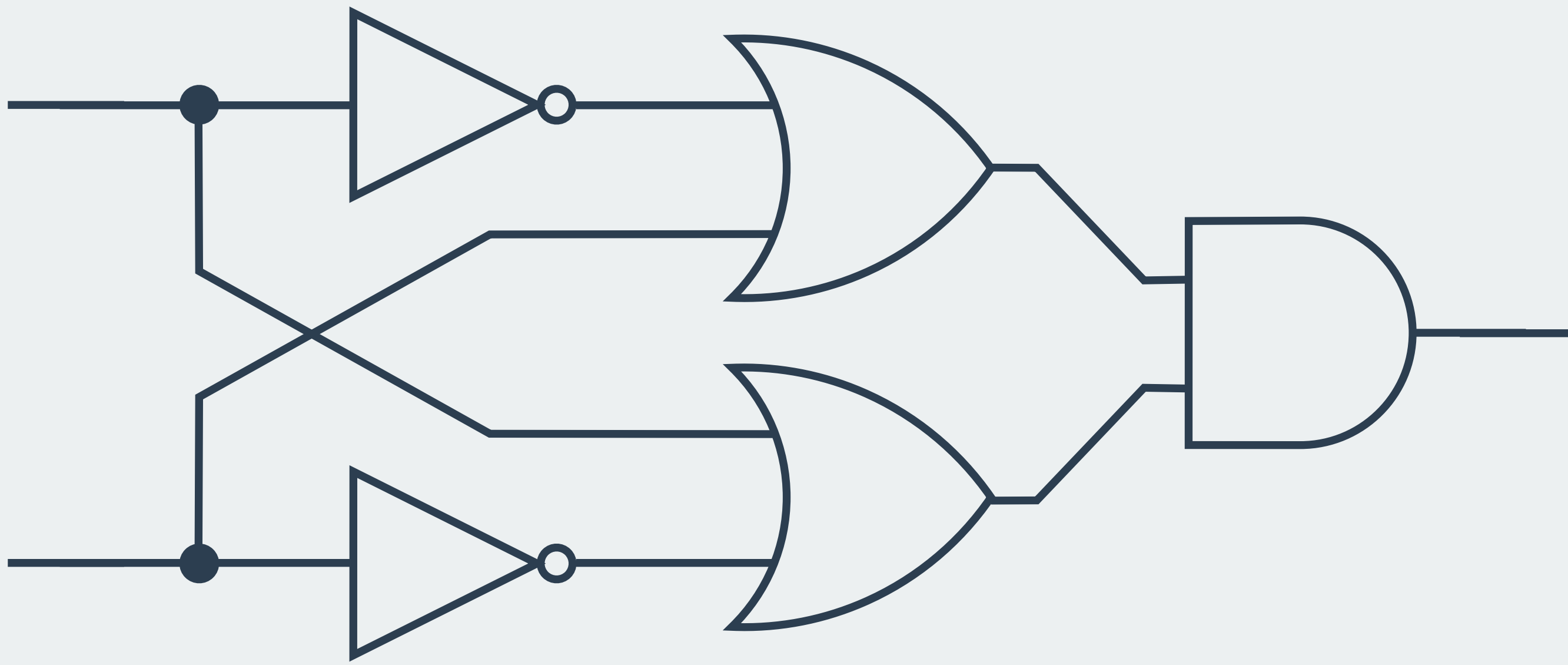


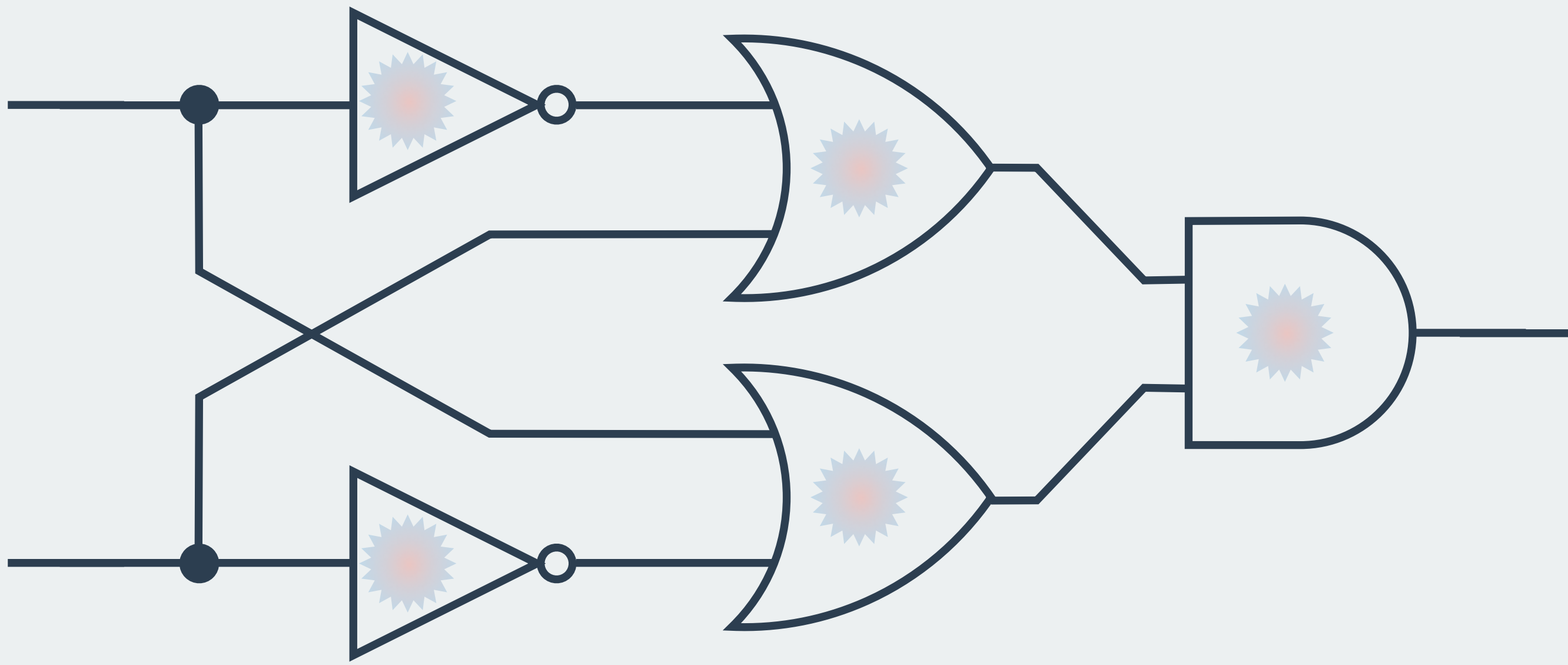


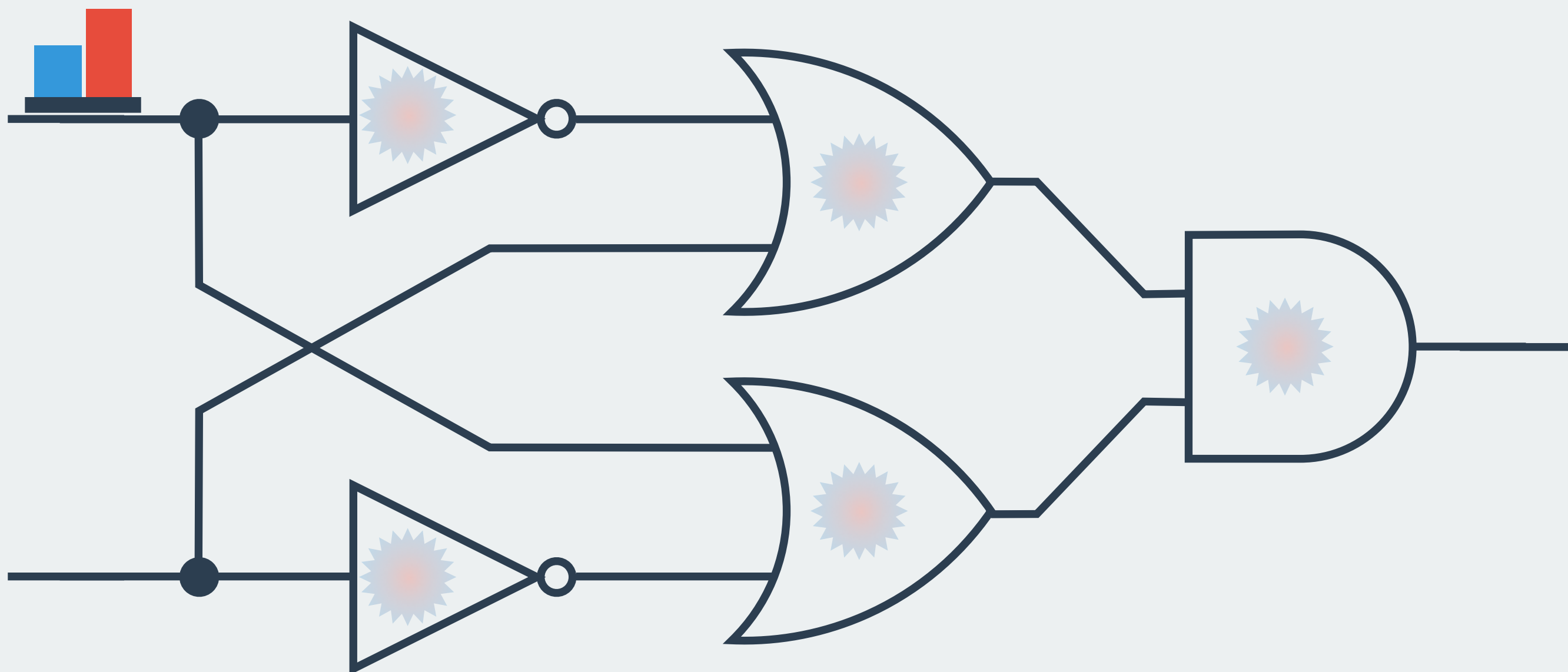


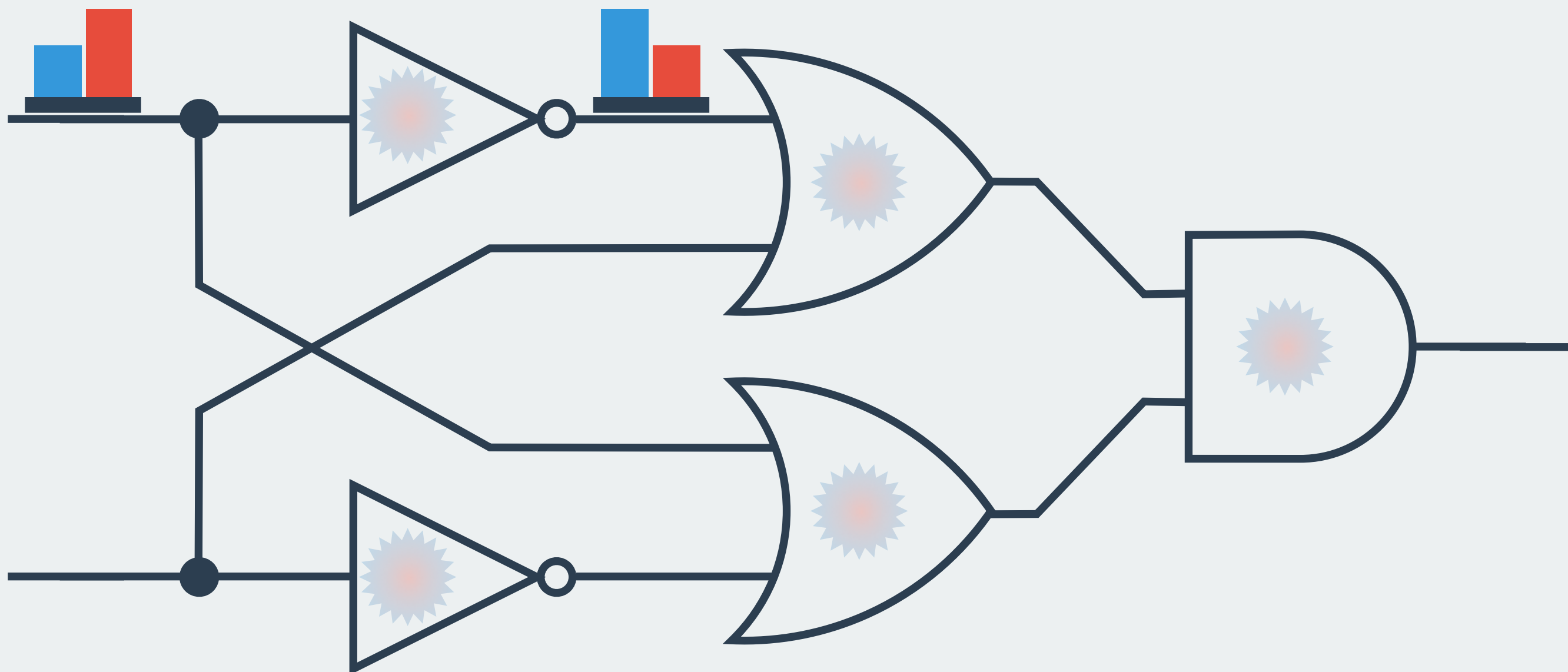


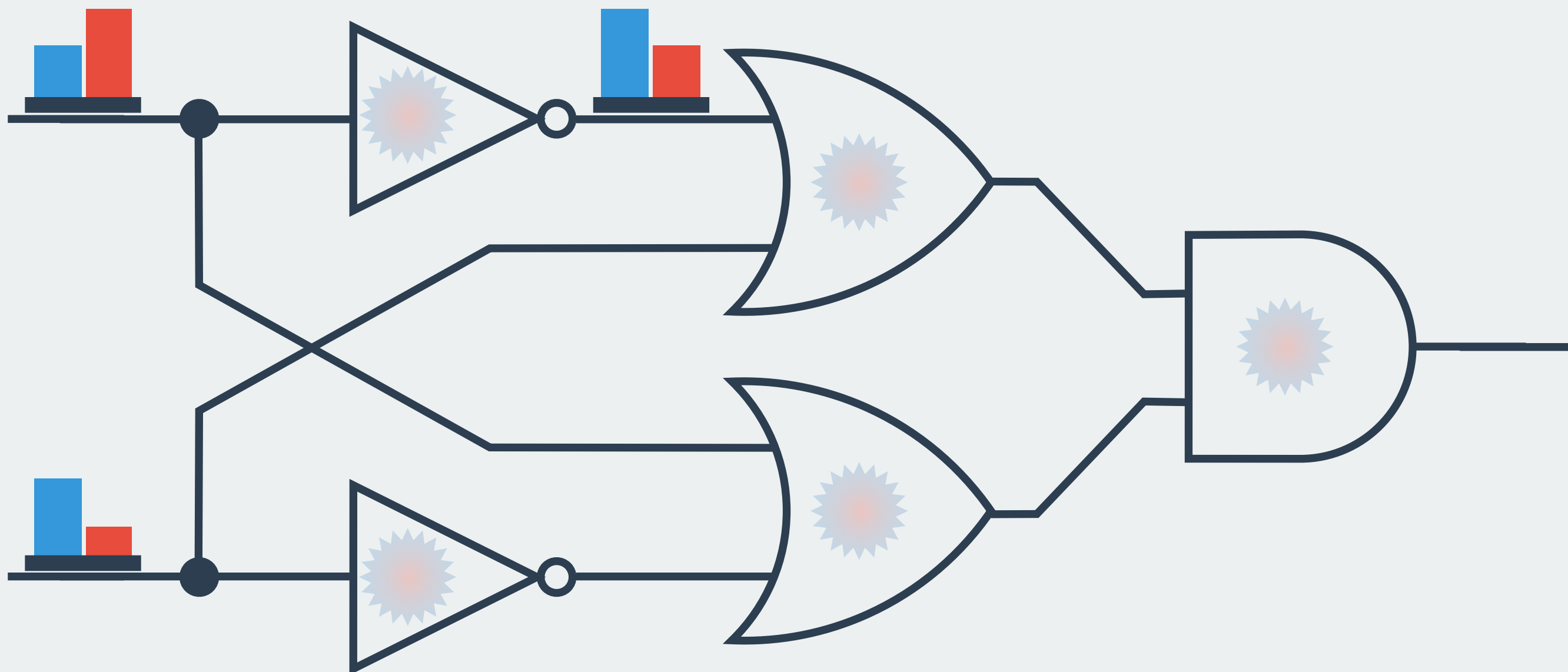


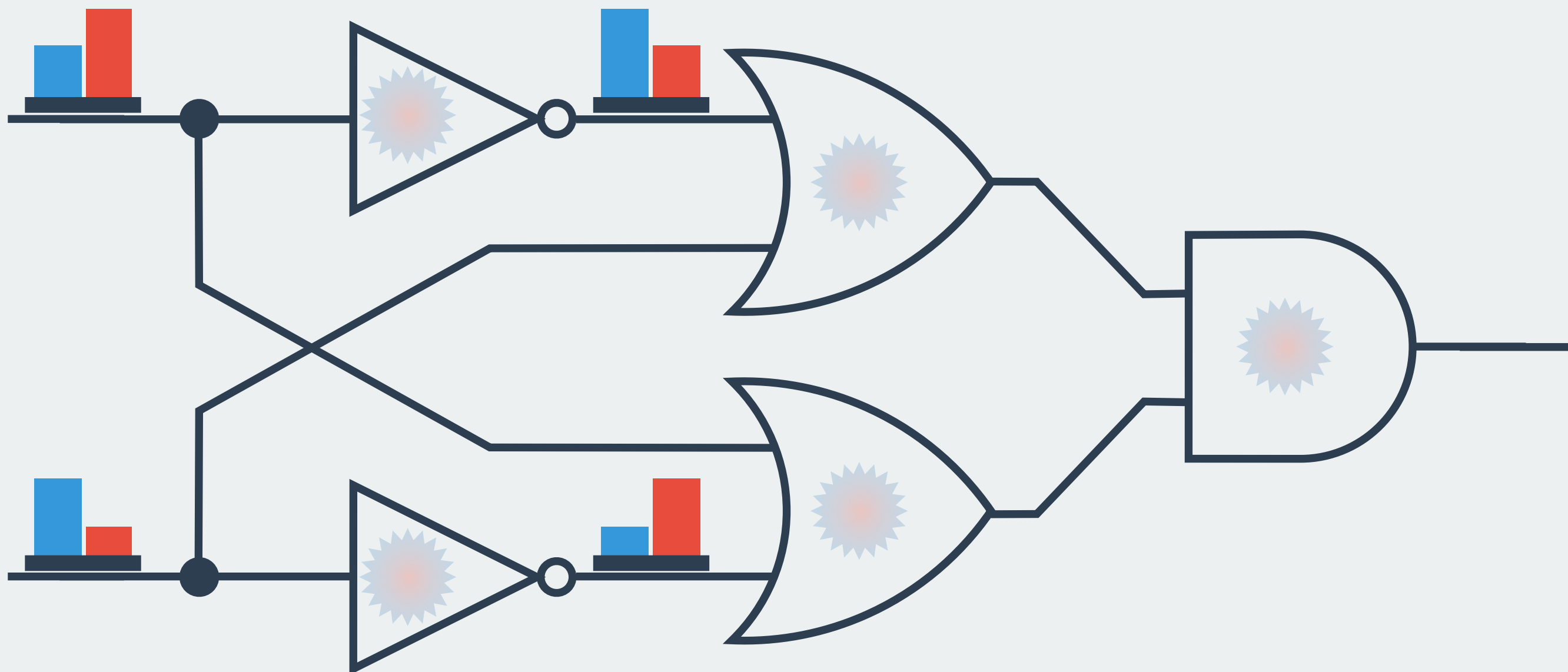


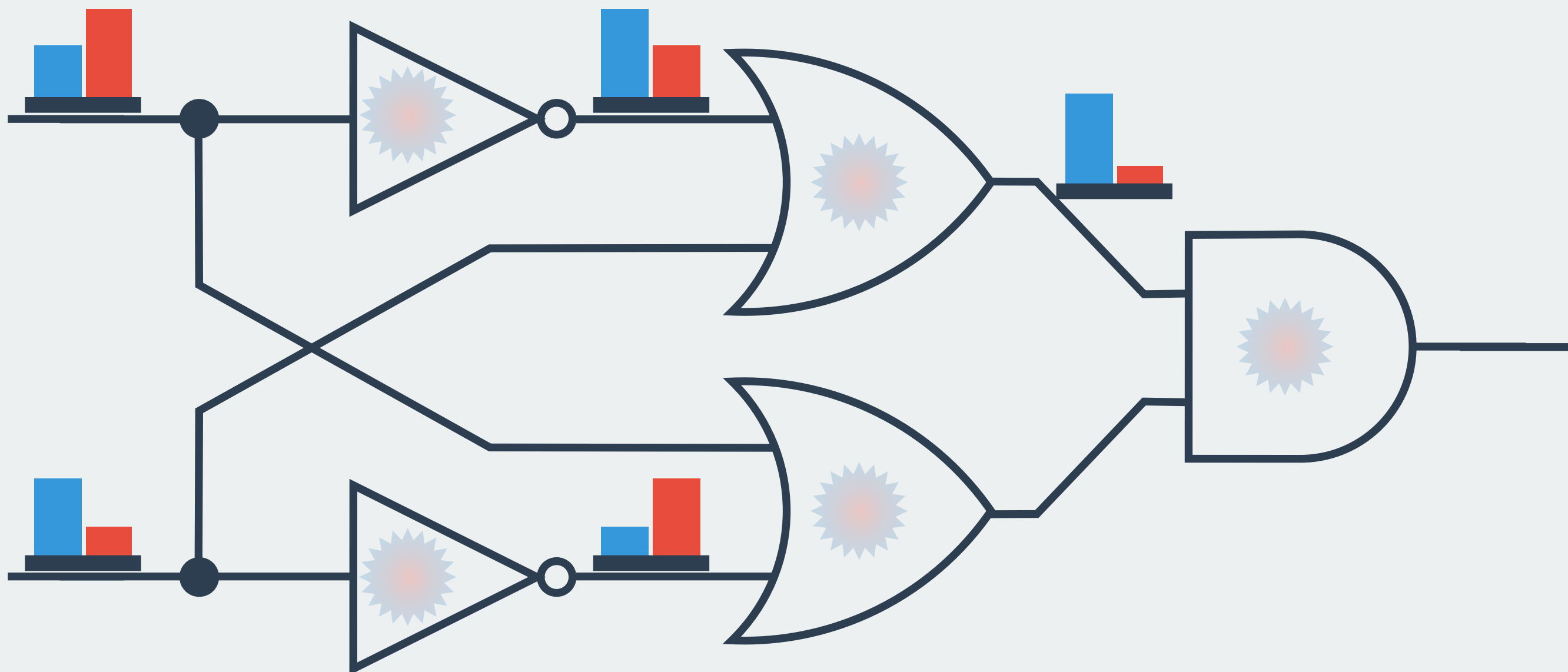


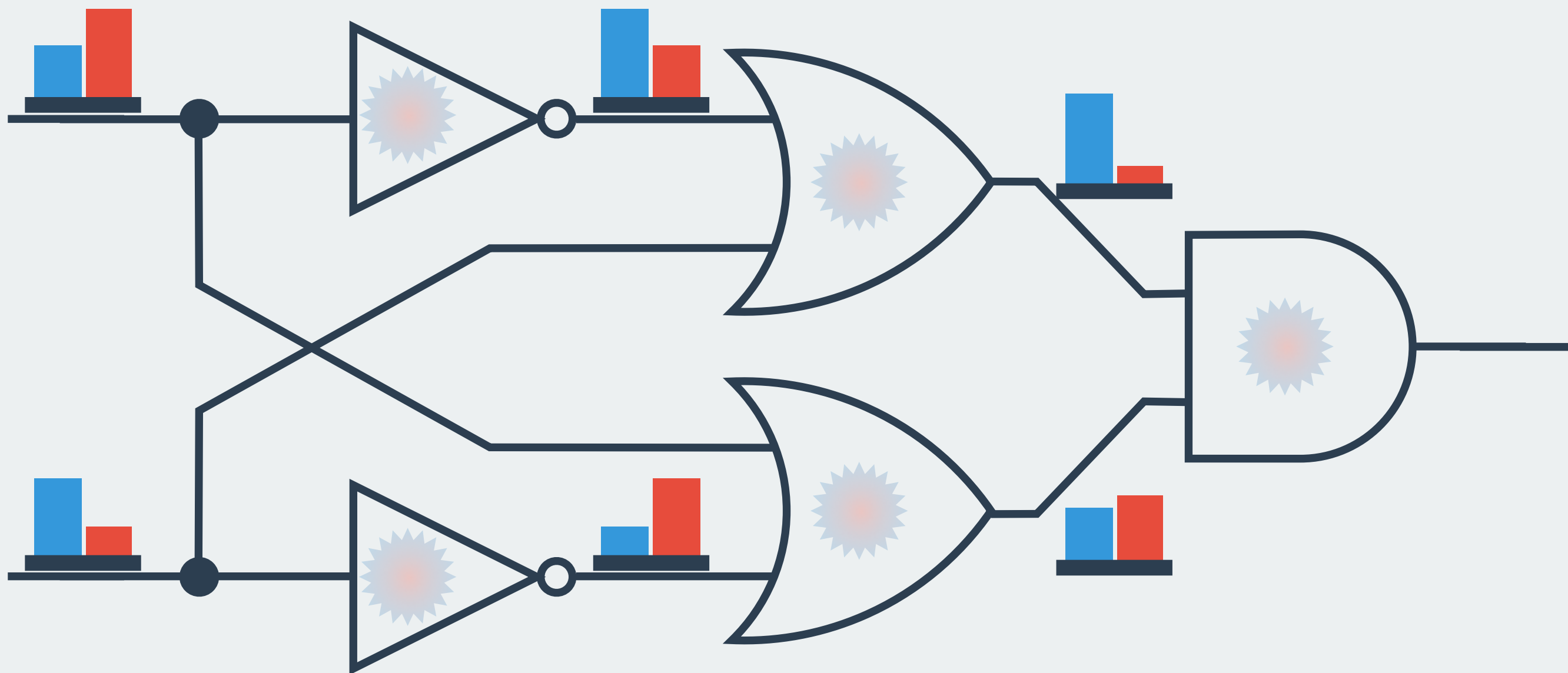


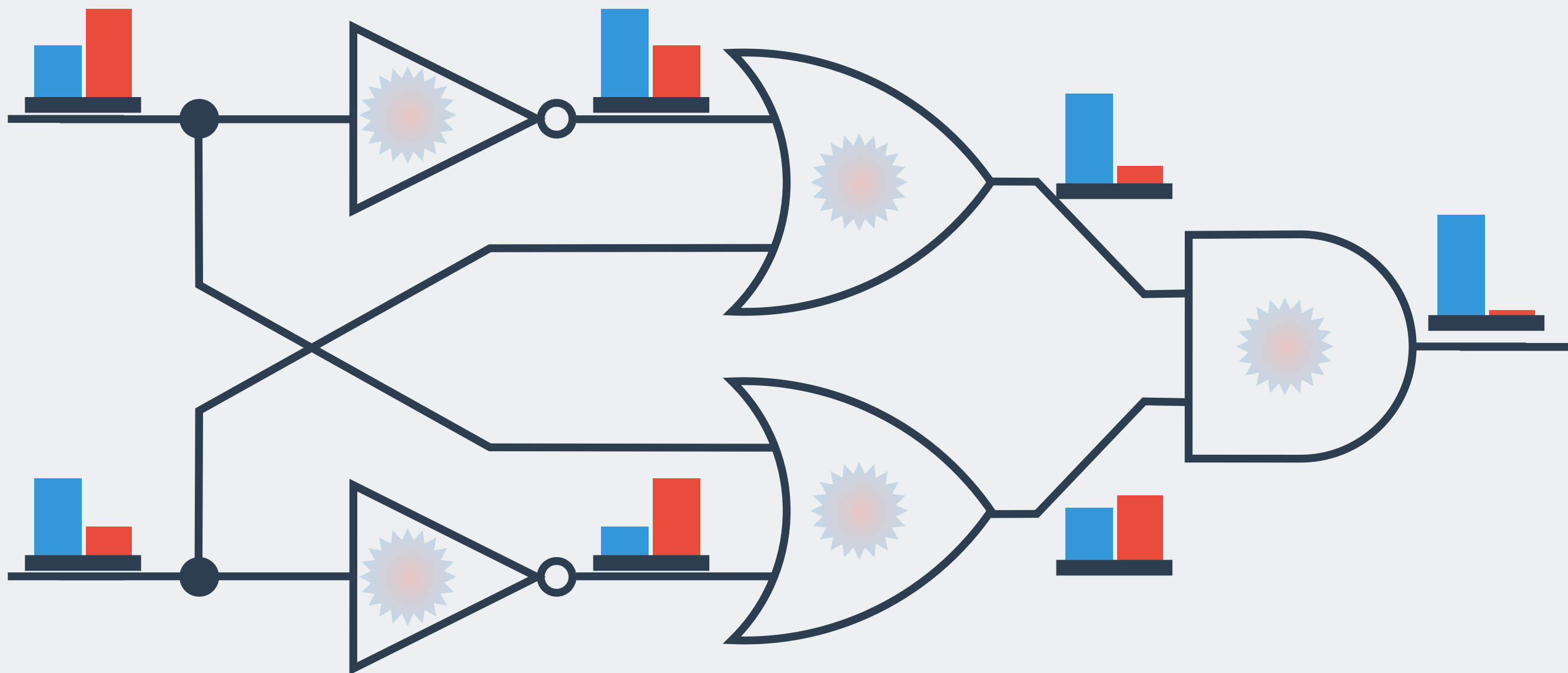








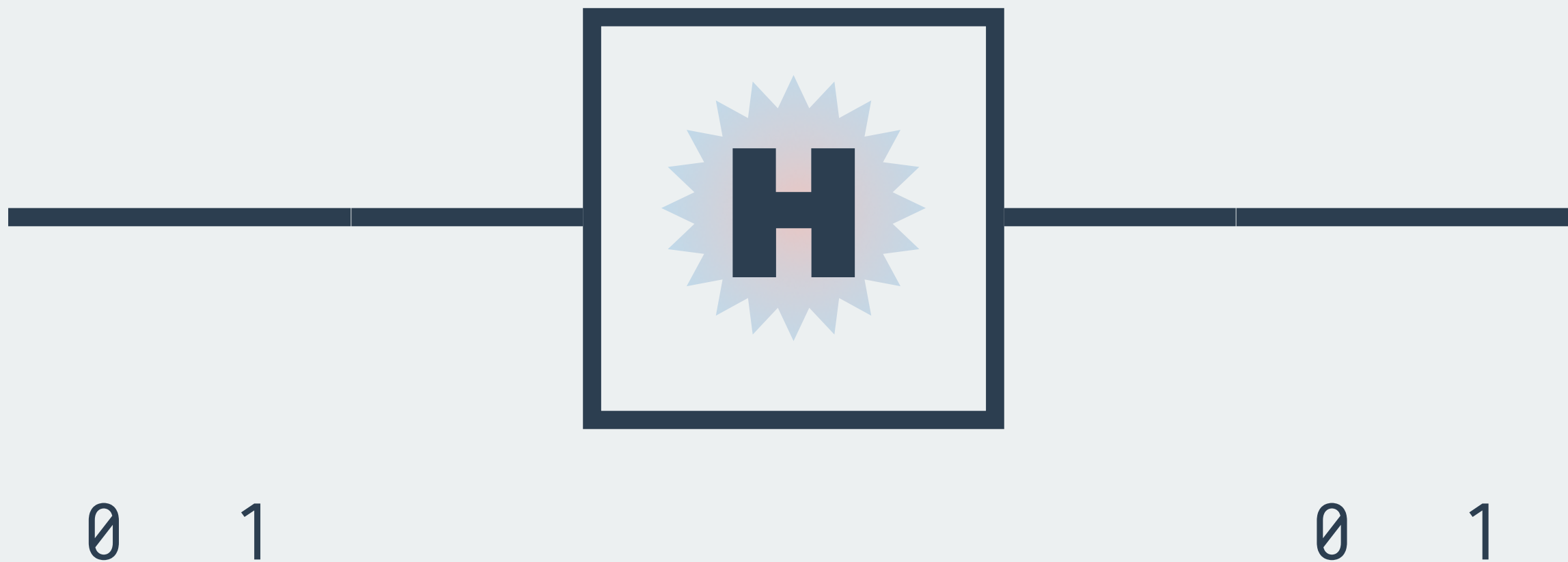


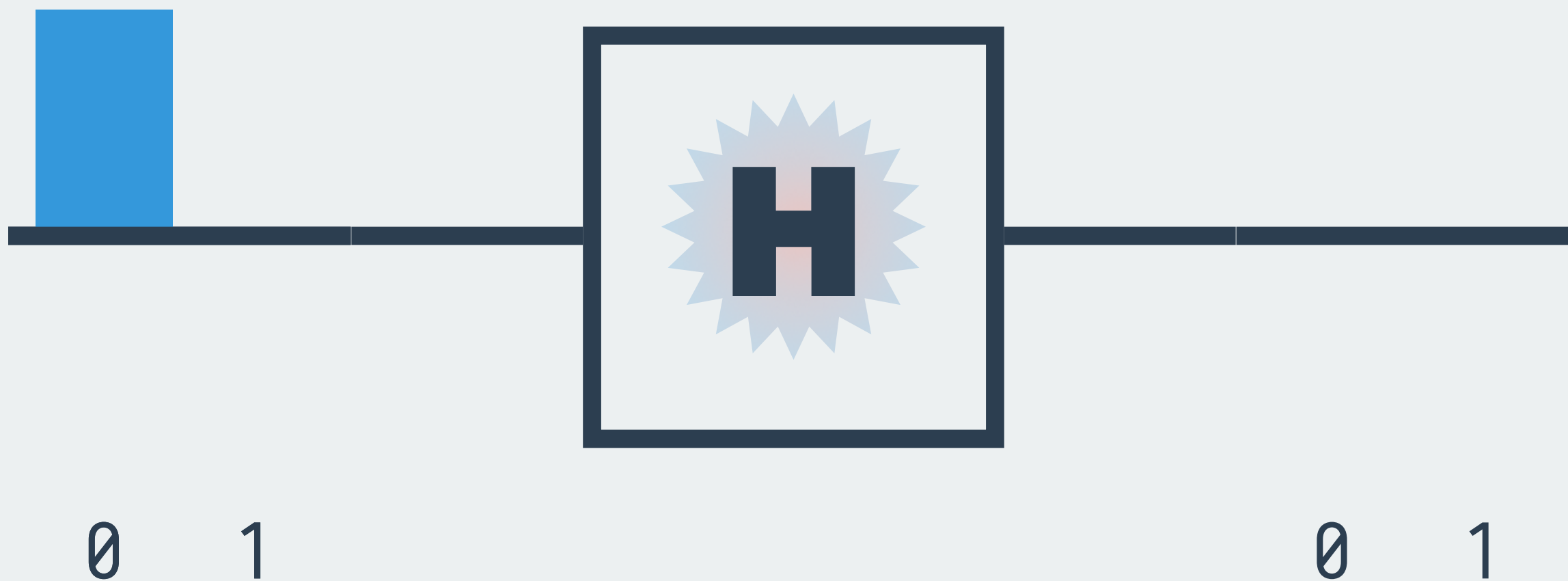


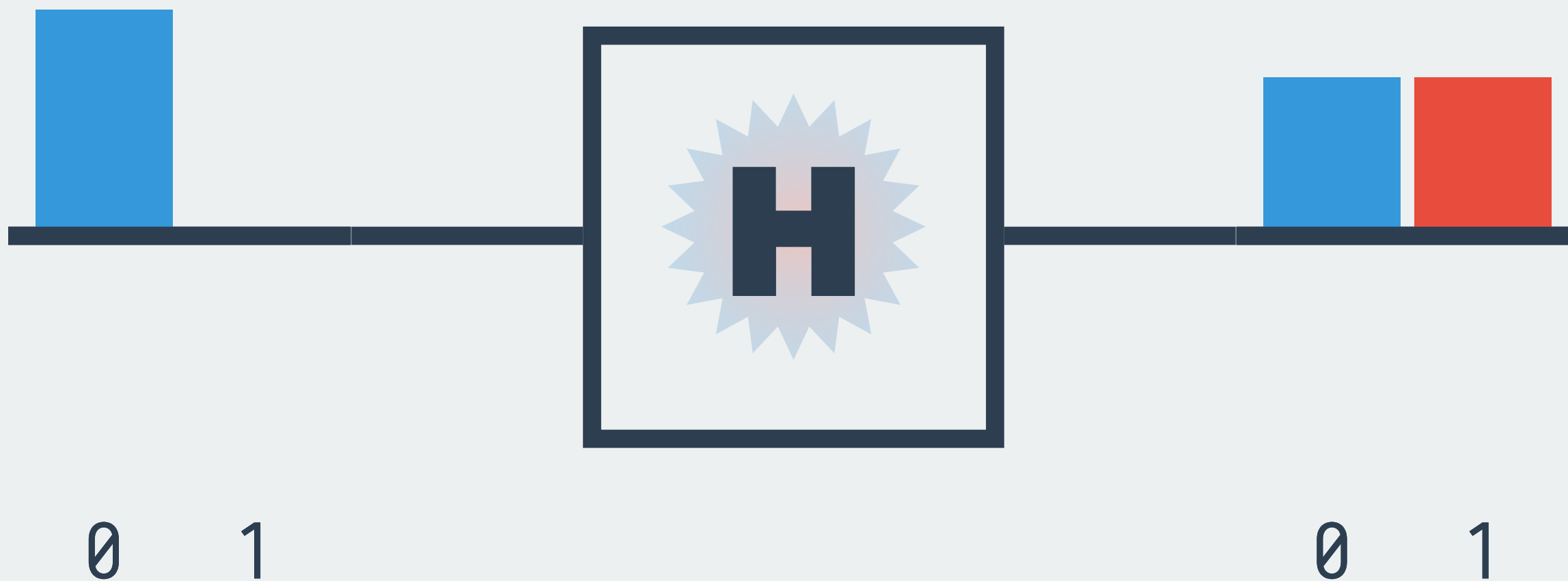


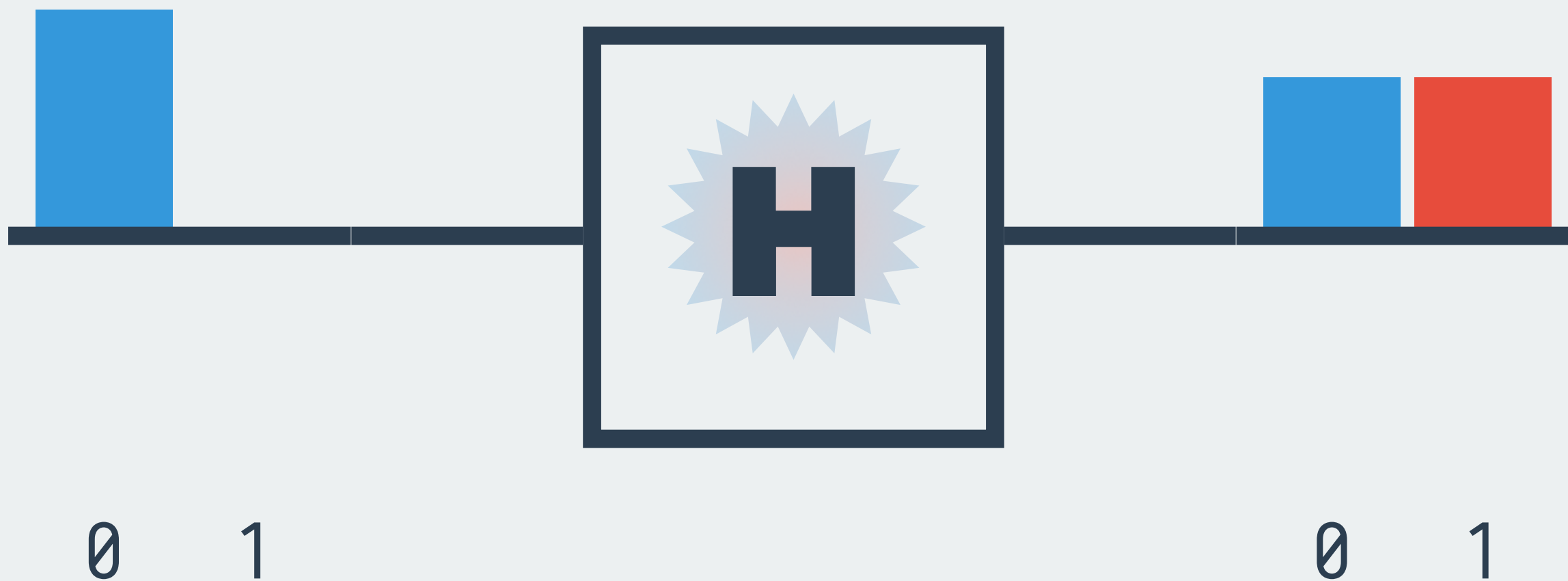


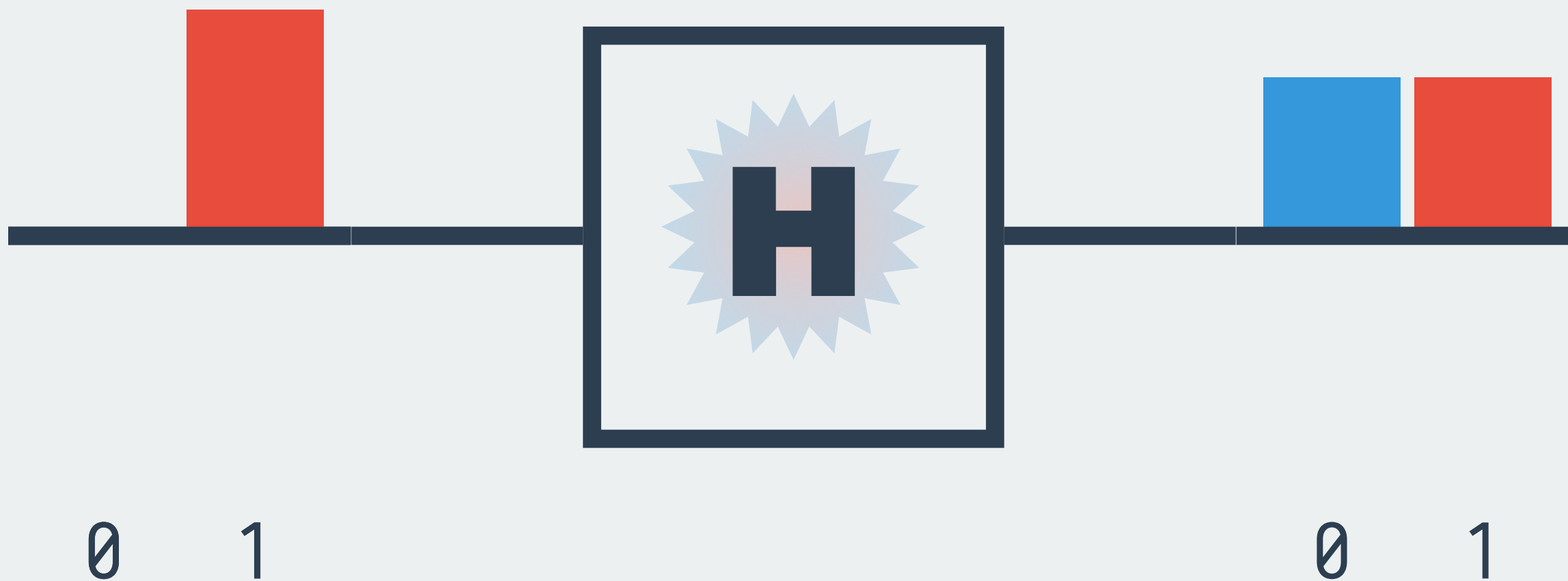
Jacques Hadamard

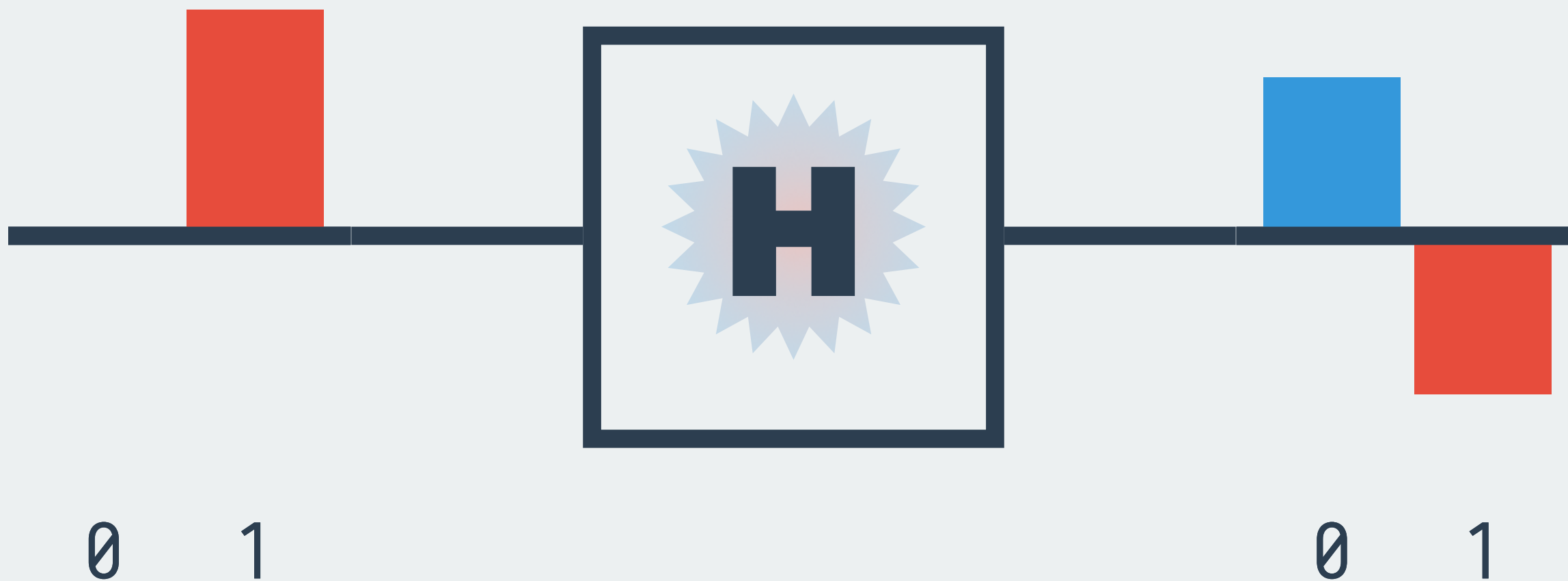


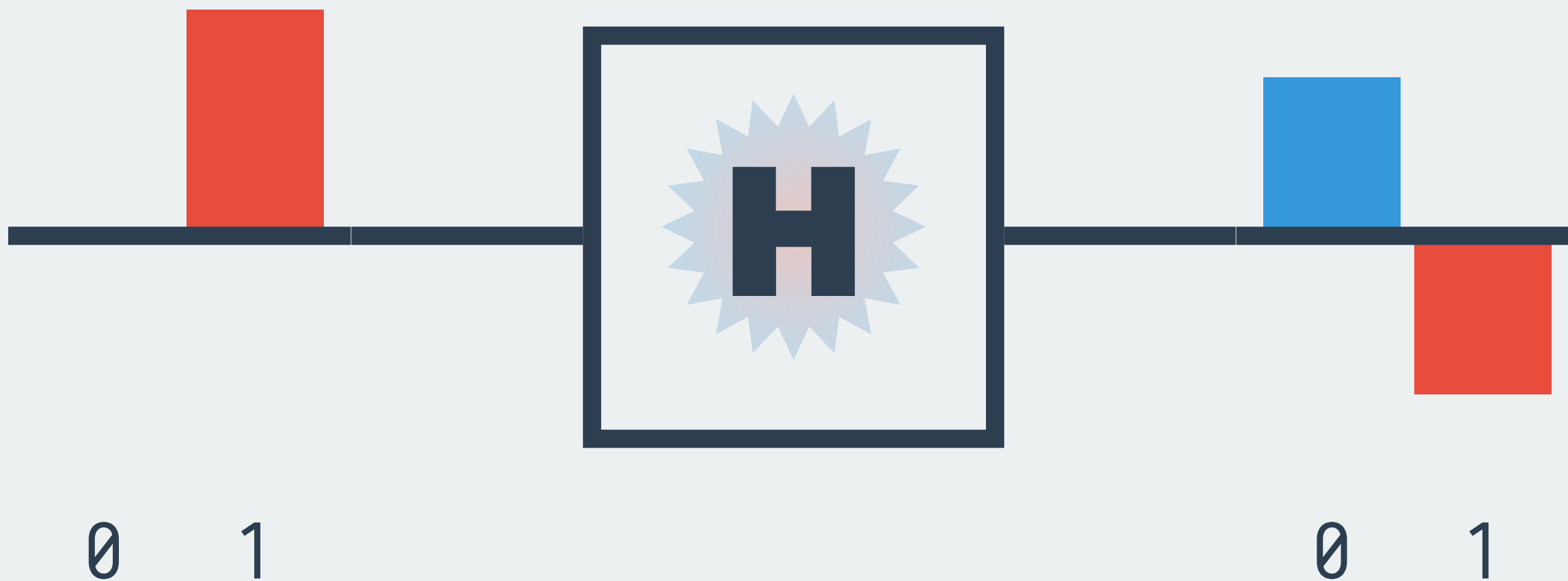


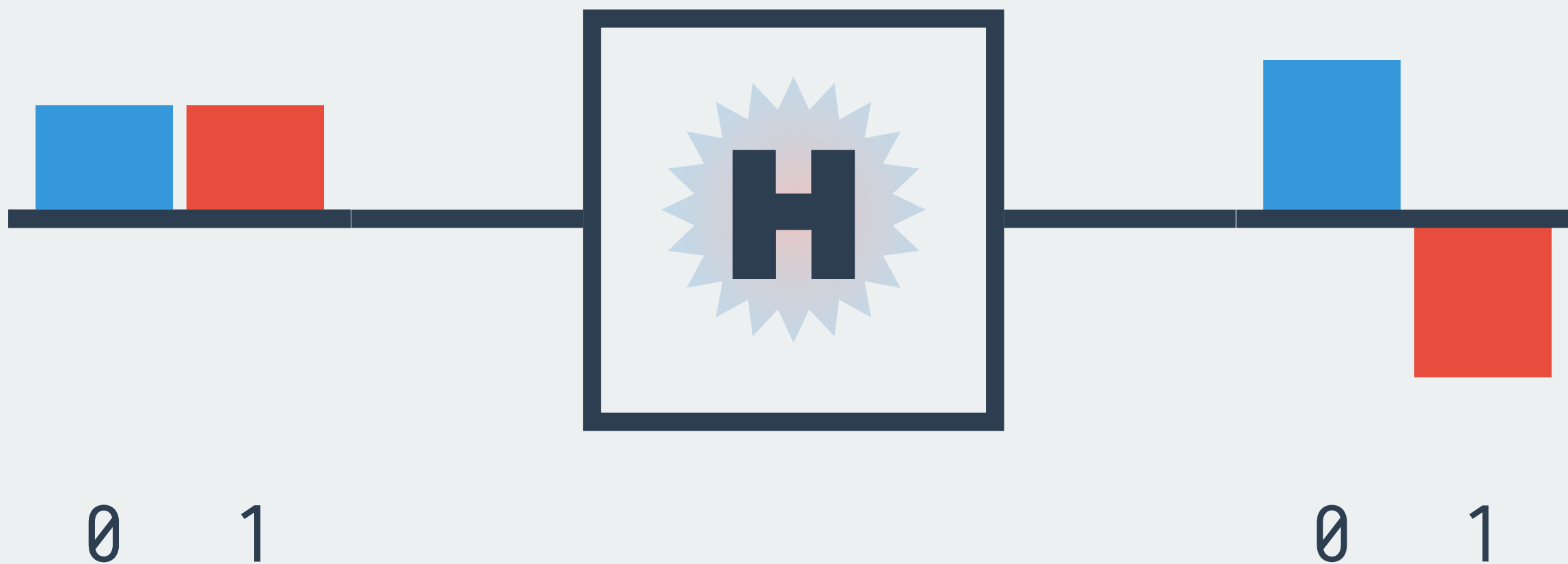


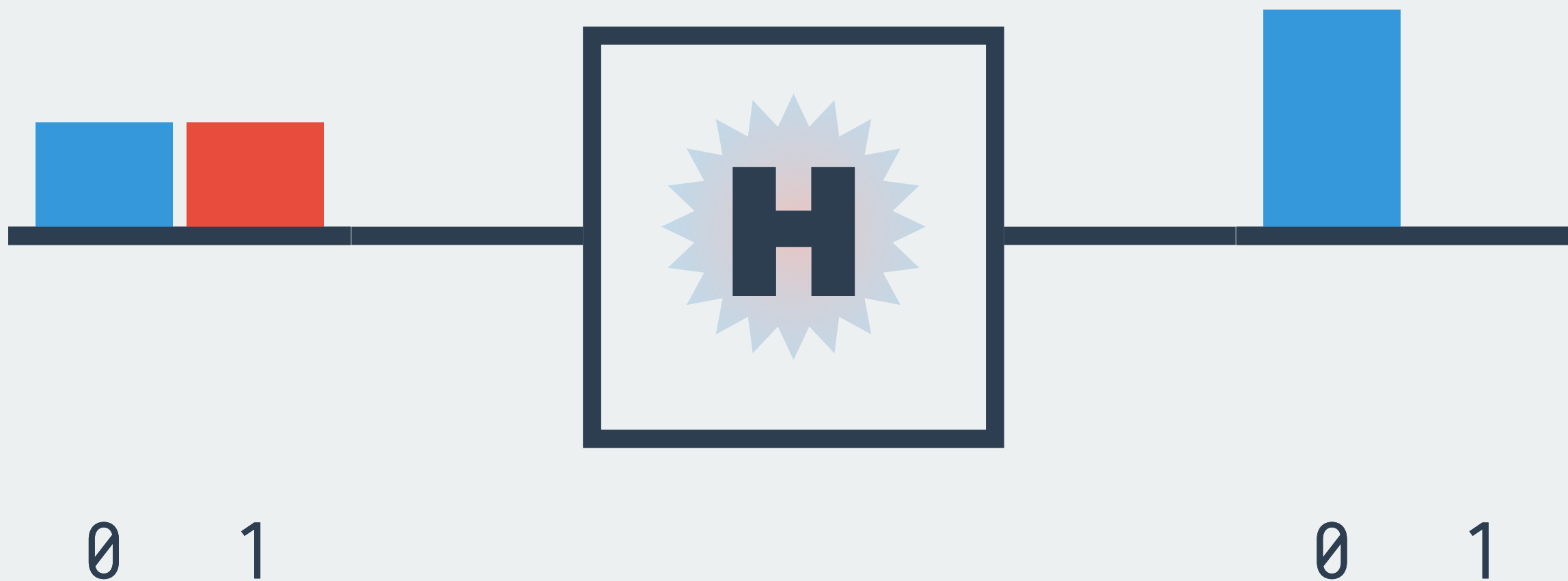


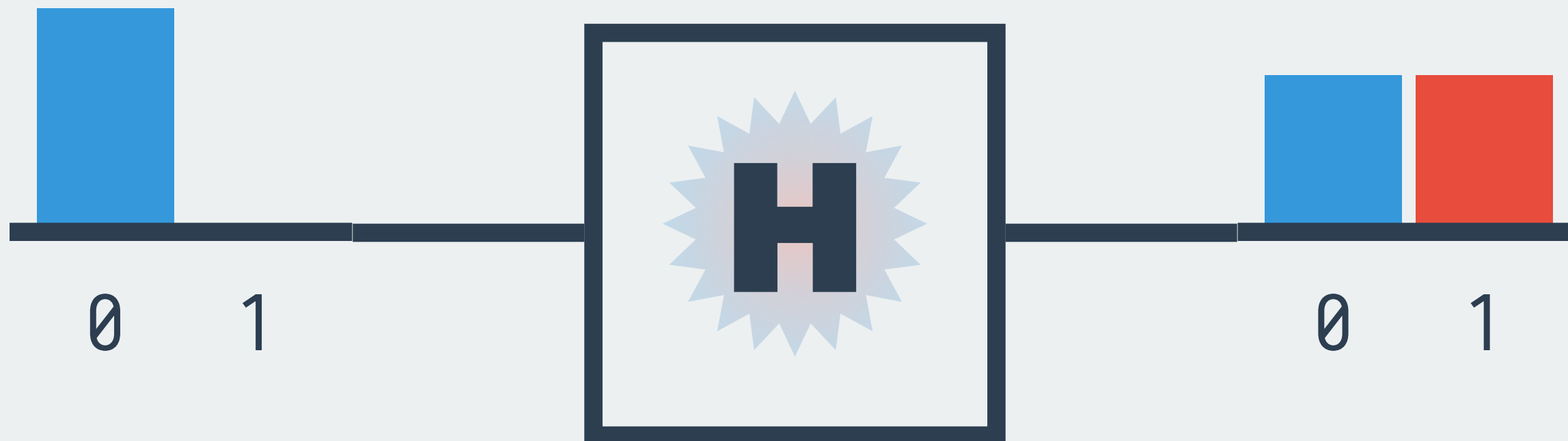


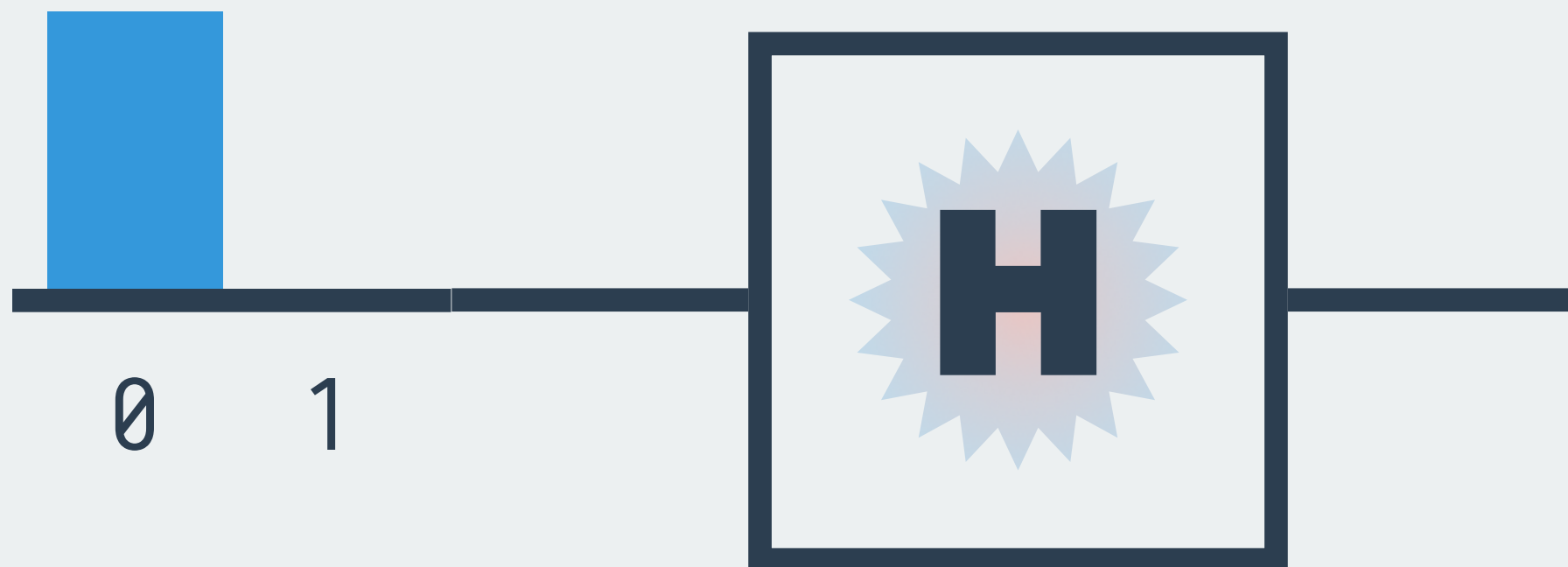
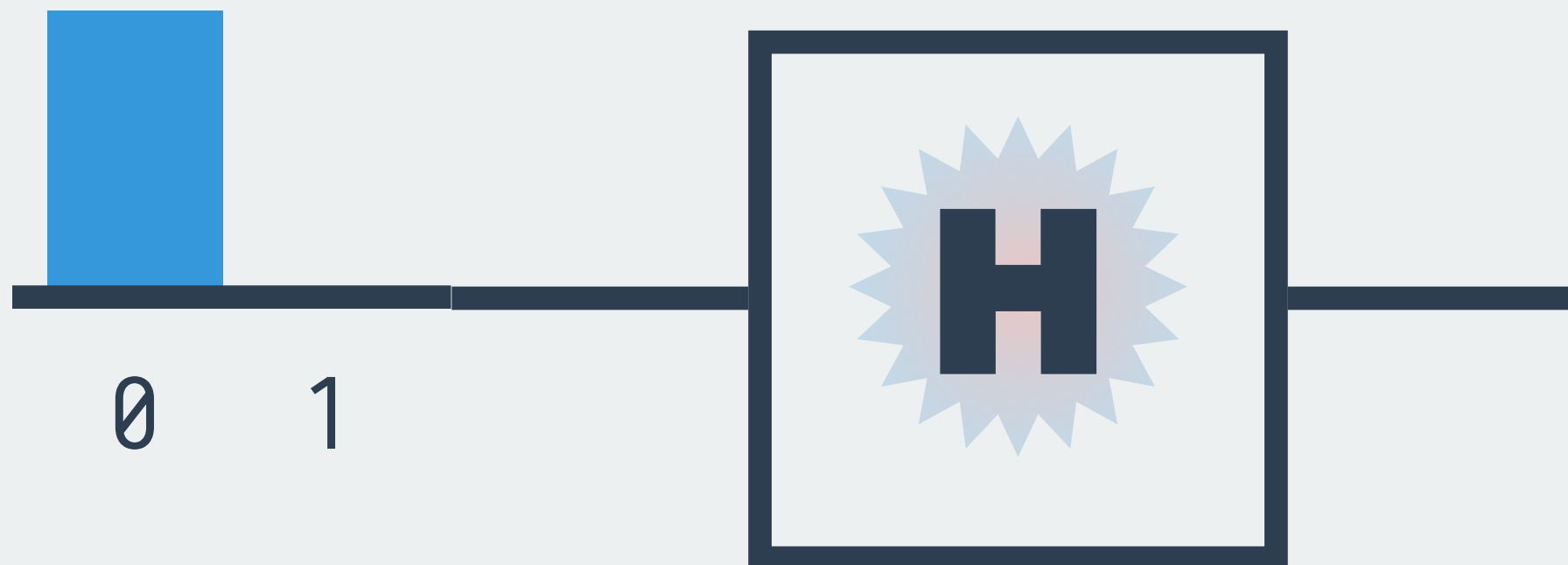


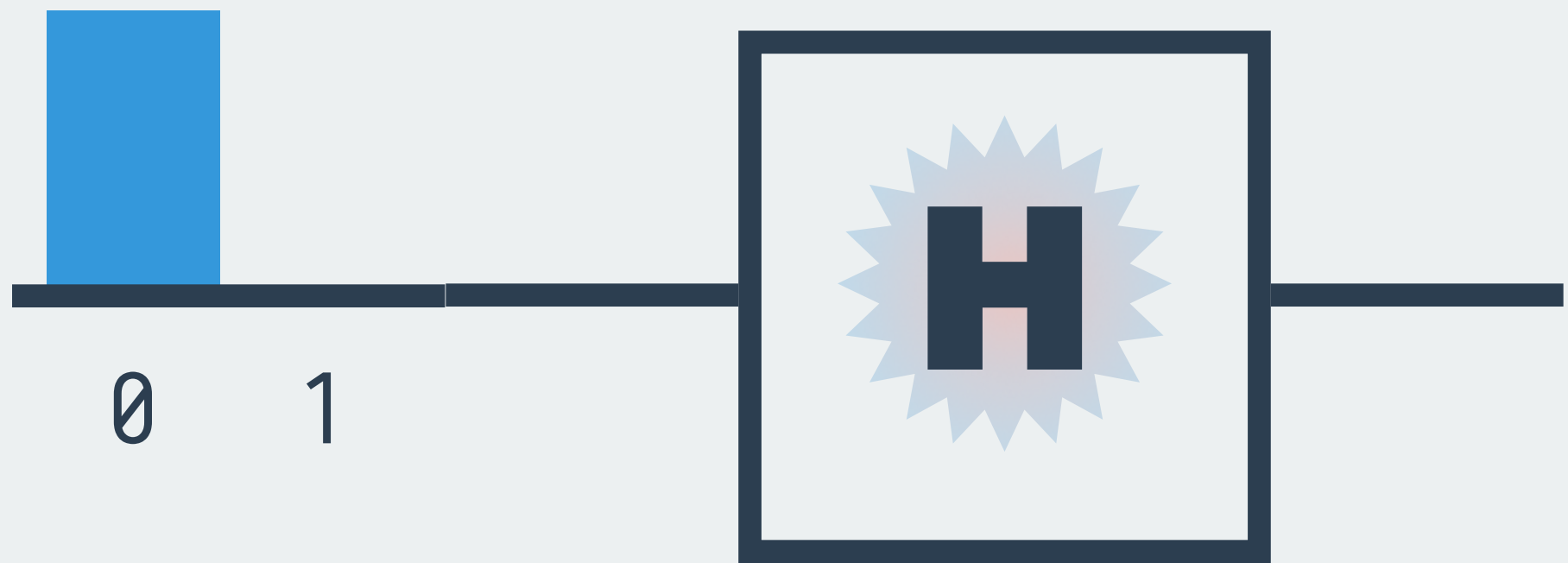
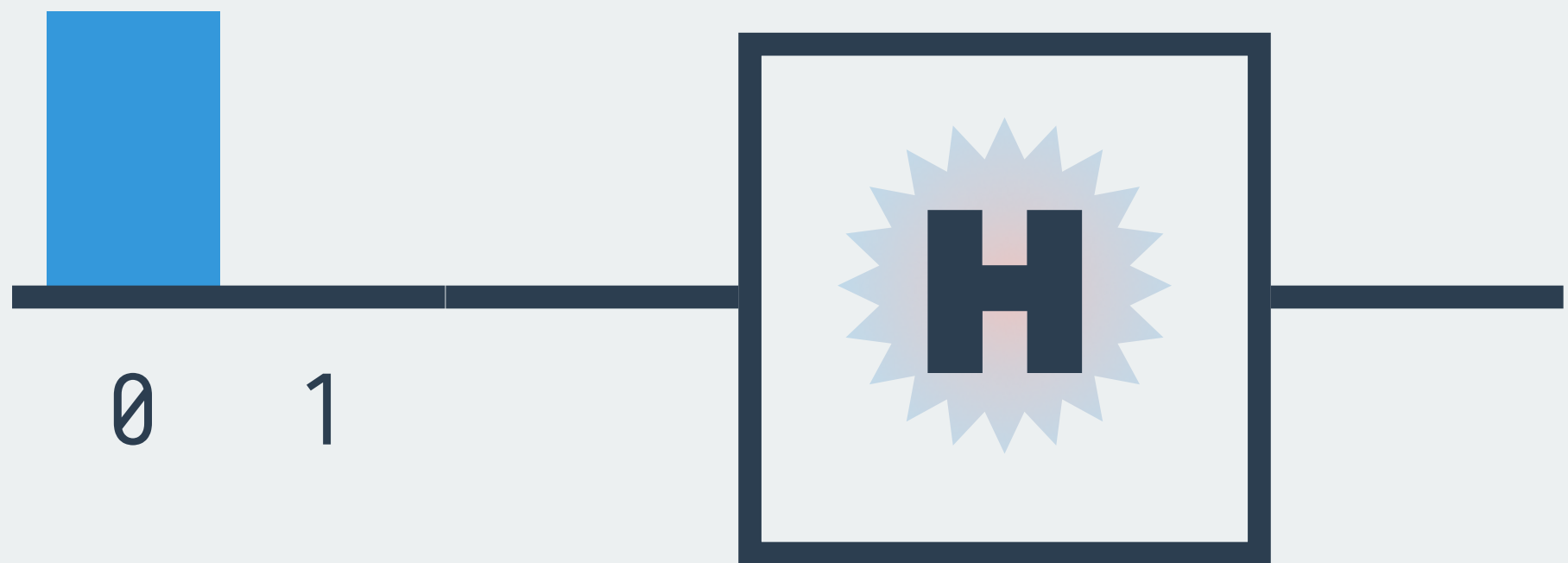
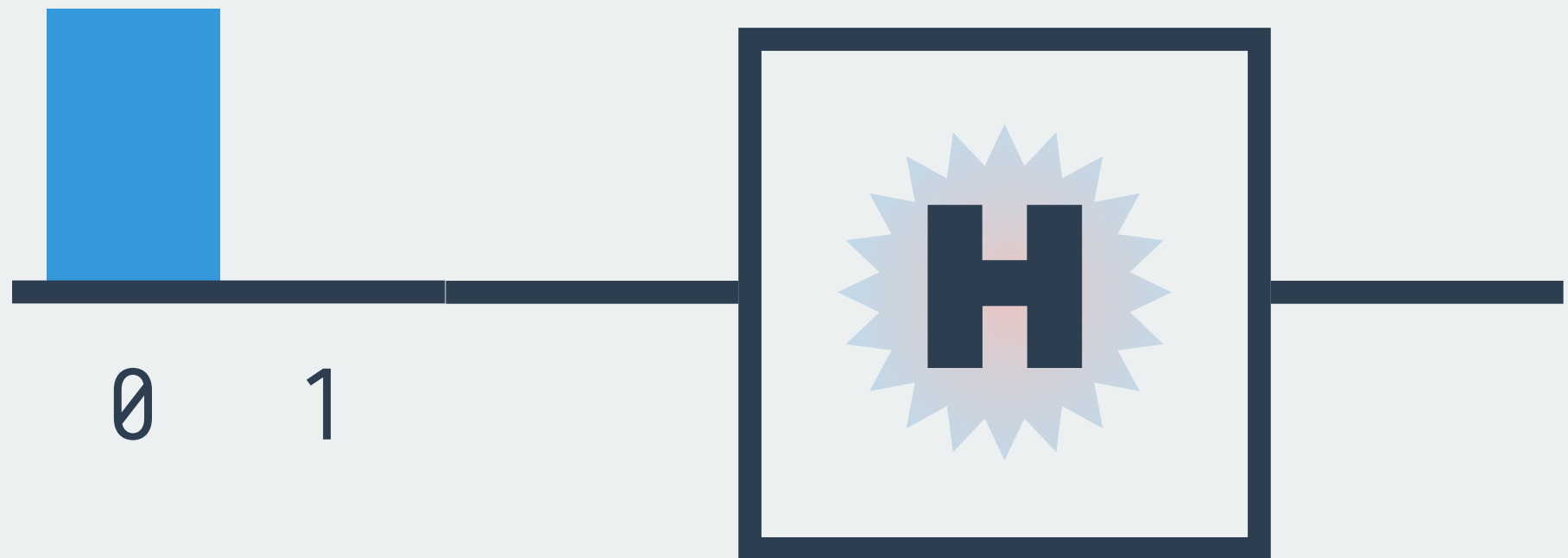


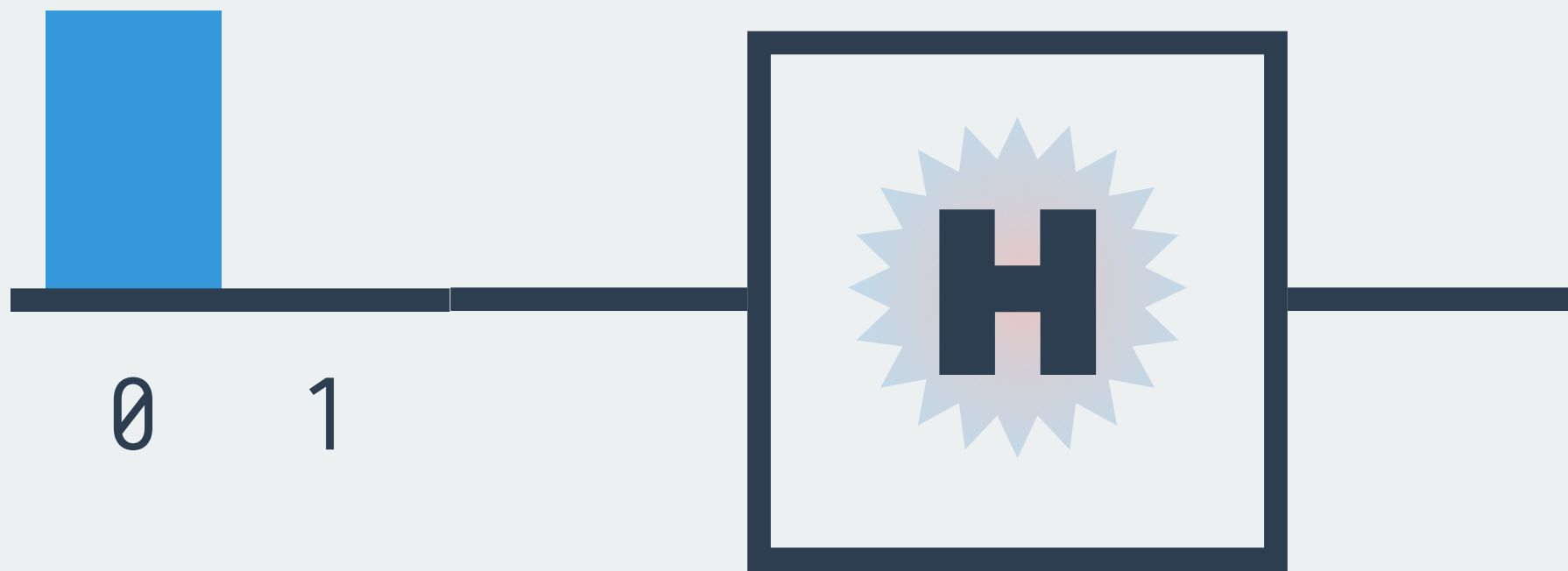
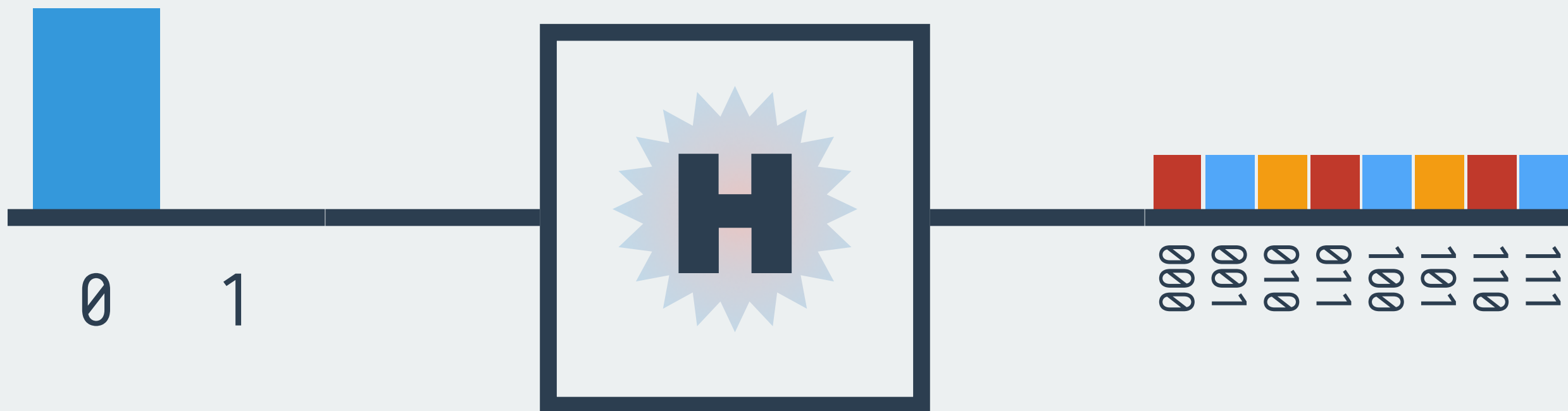
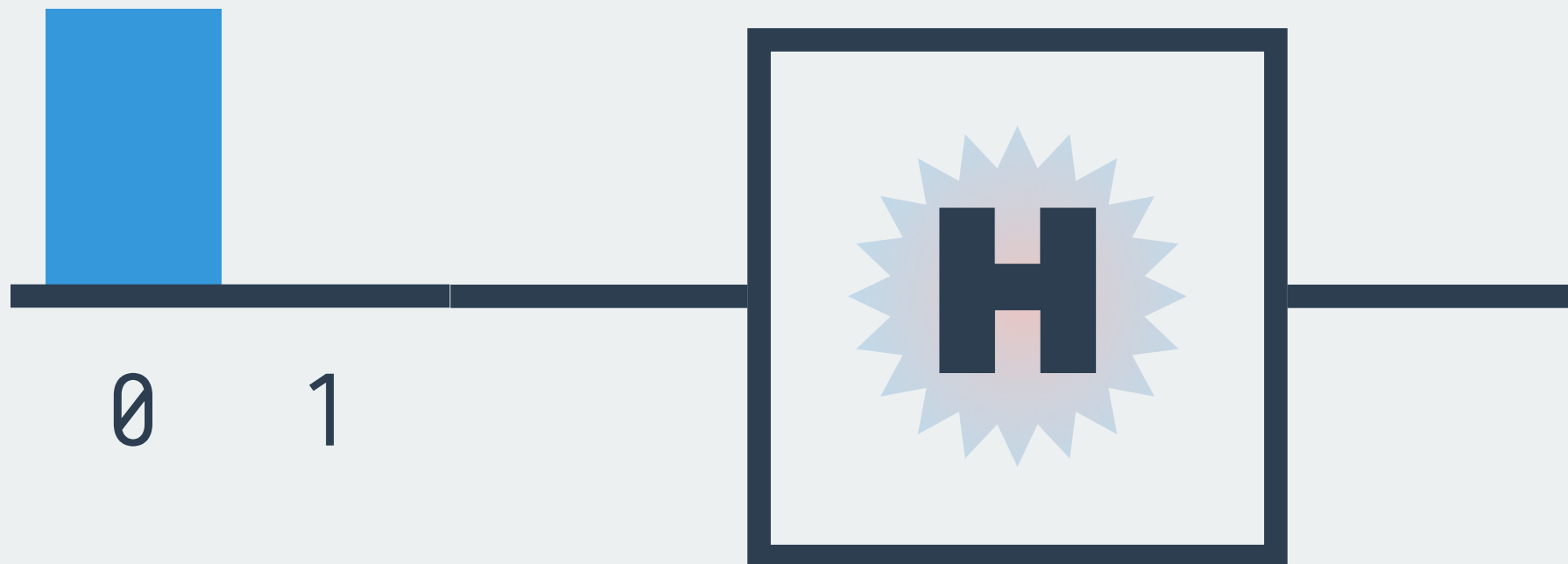


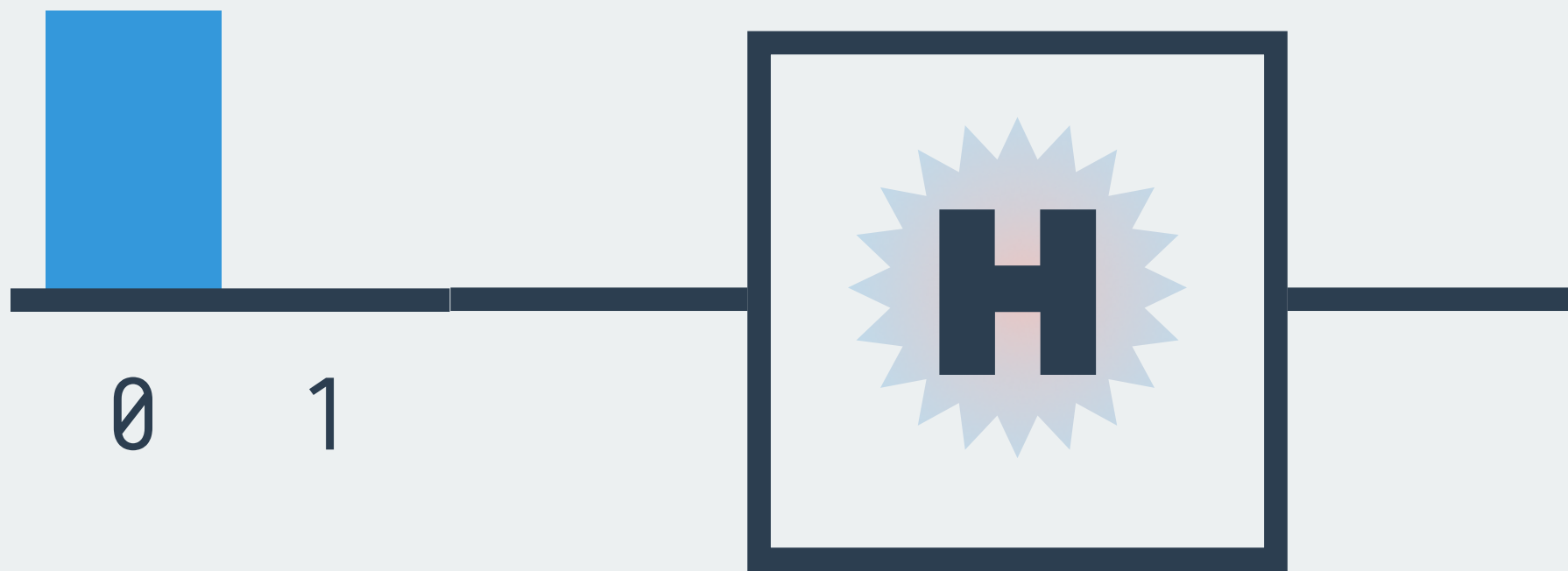
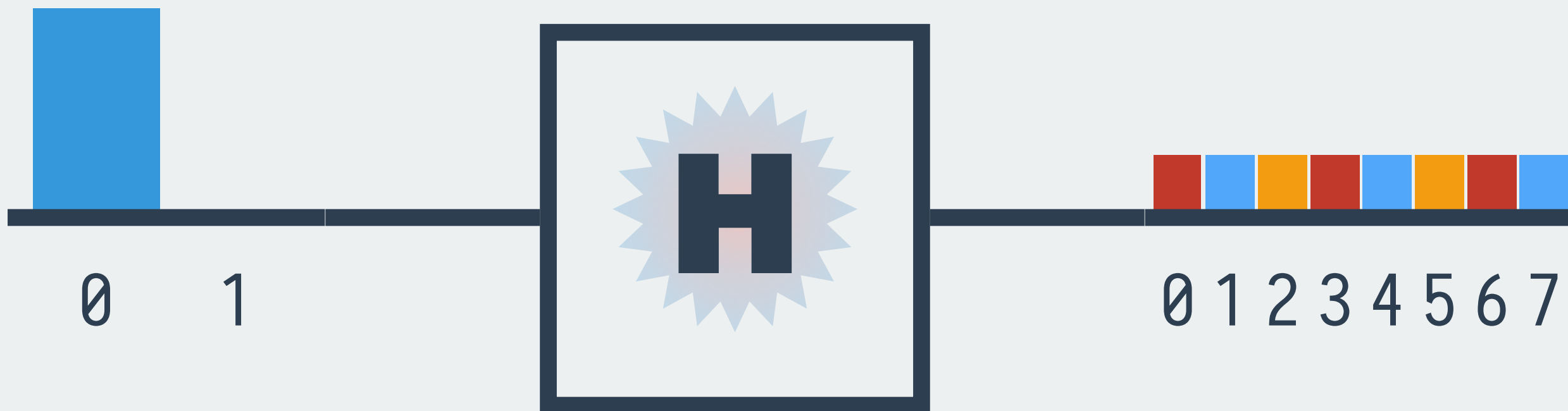
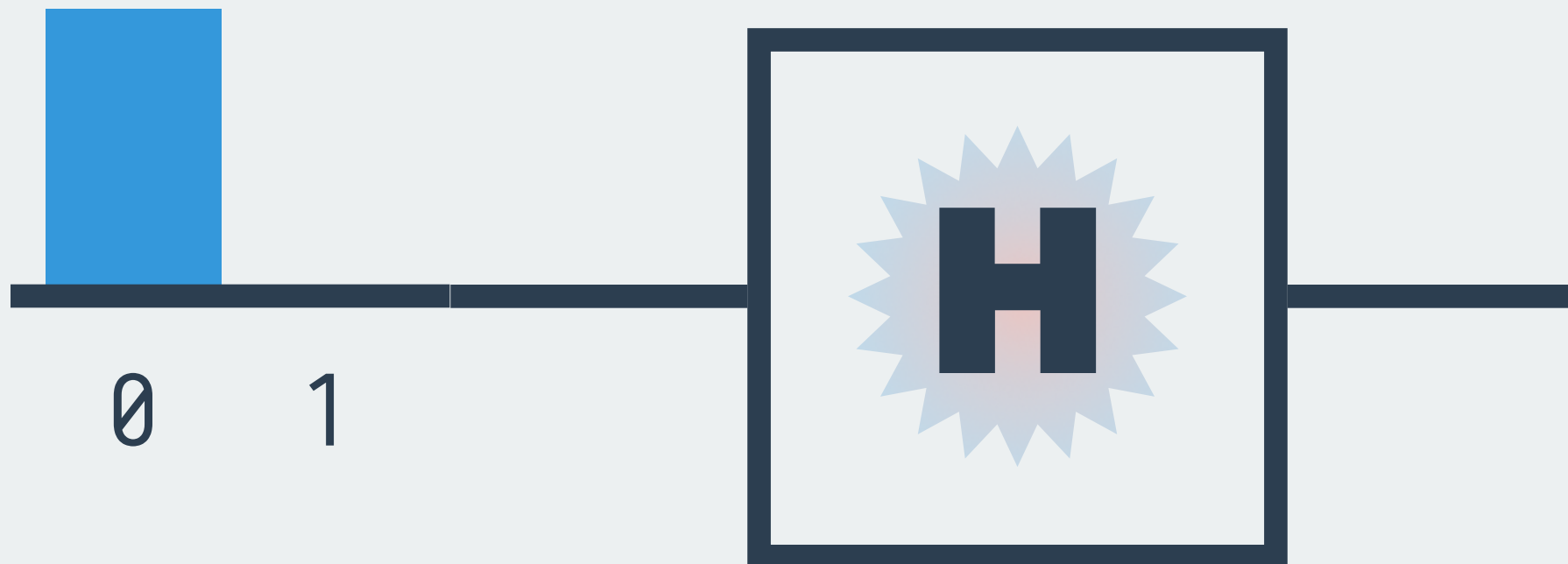




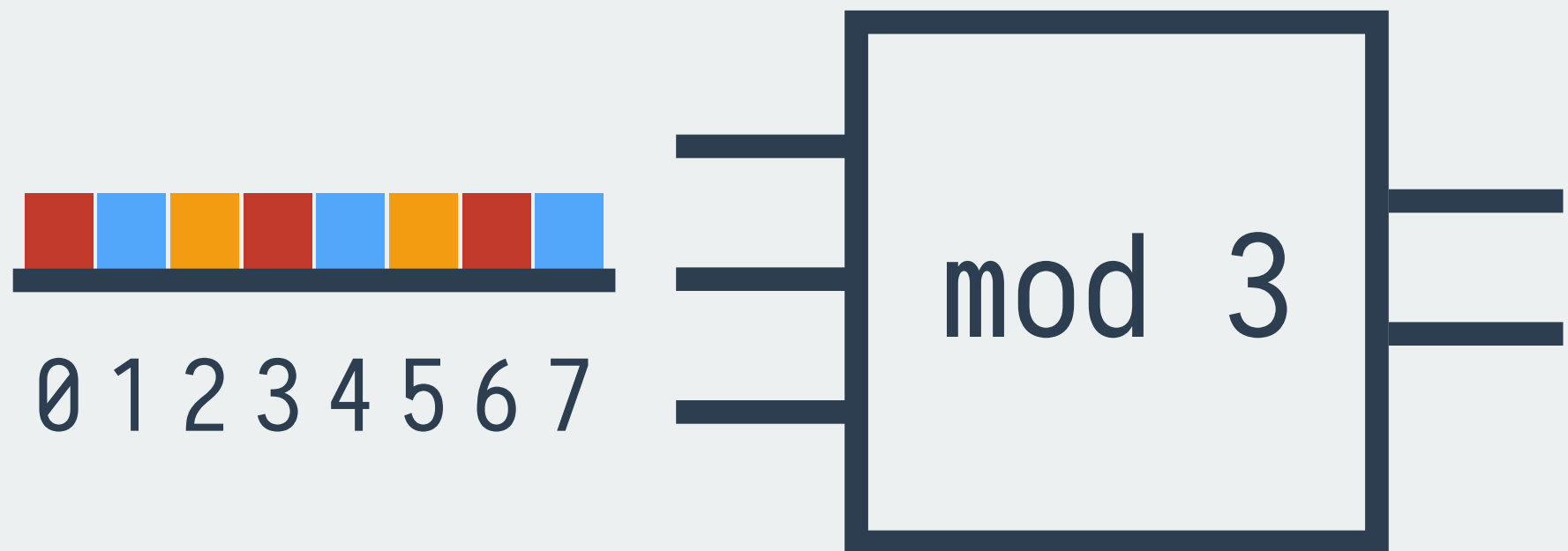


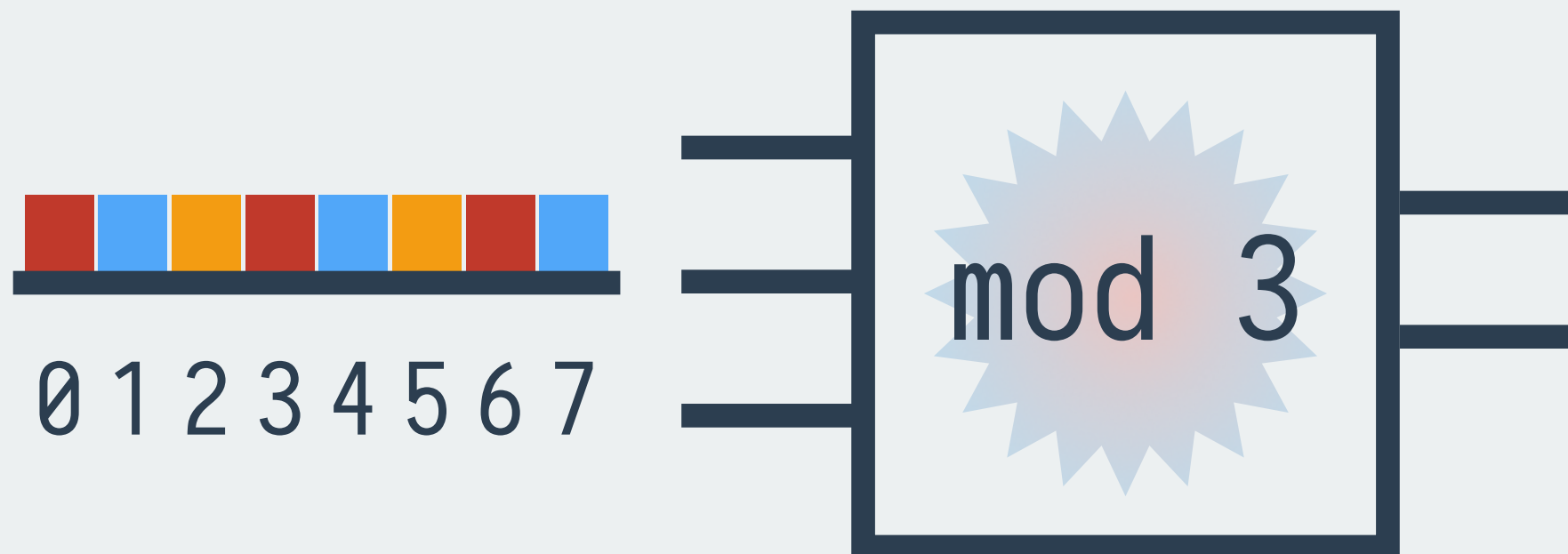


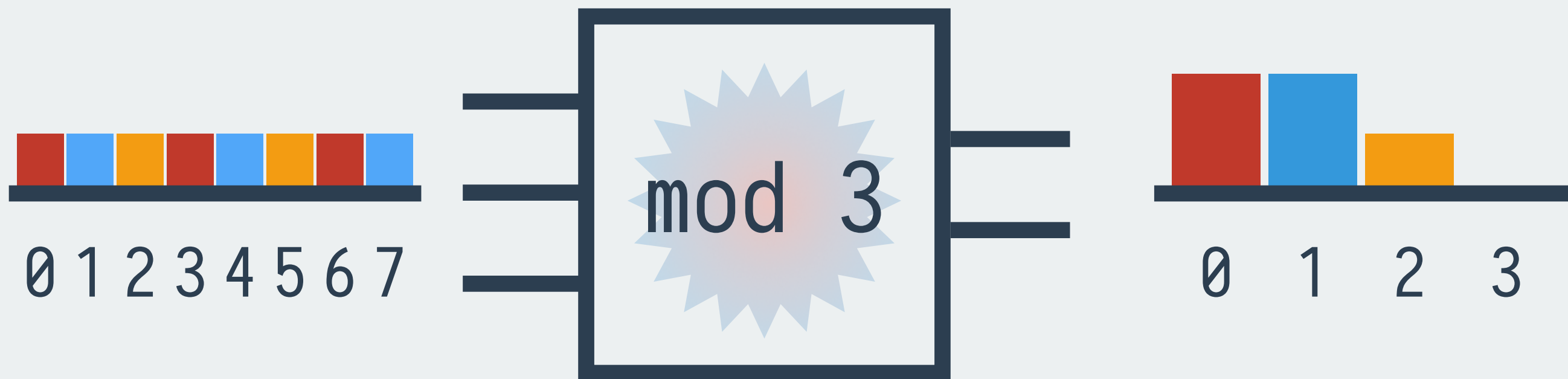


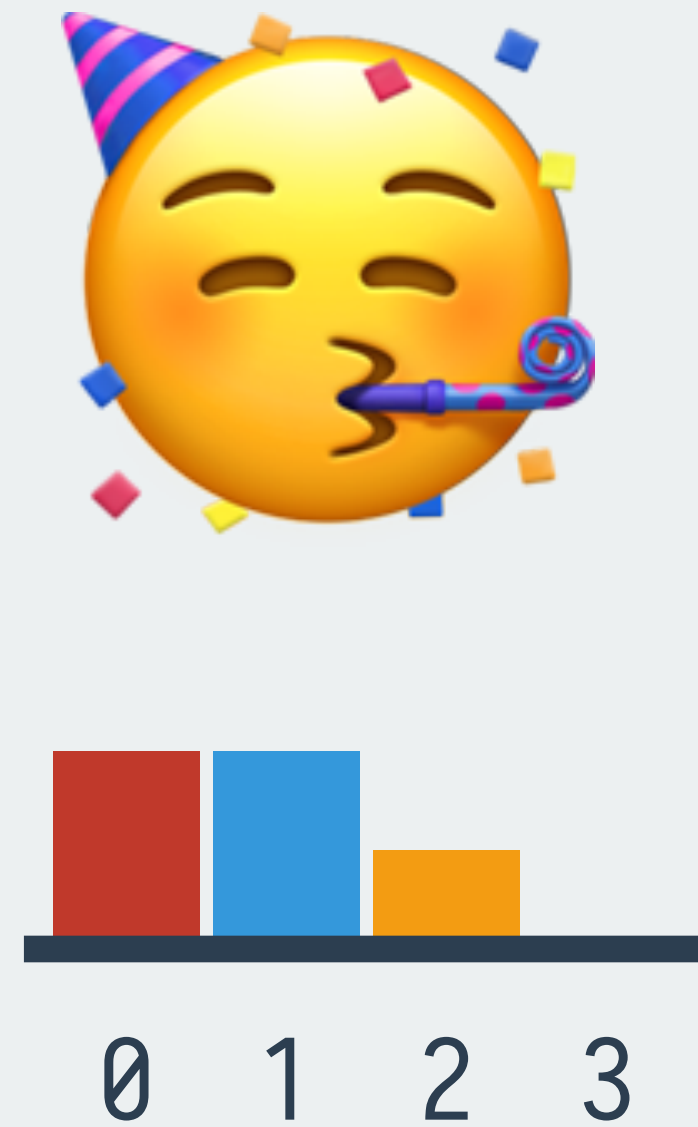
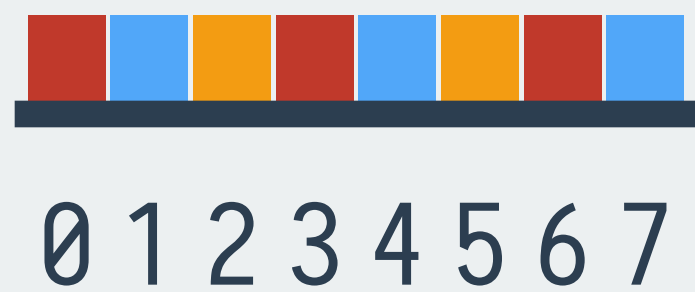


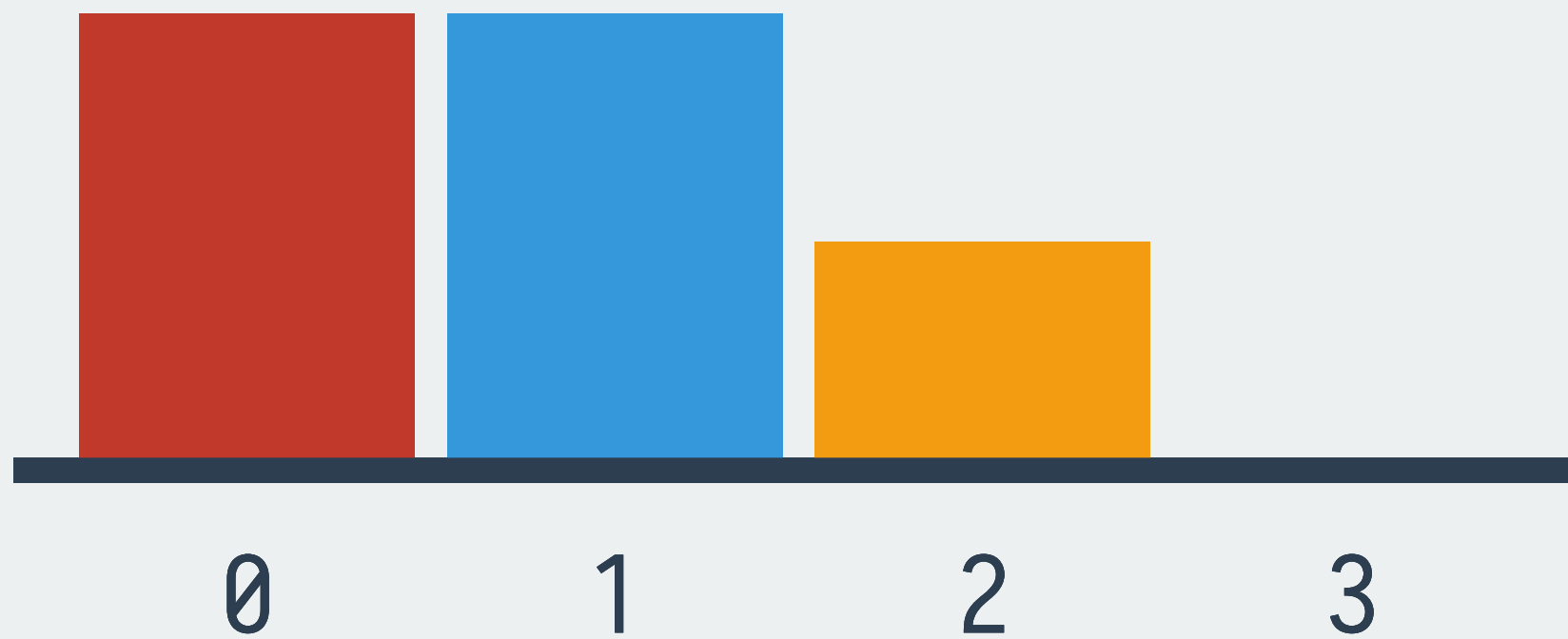


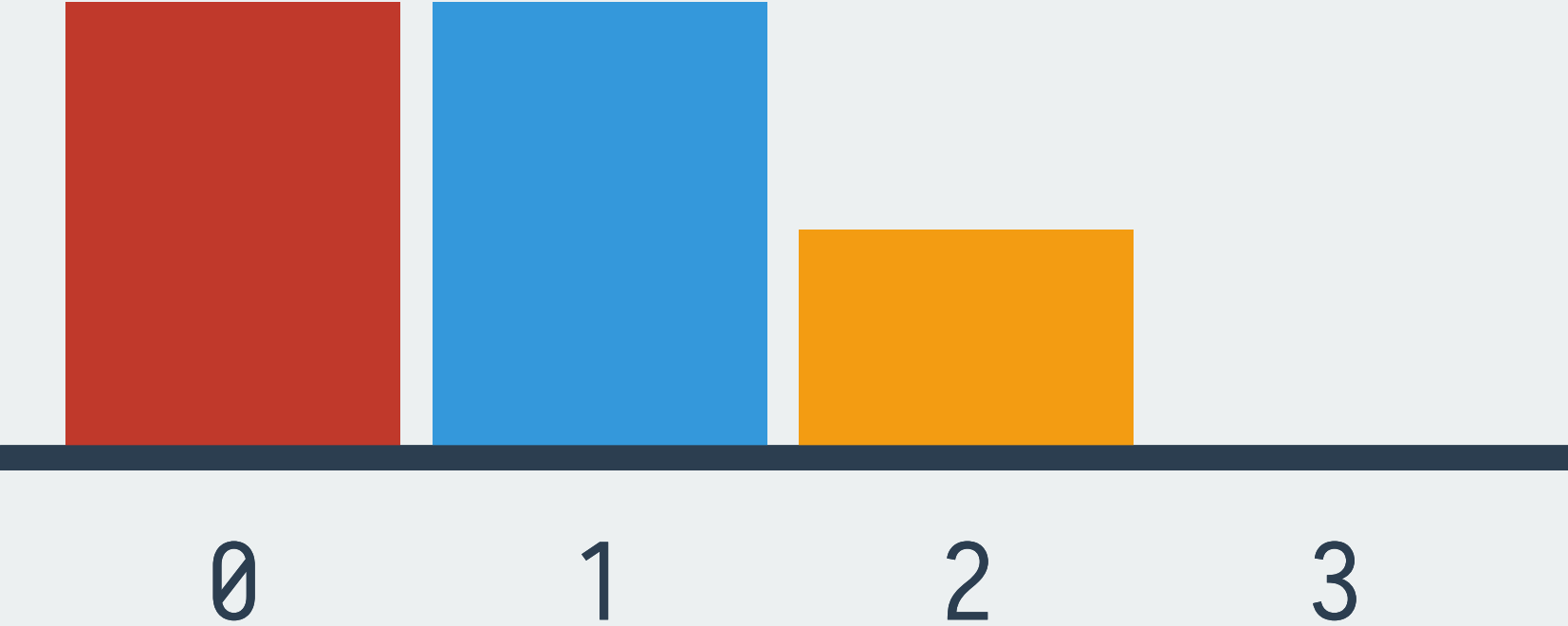


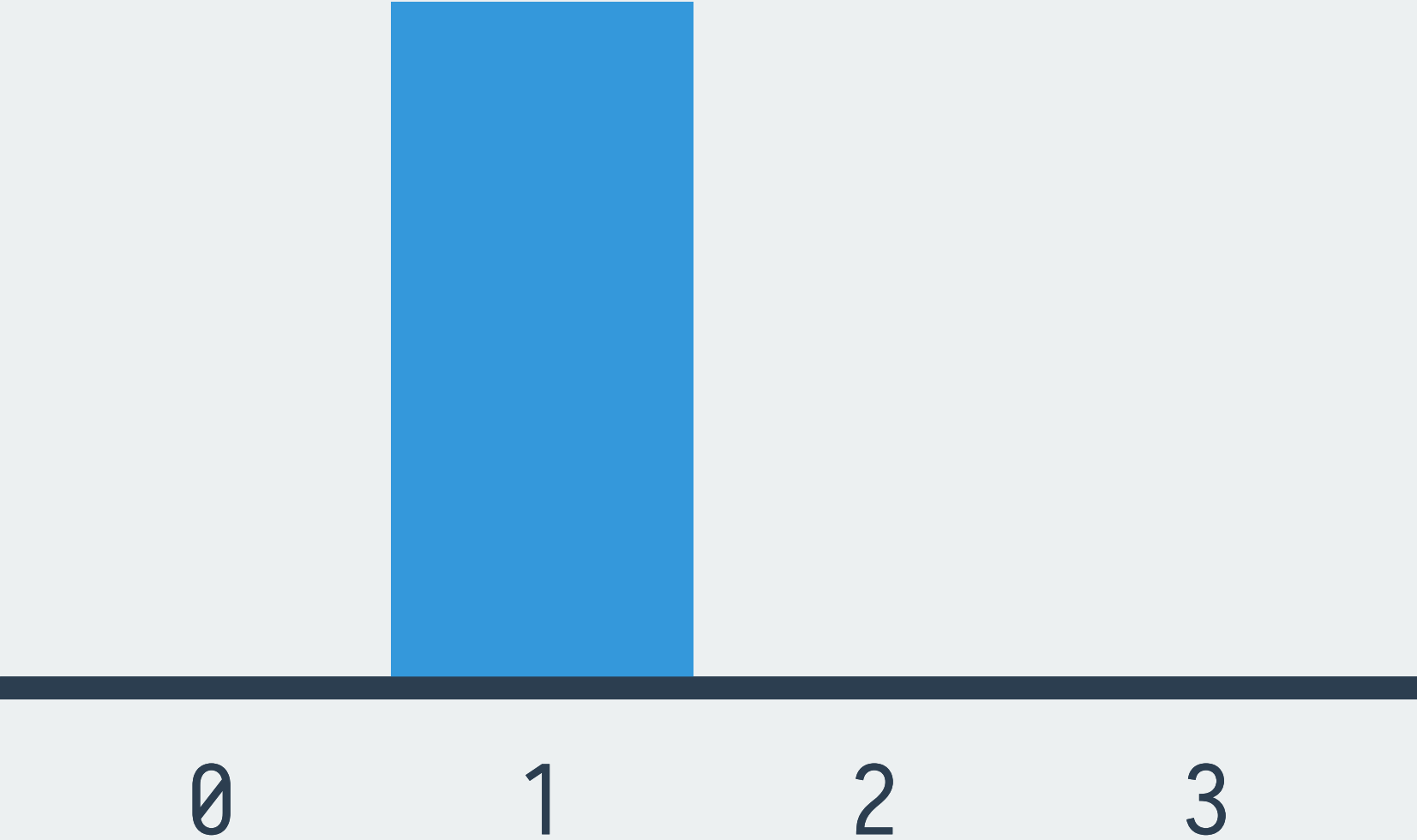


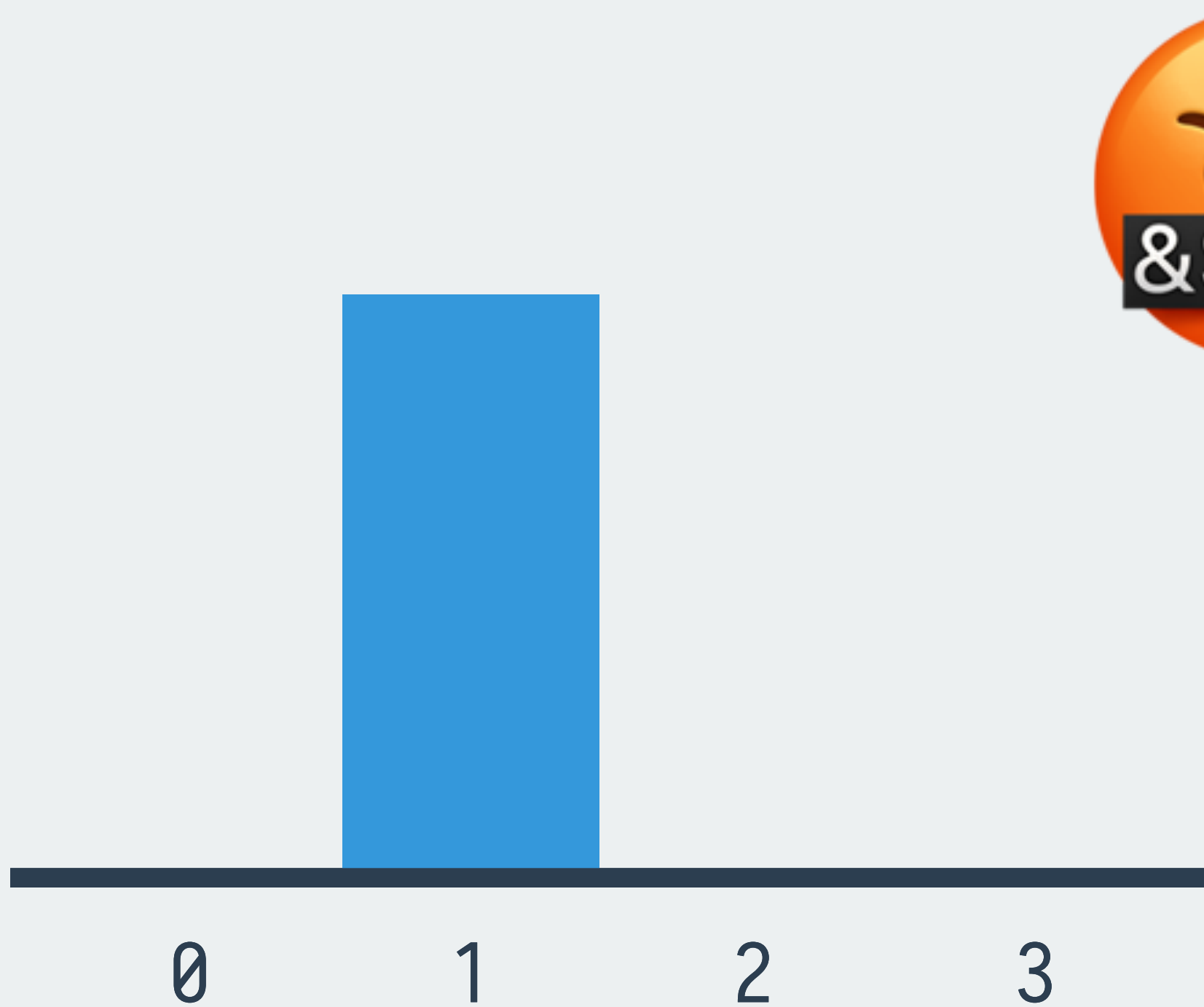








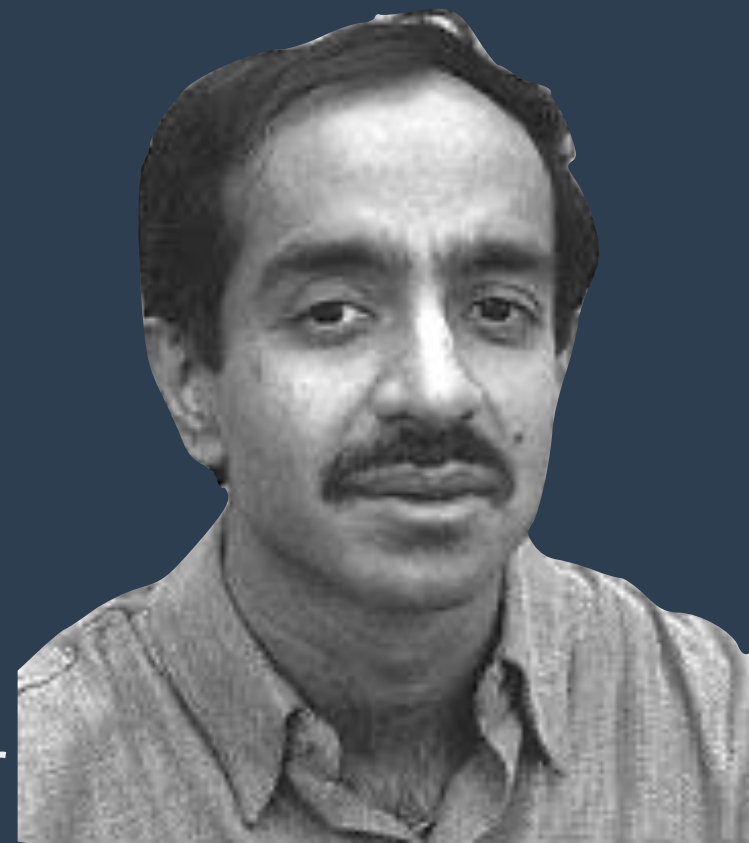


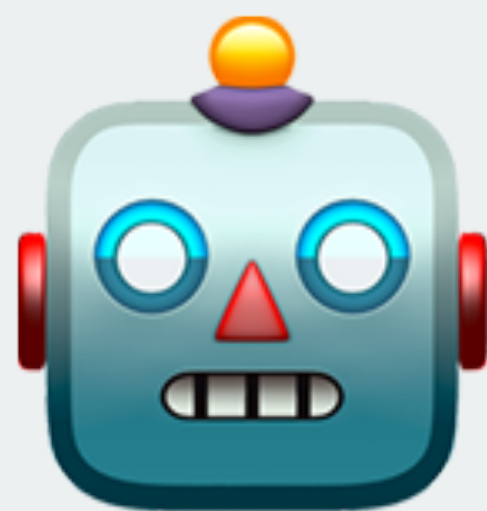


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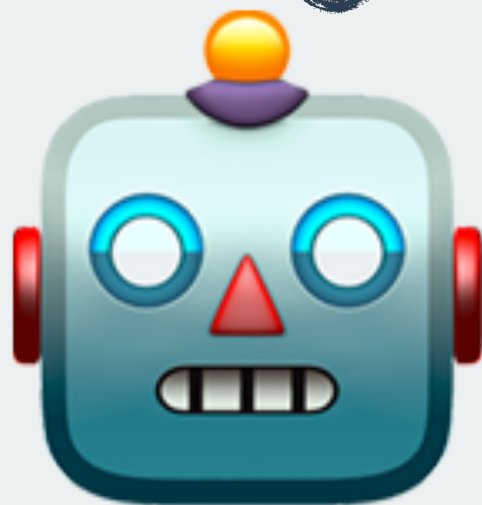
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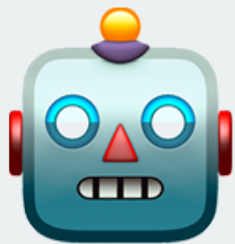




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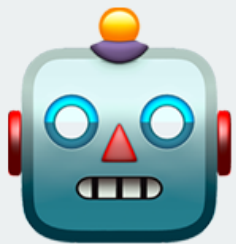
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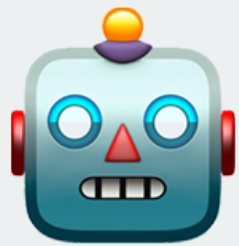
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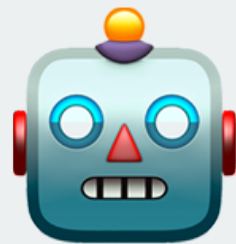
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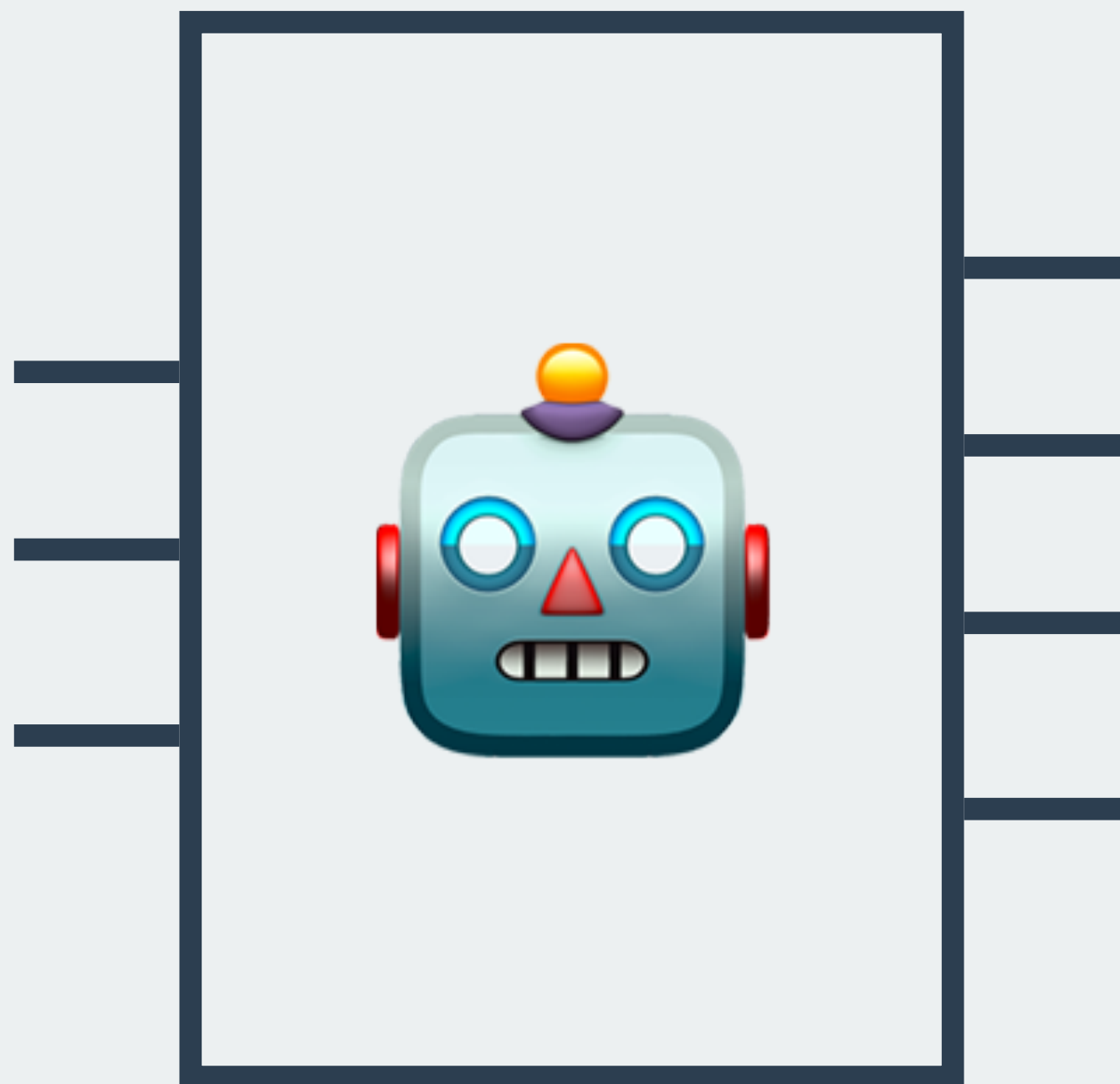


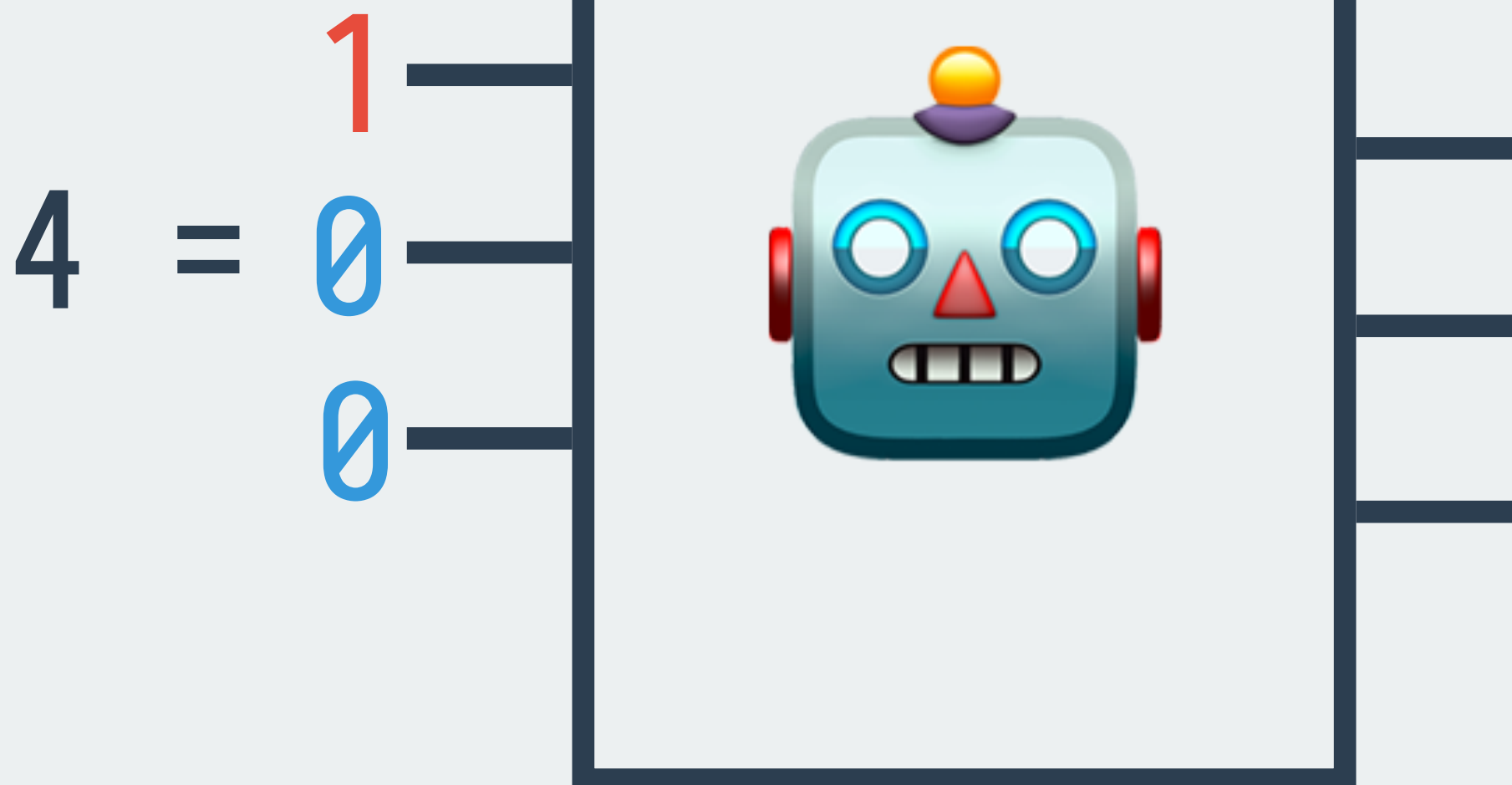
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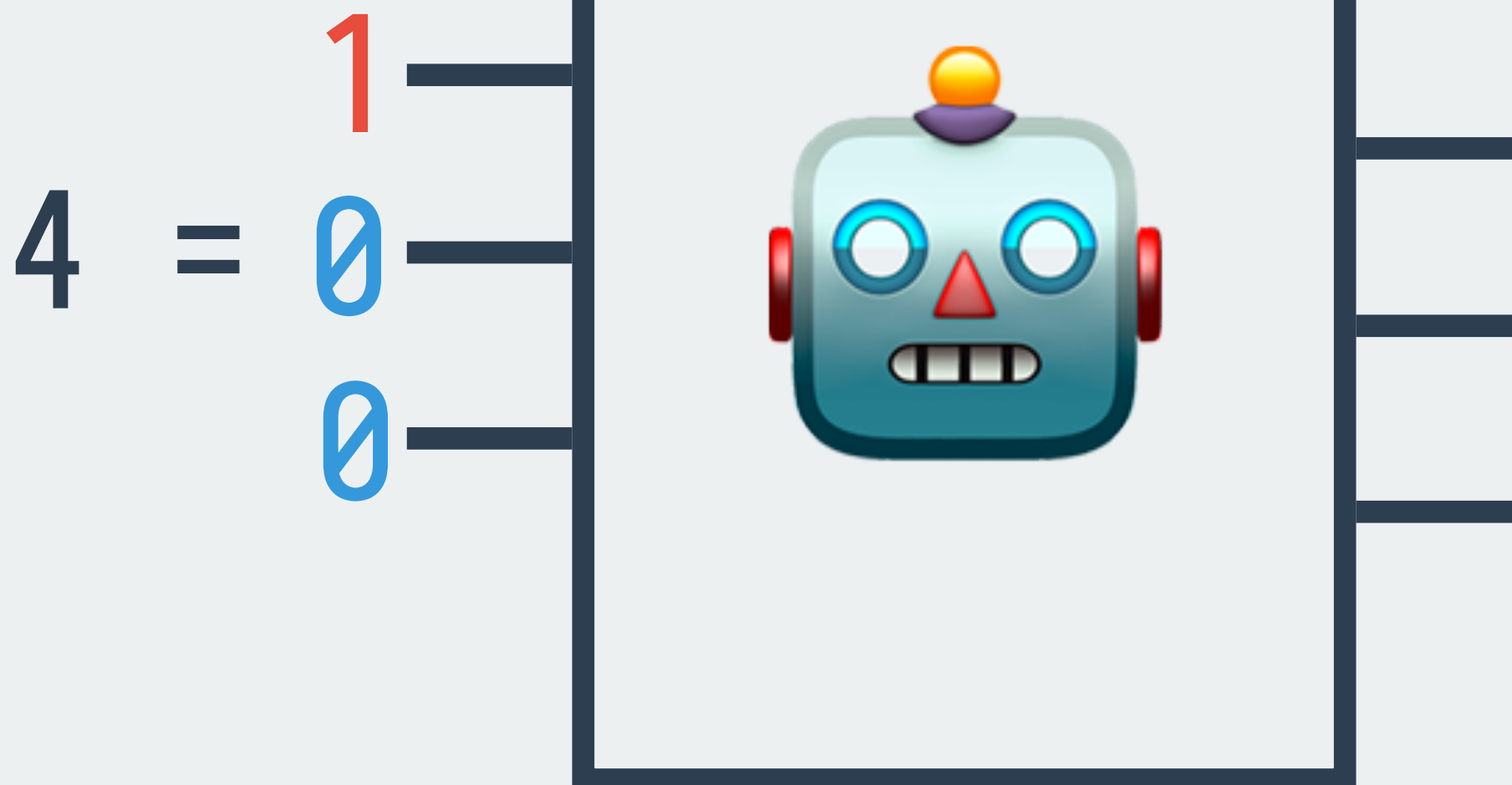


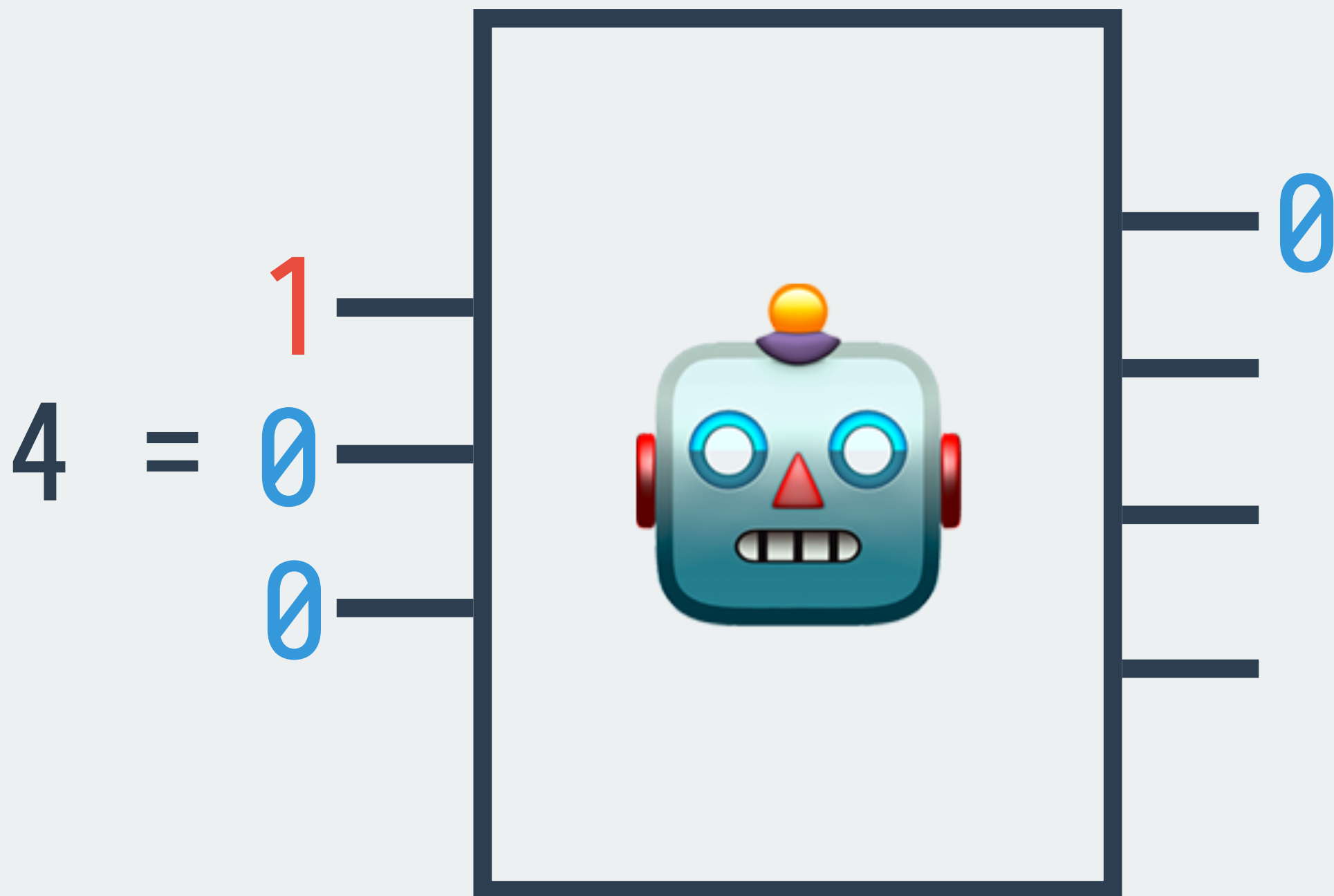
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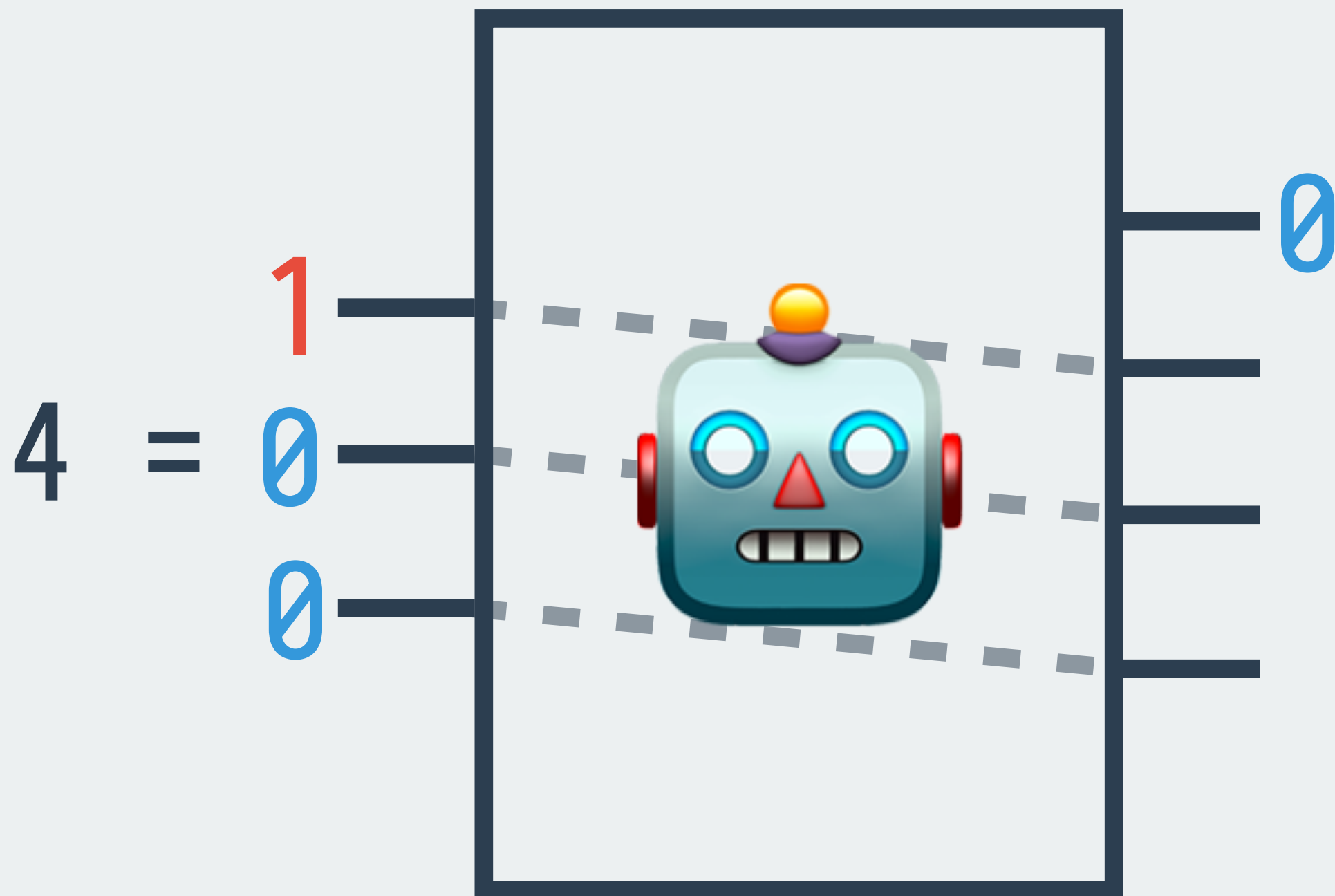
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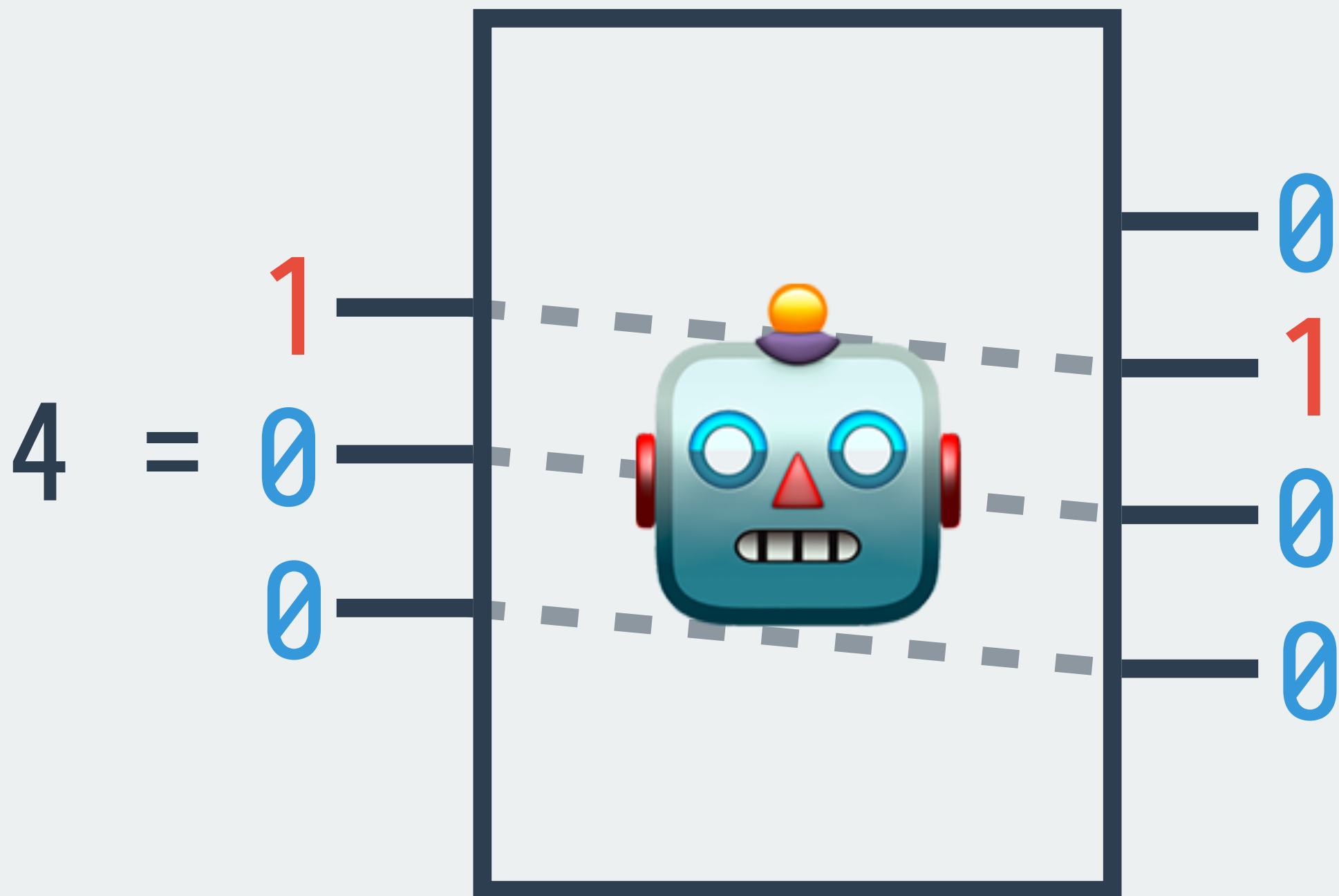


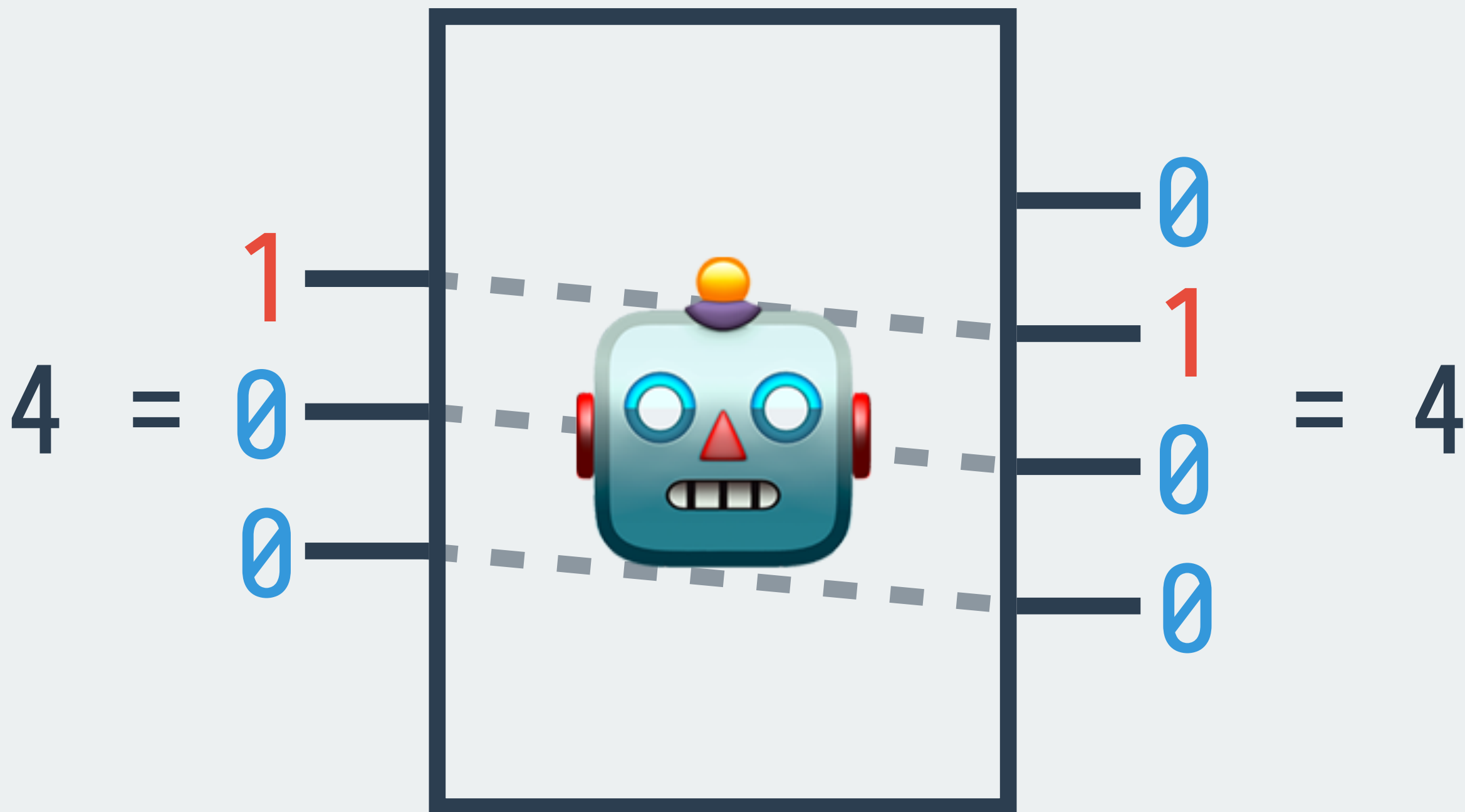


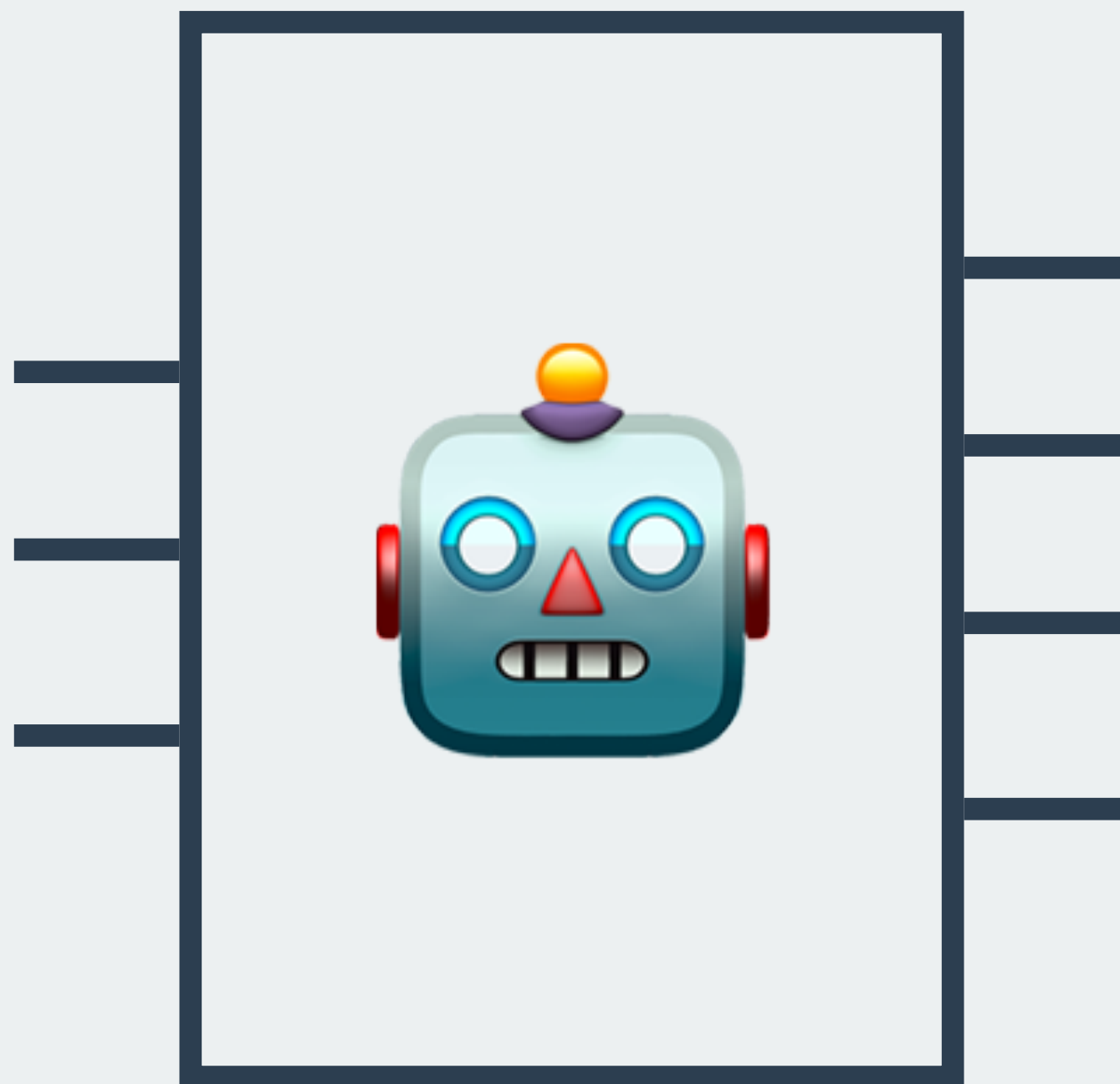




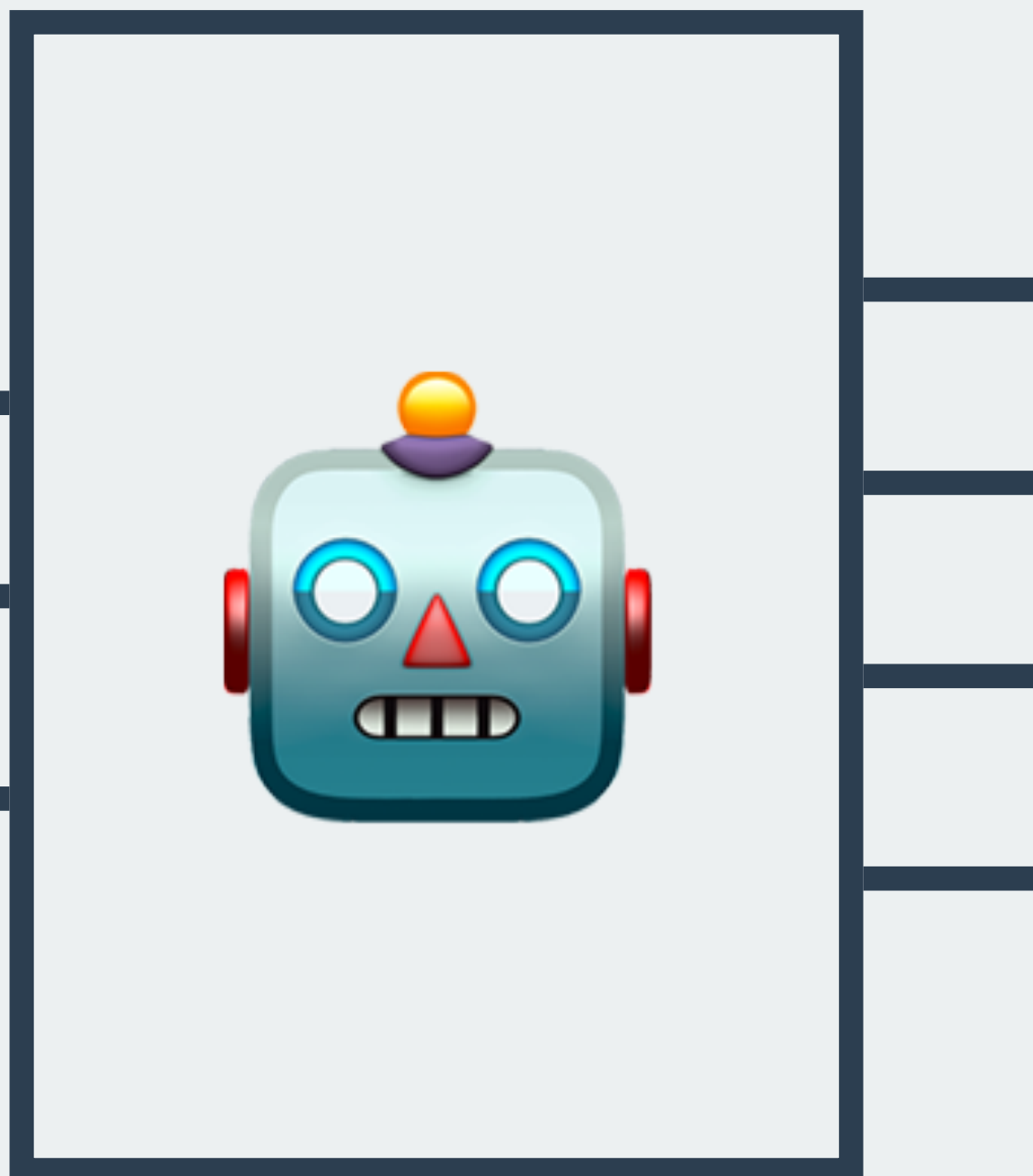




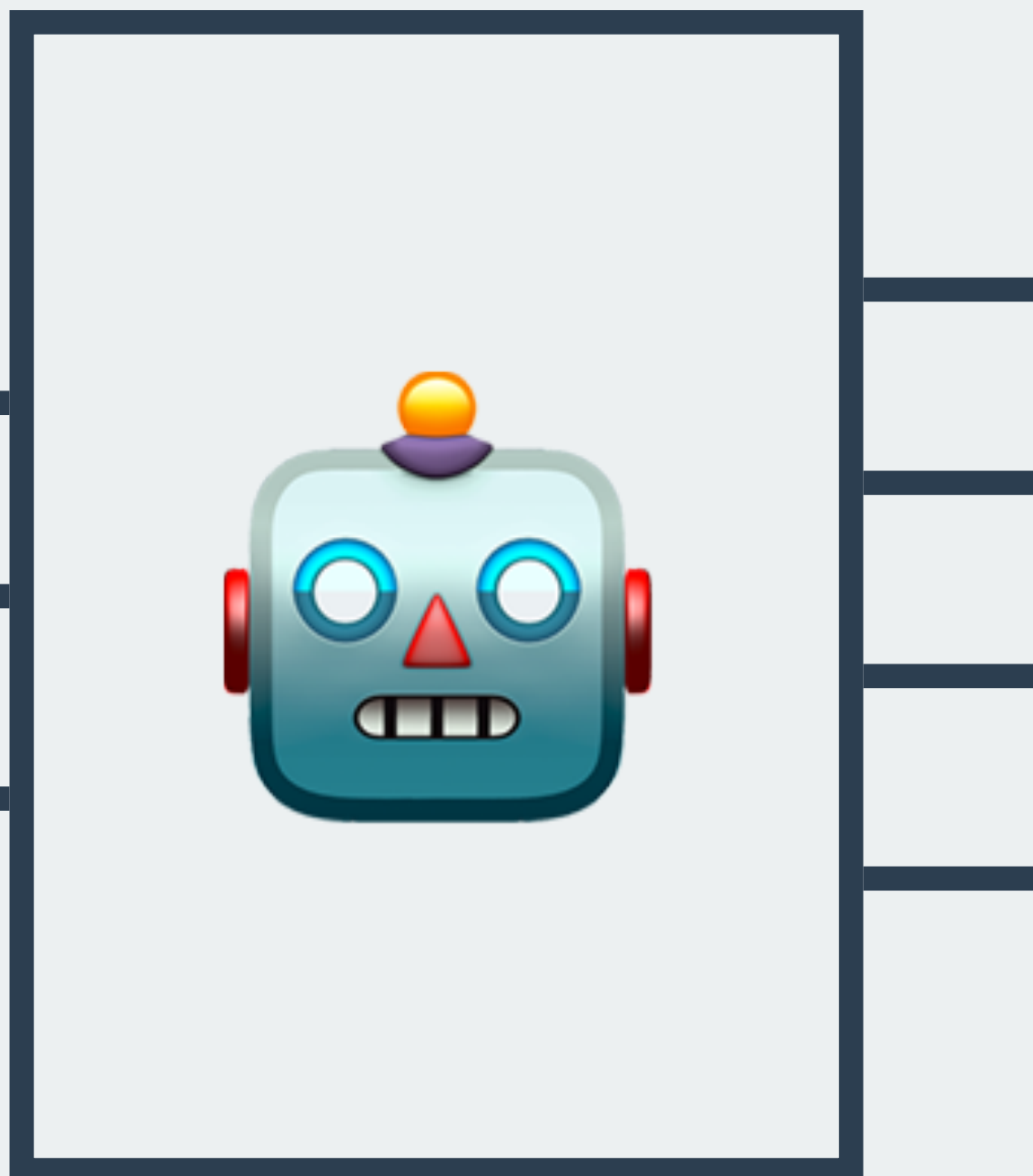


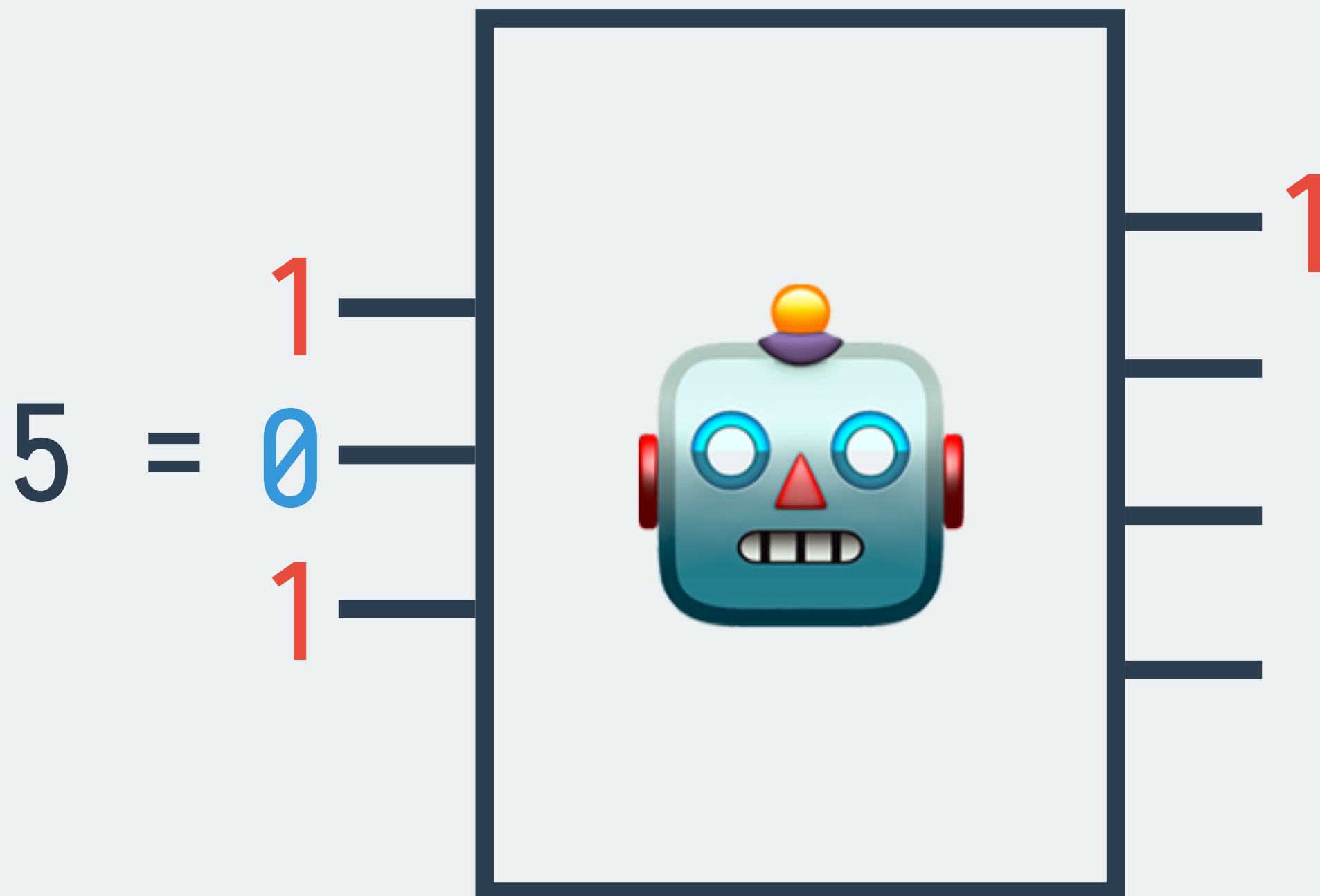


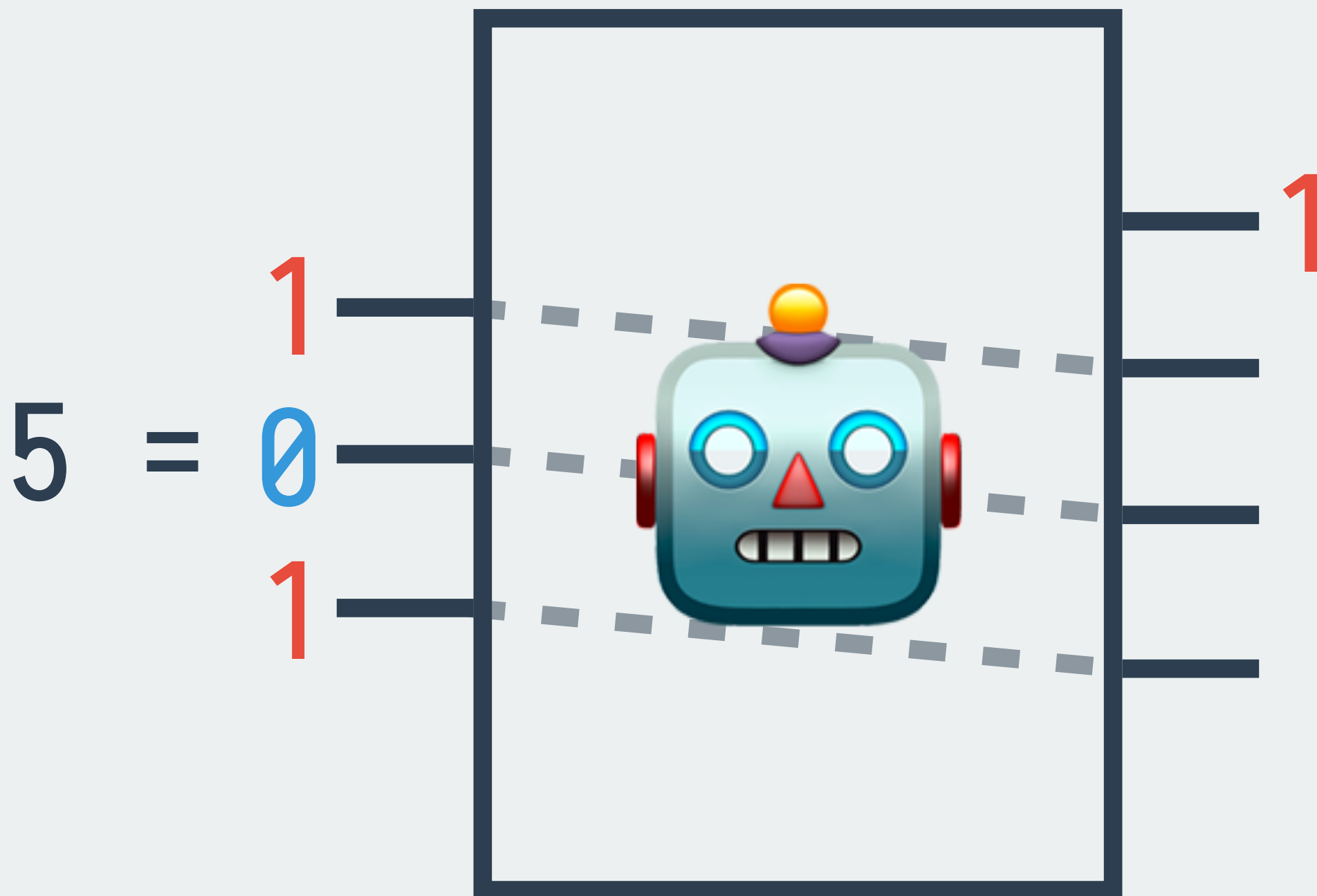
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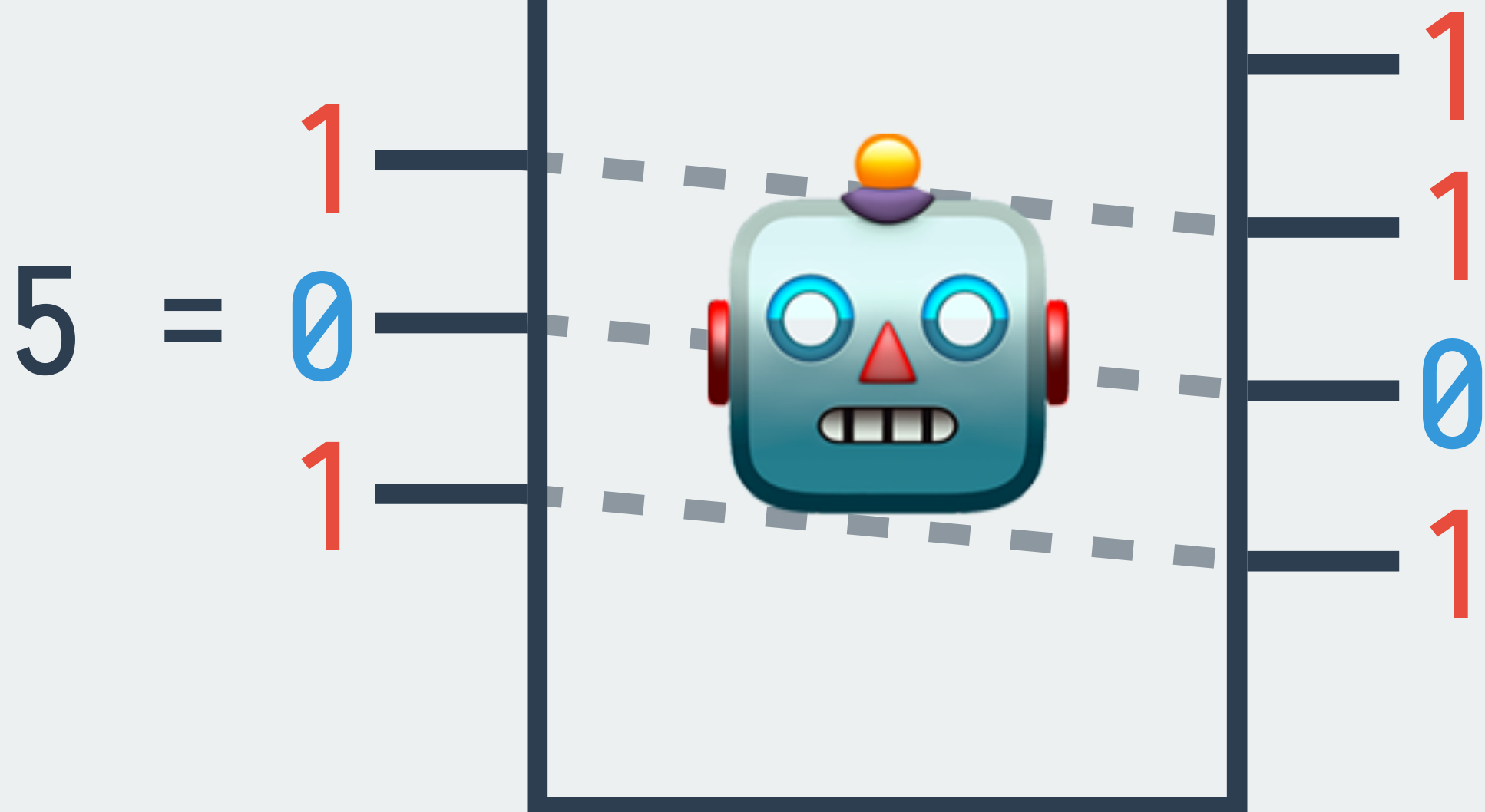


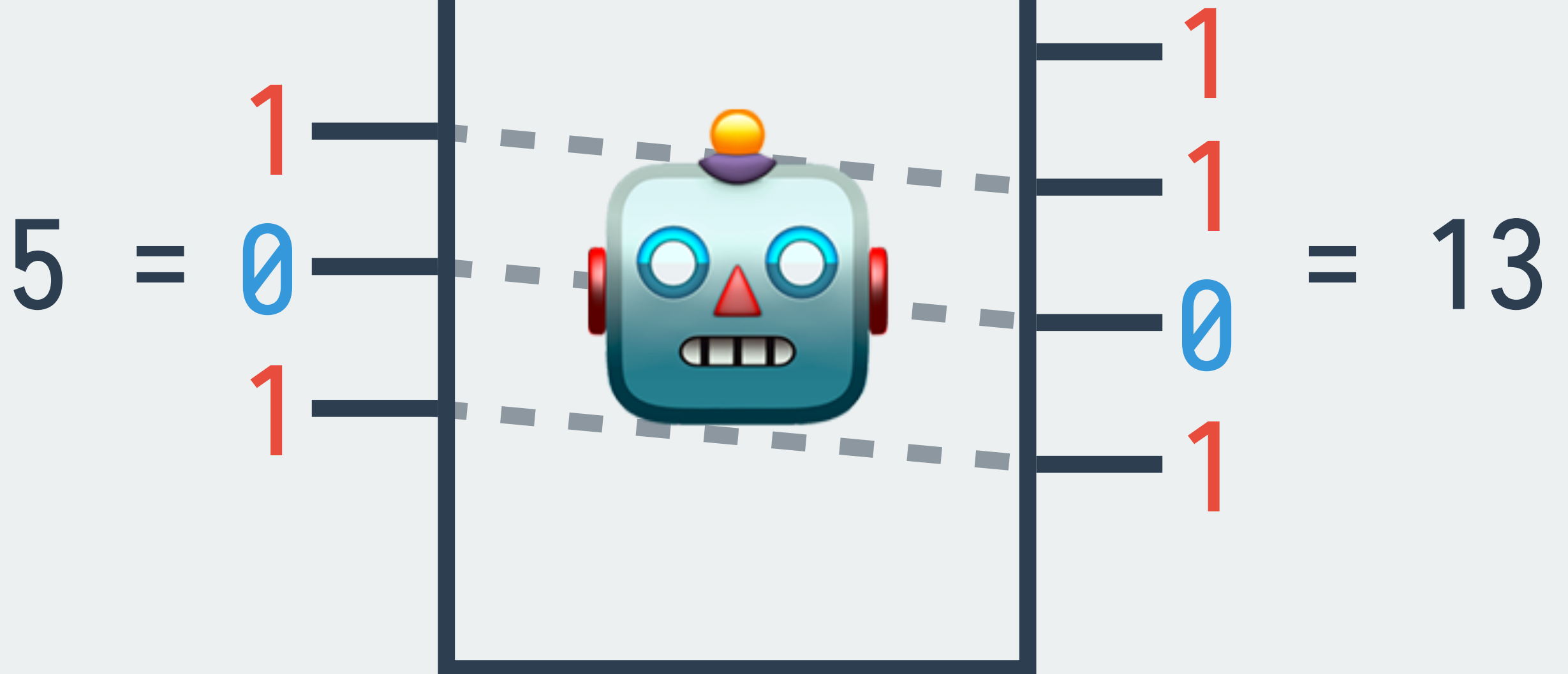
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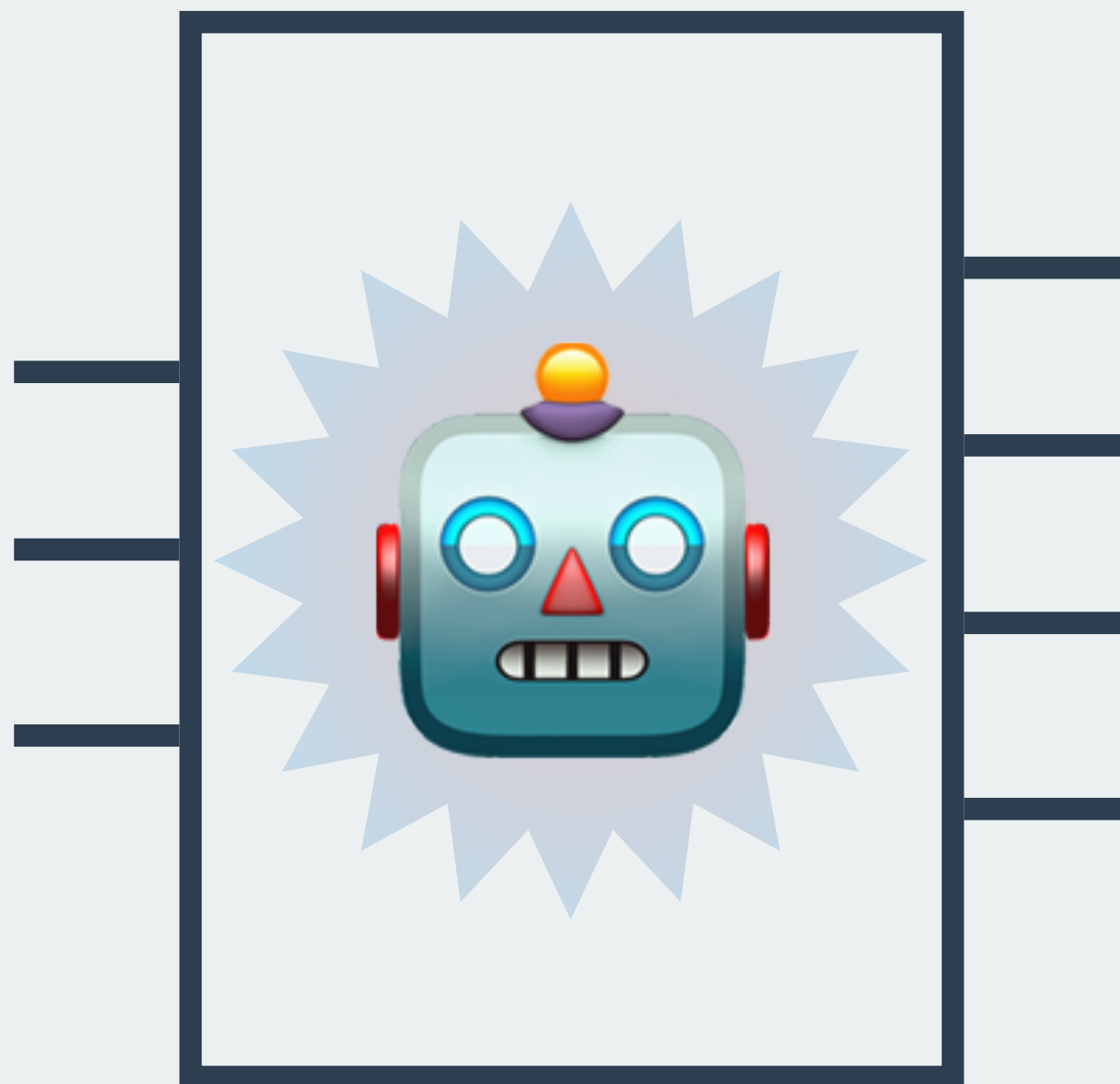


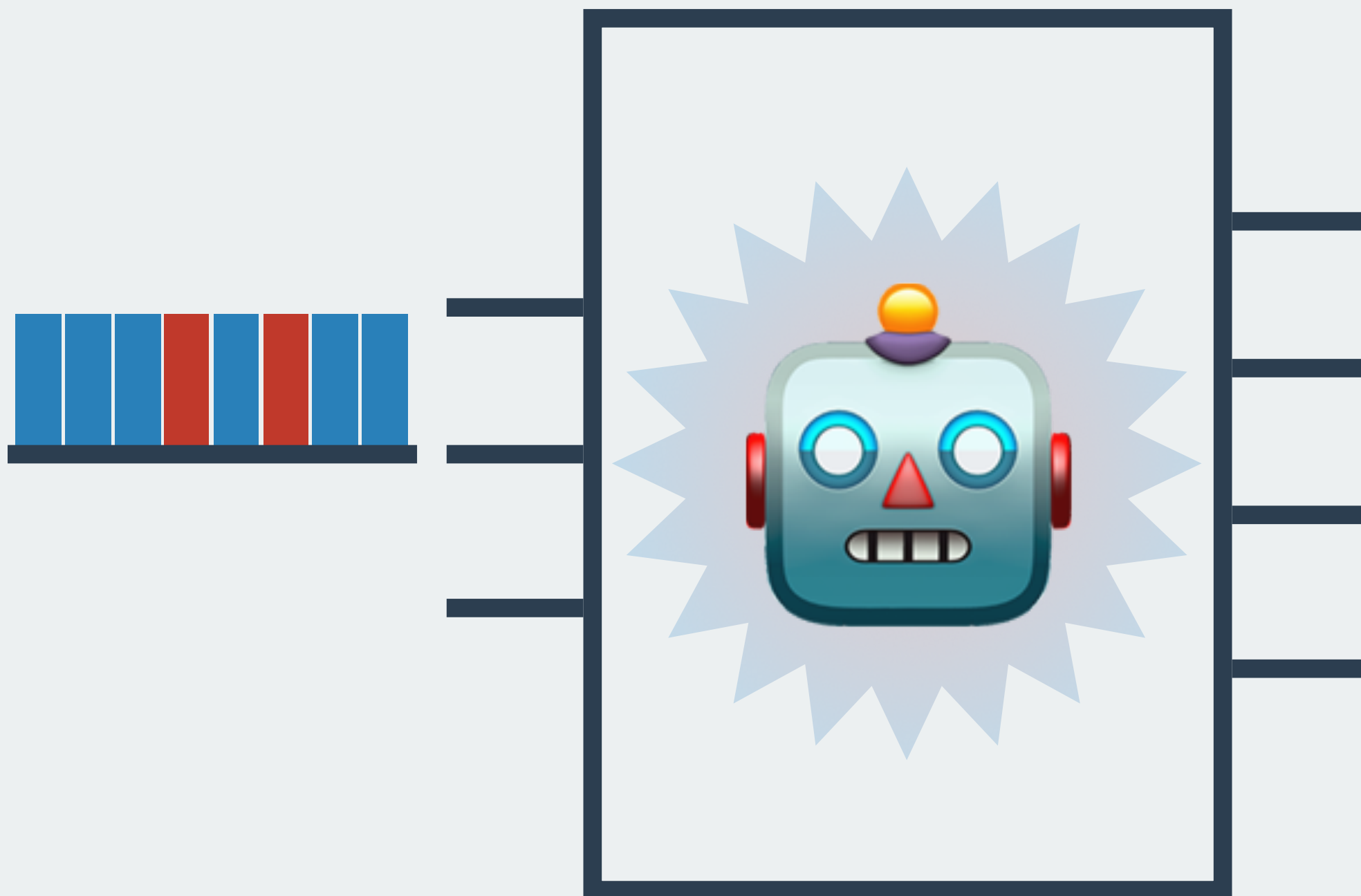


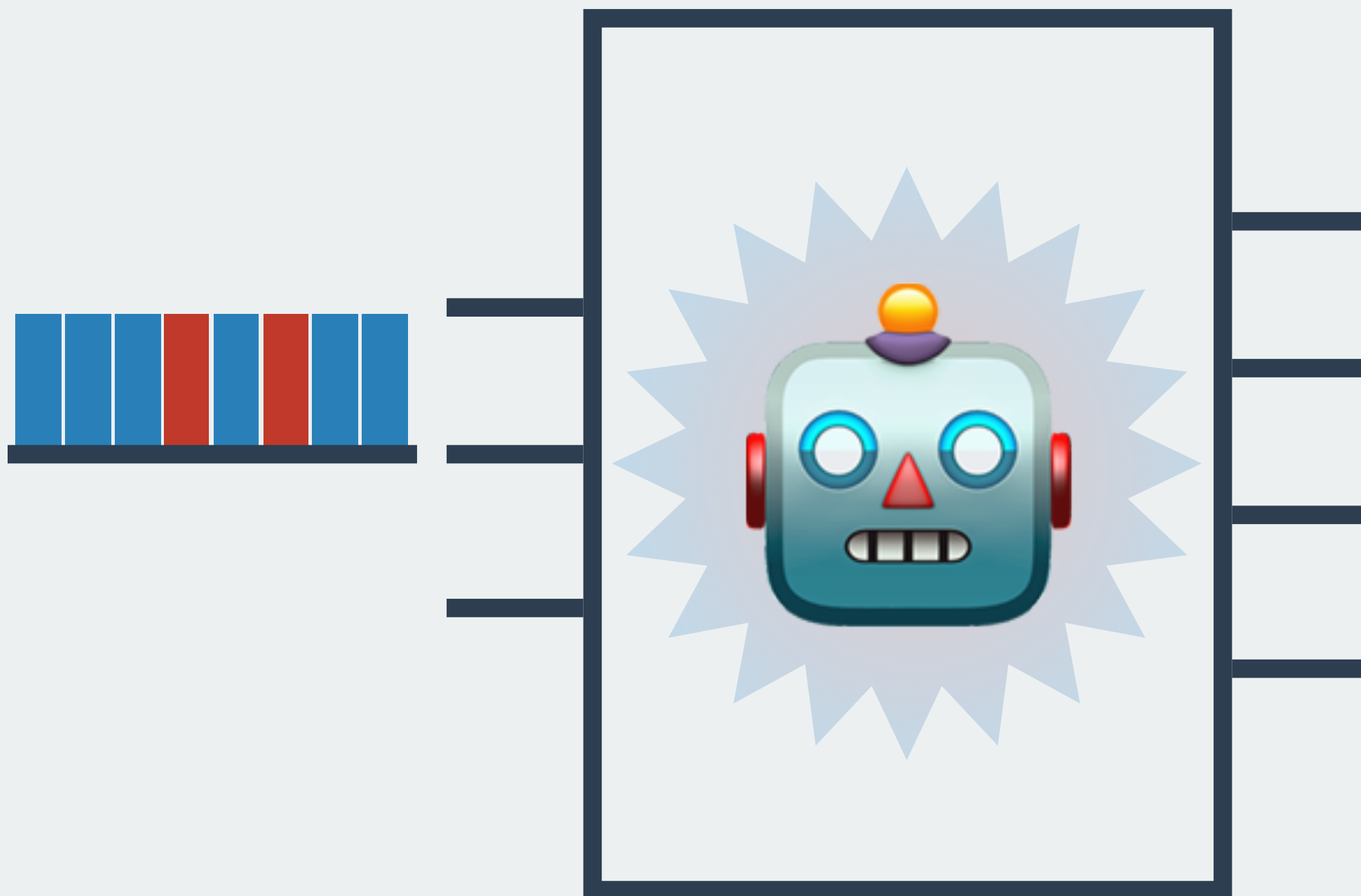


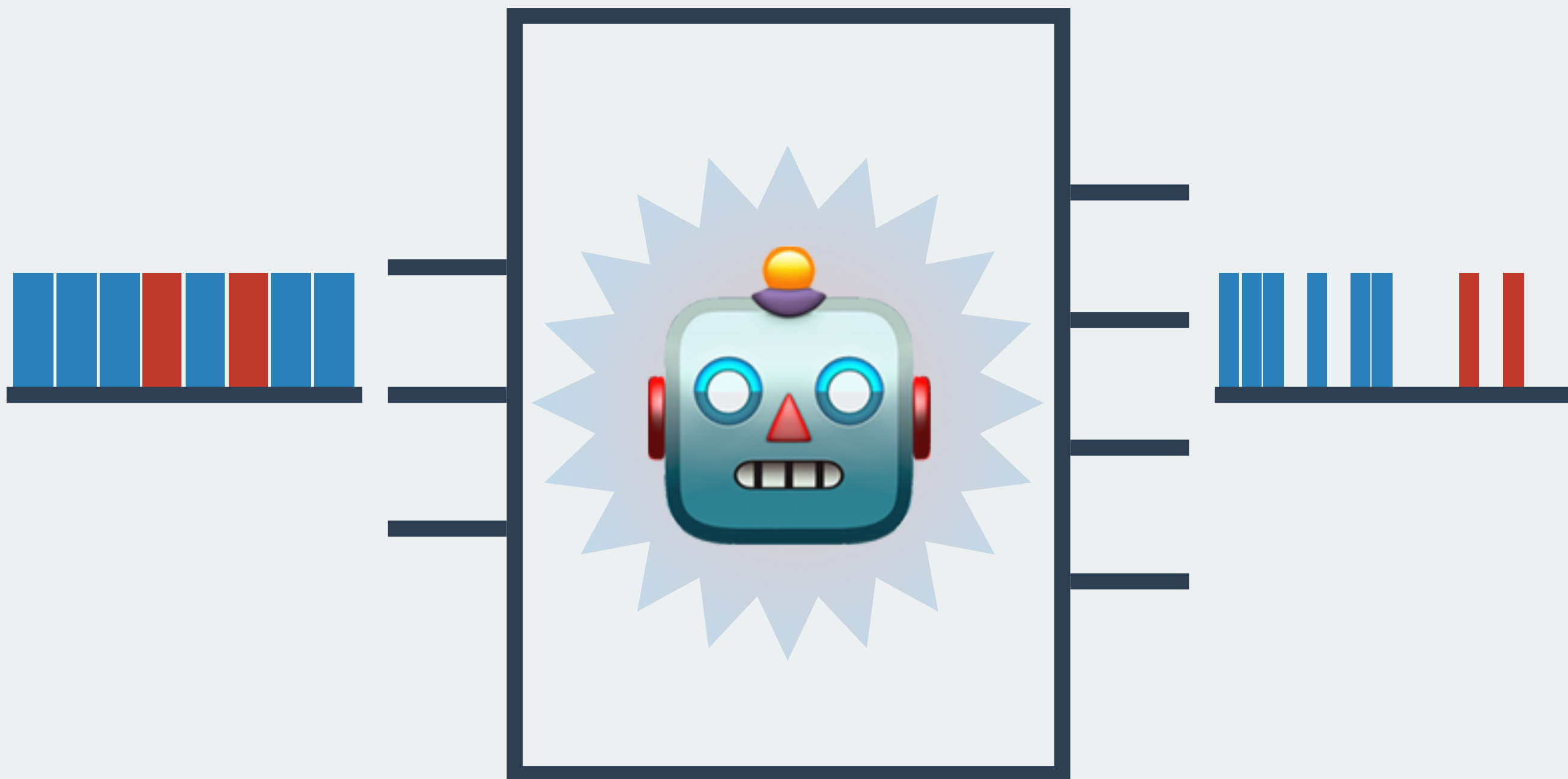


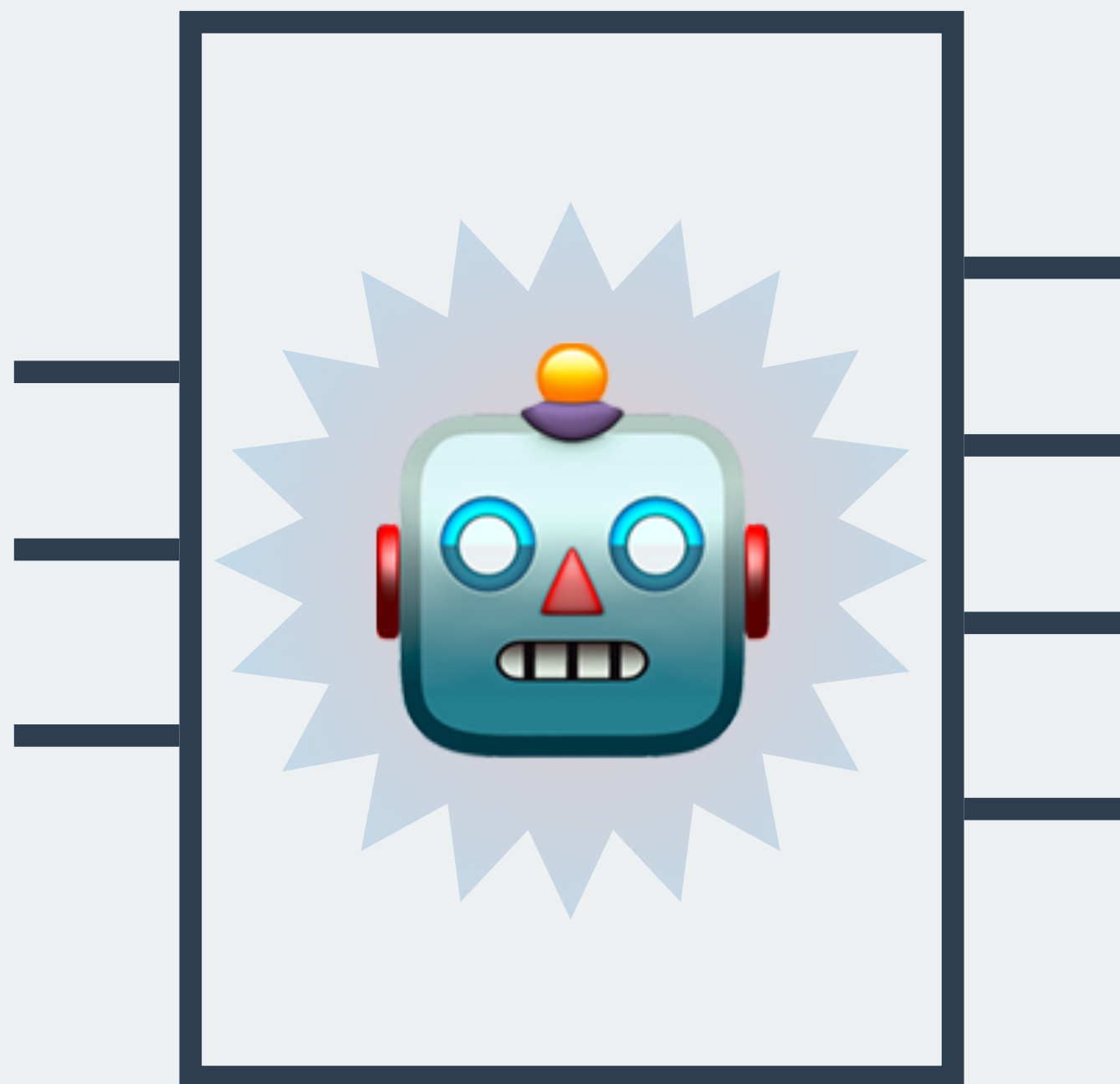


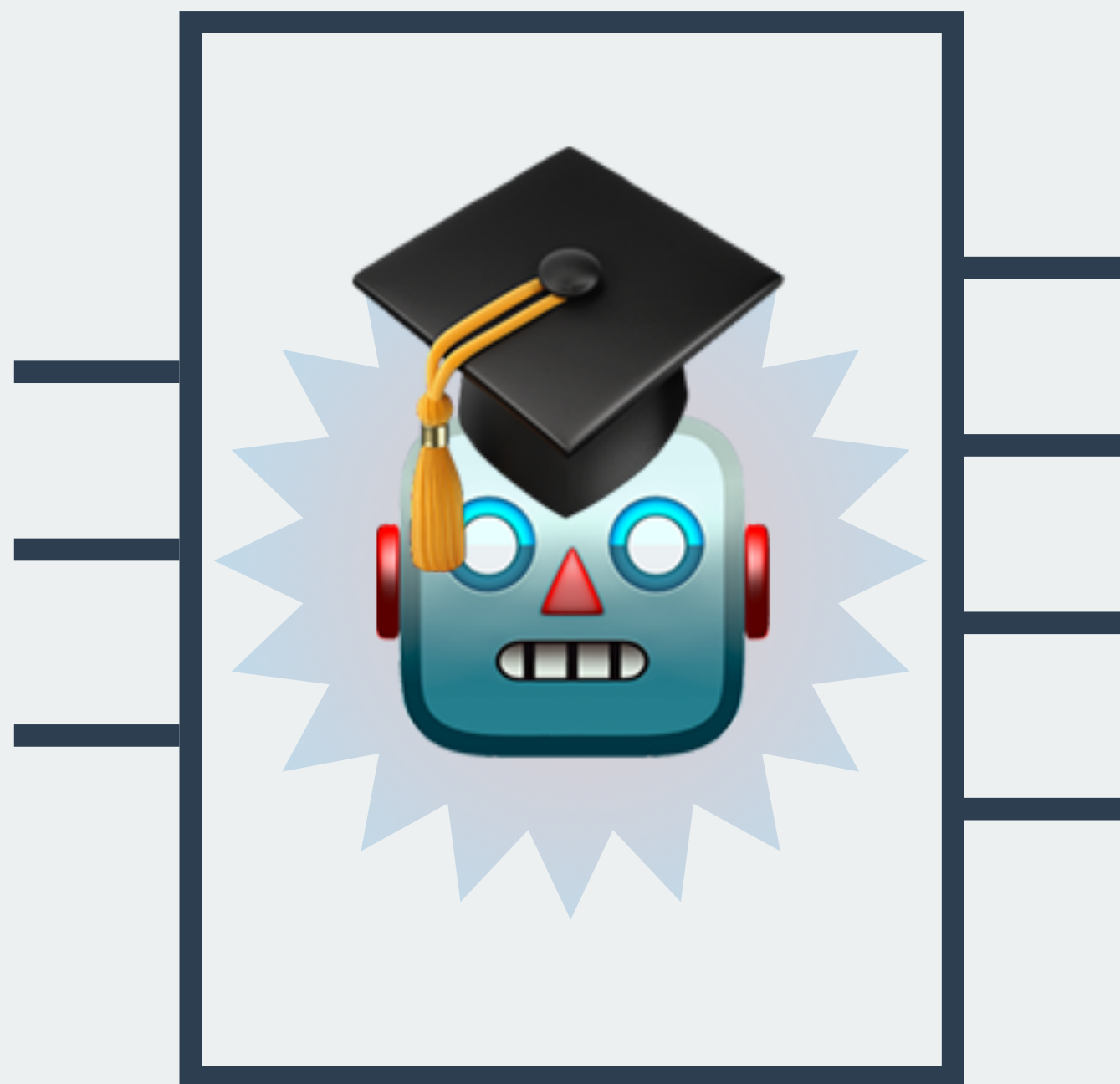


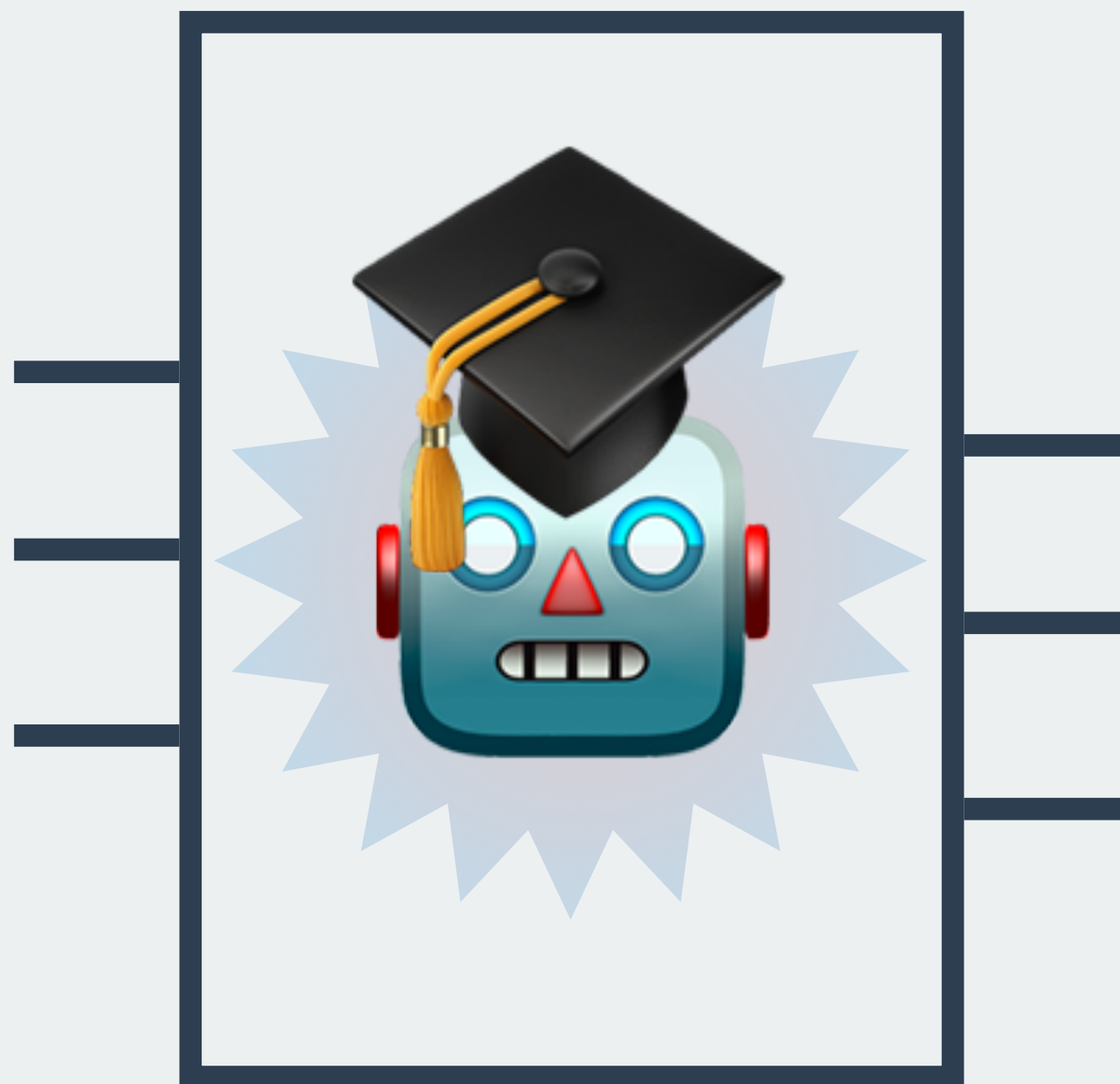


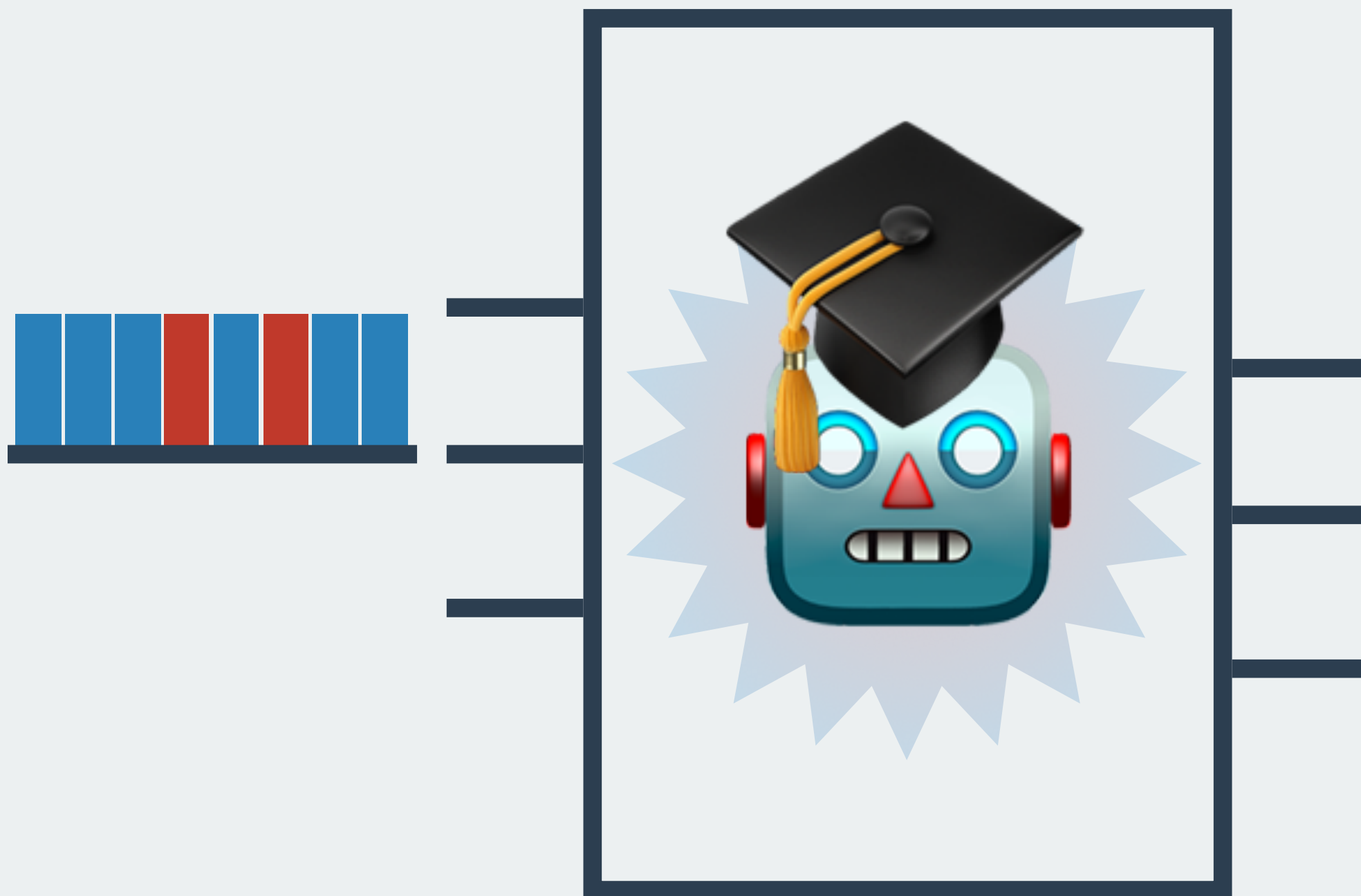


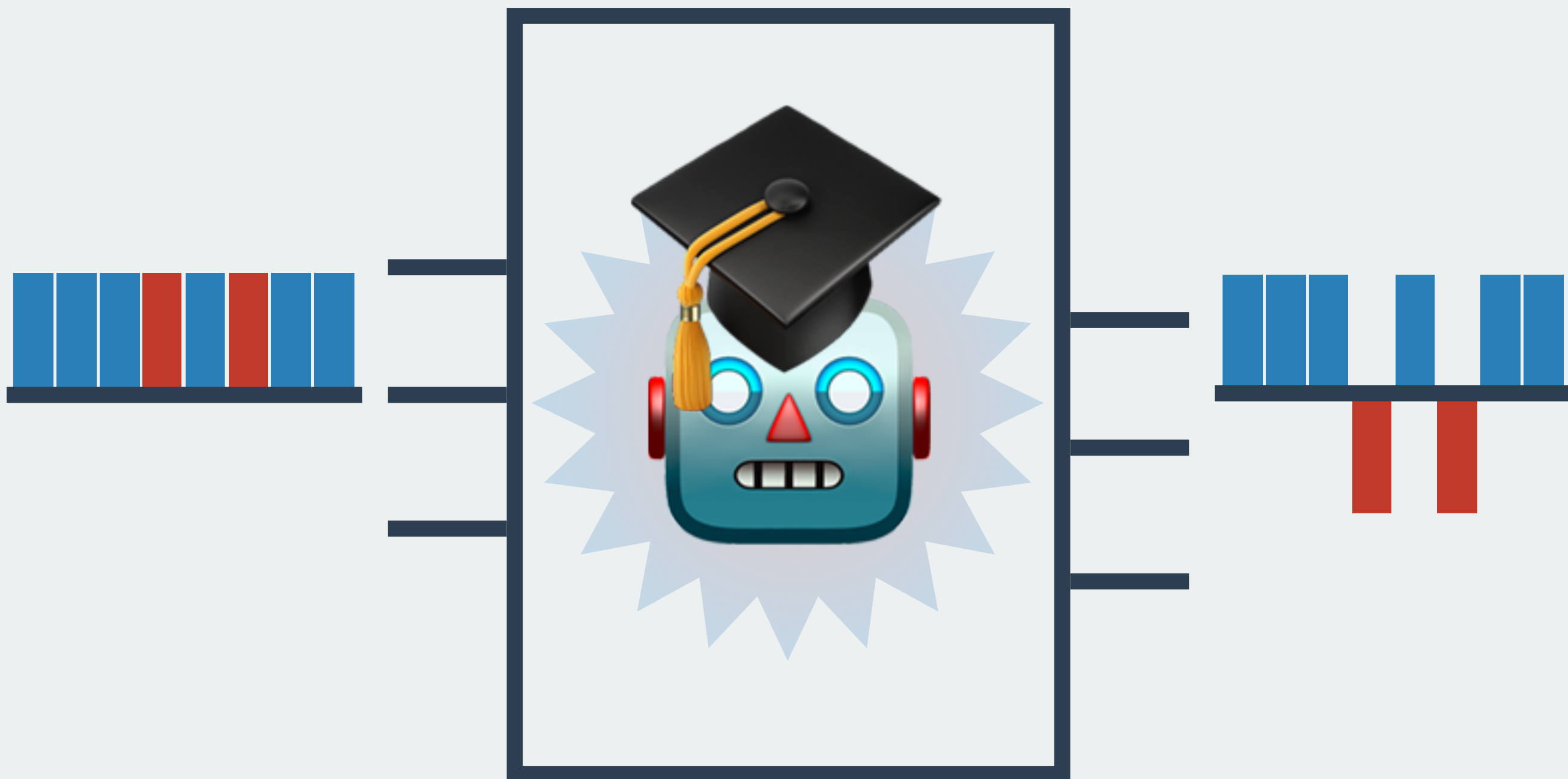


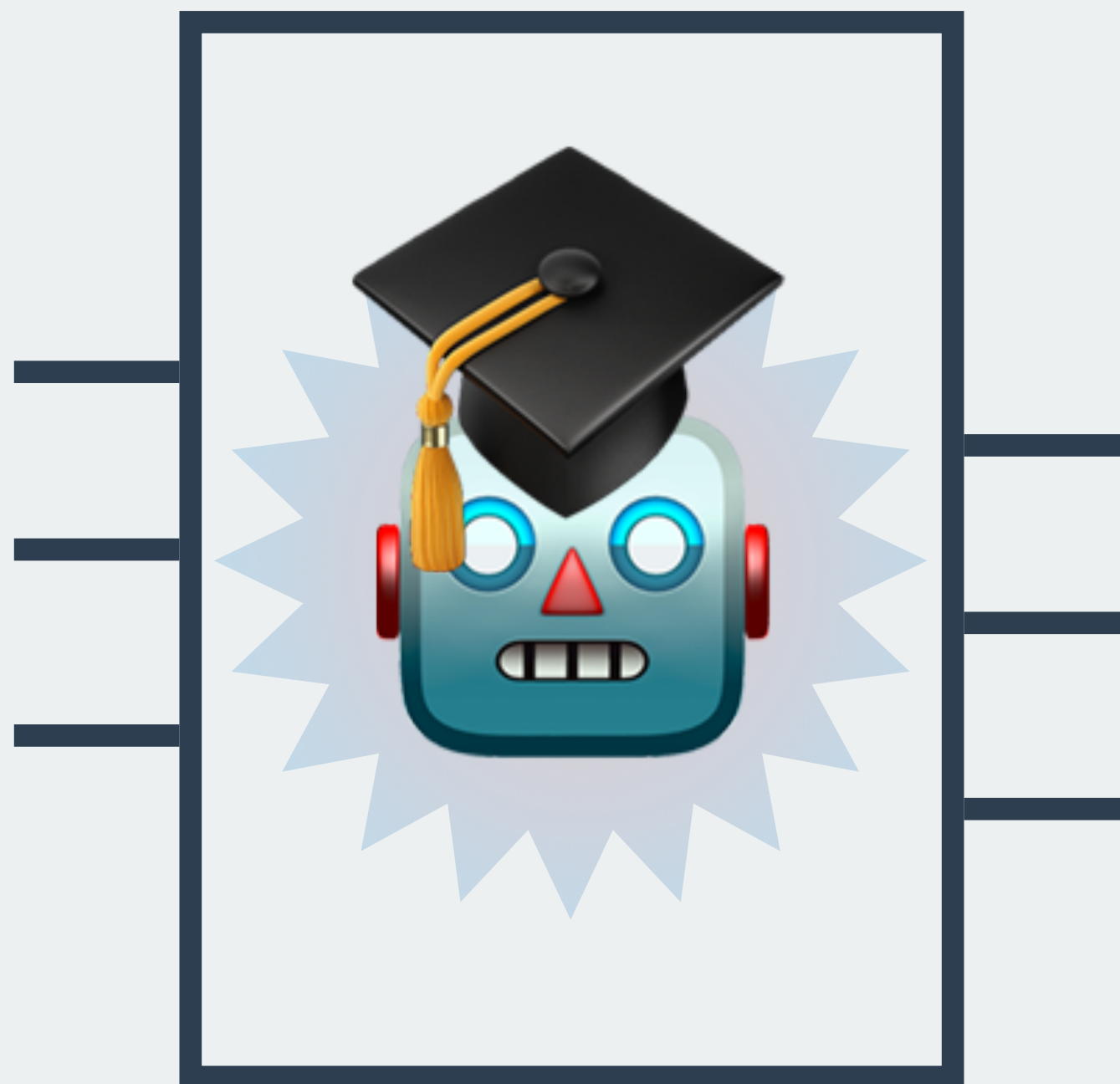


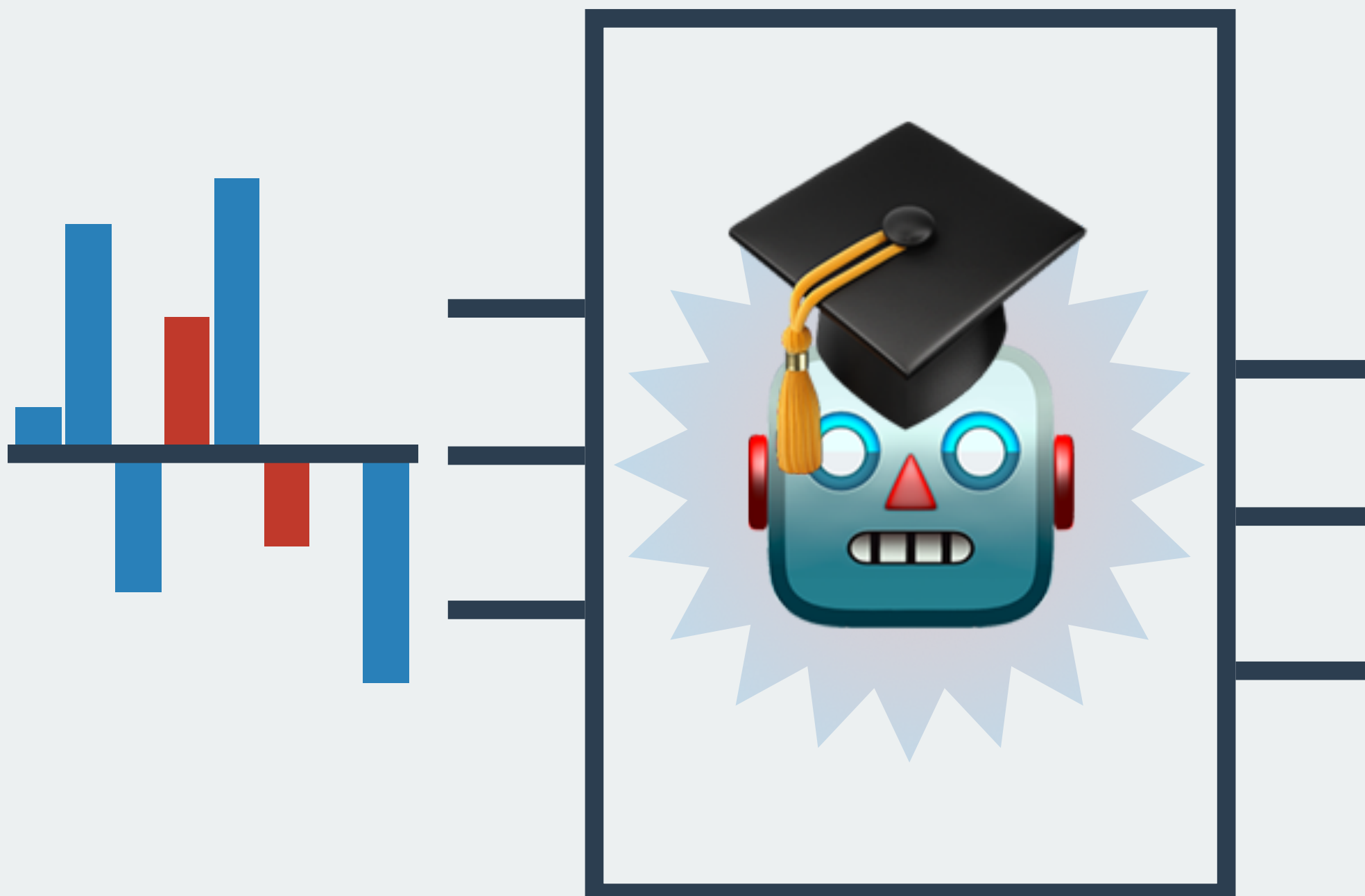


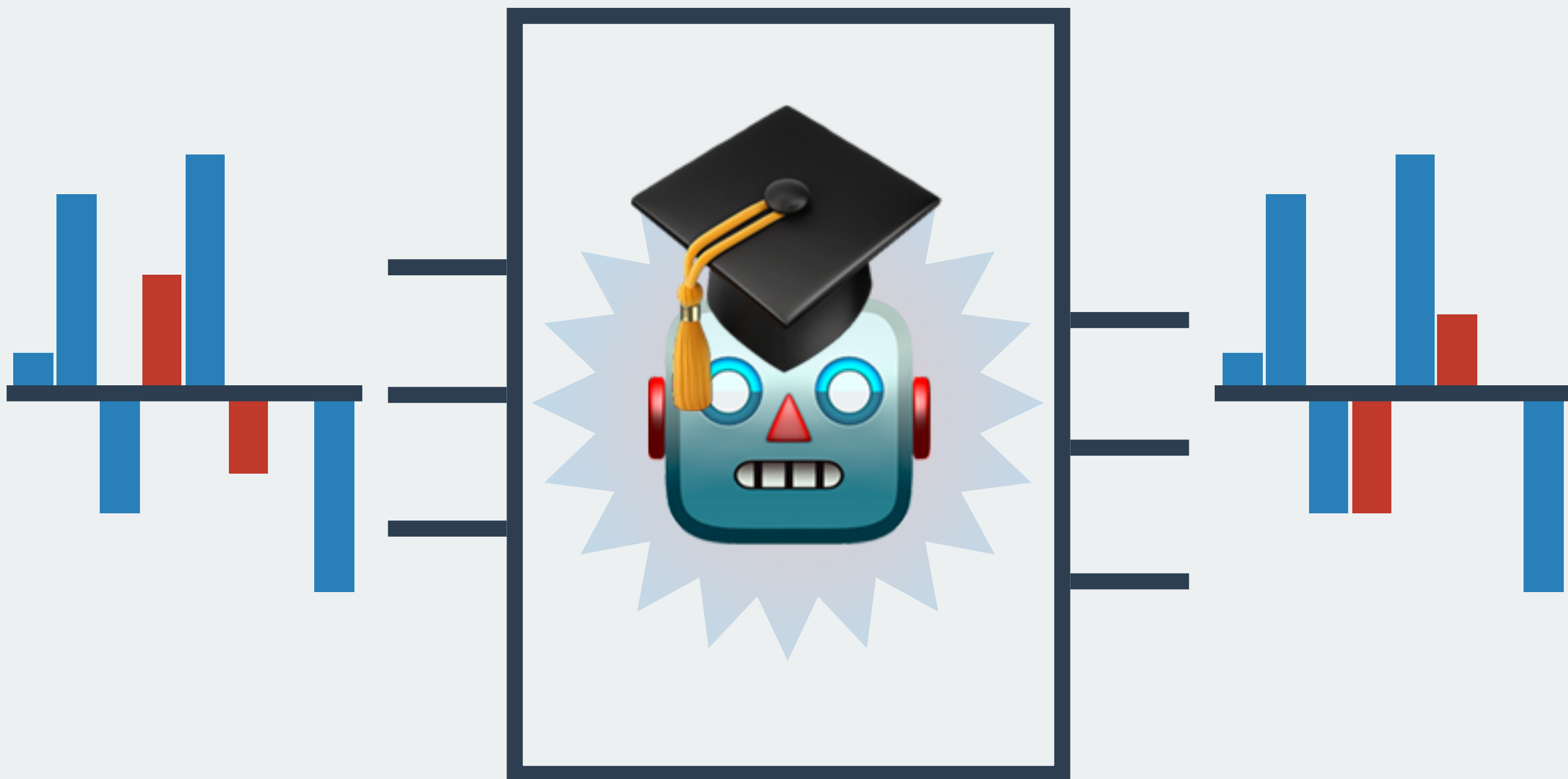


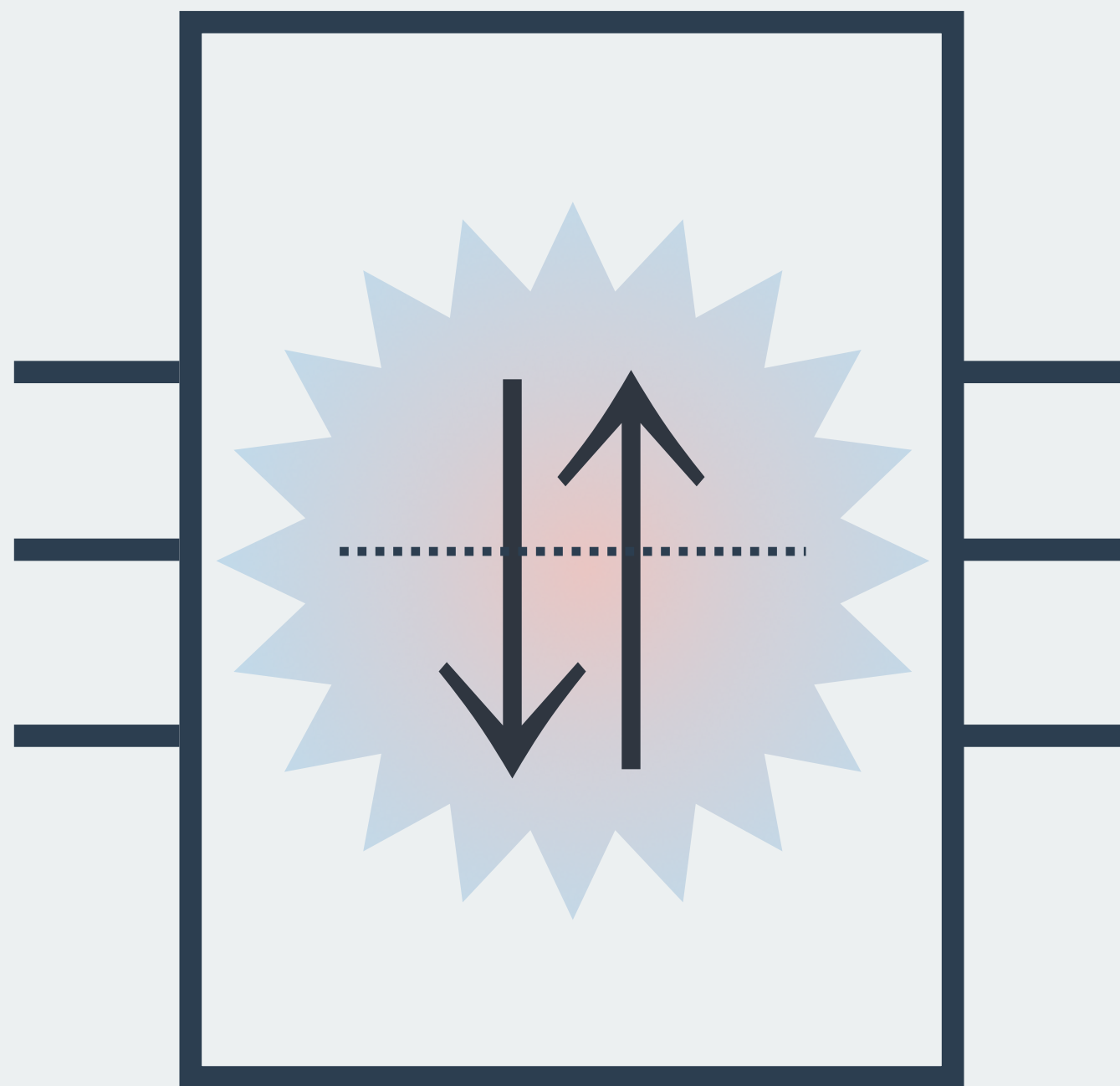


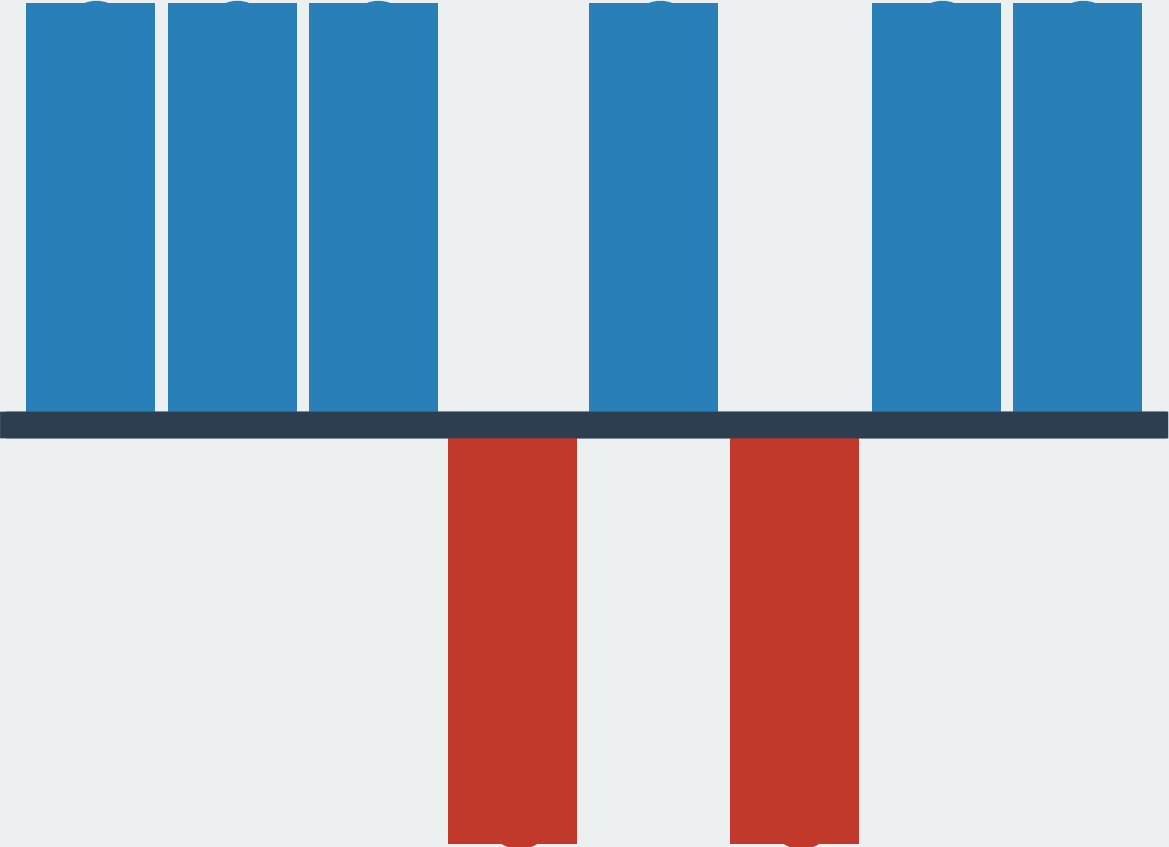


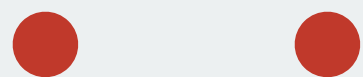
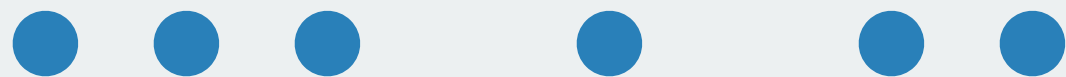


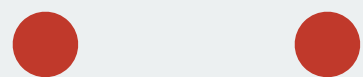
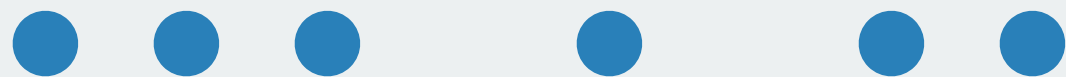


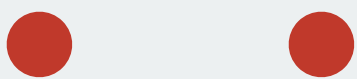
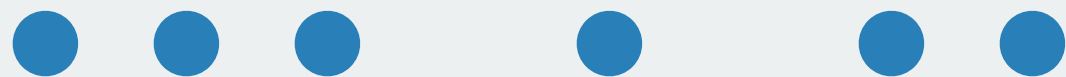


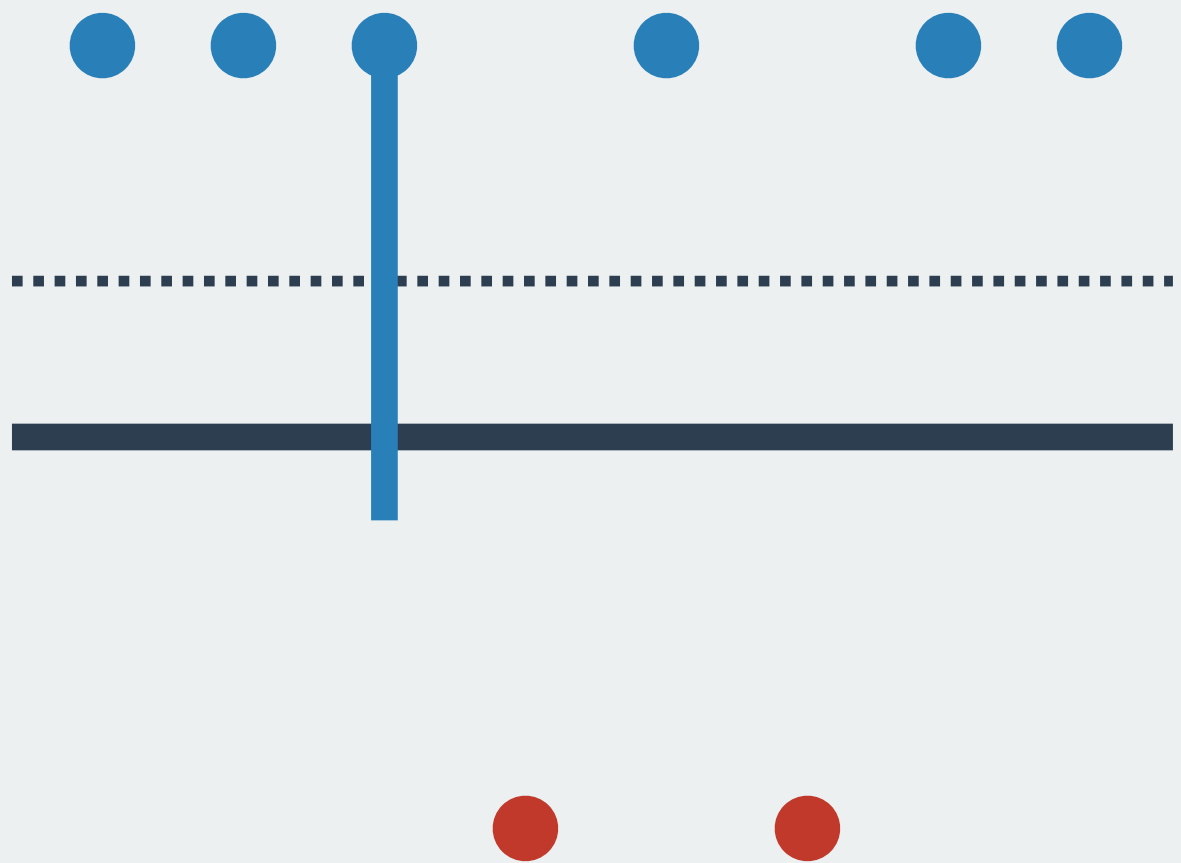


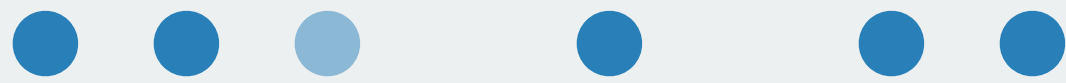


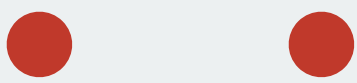
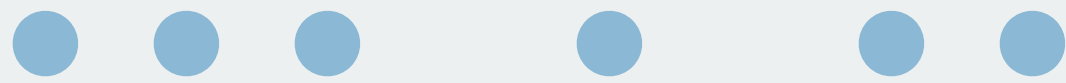


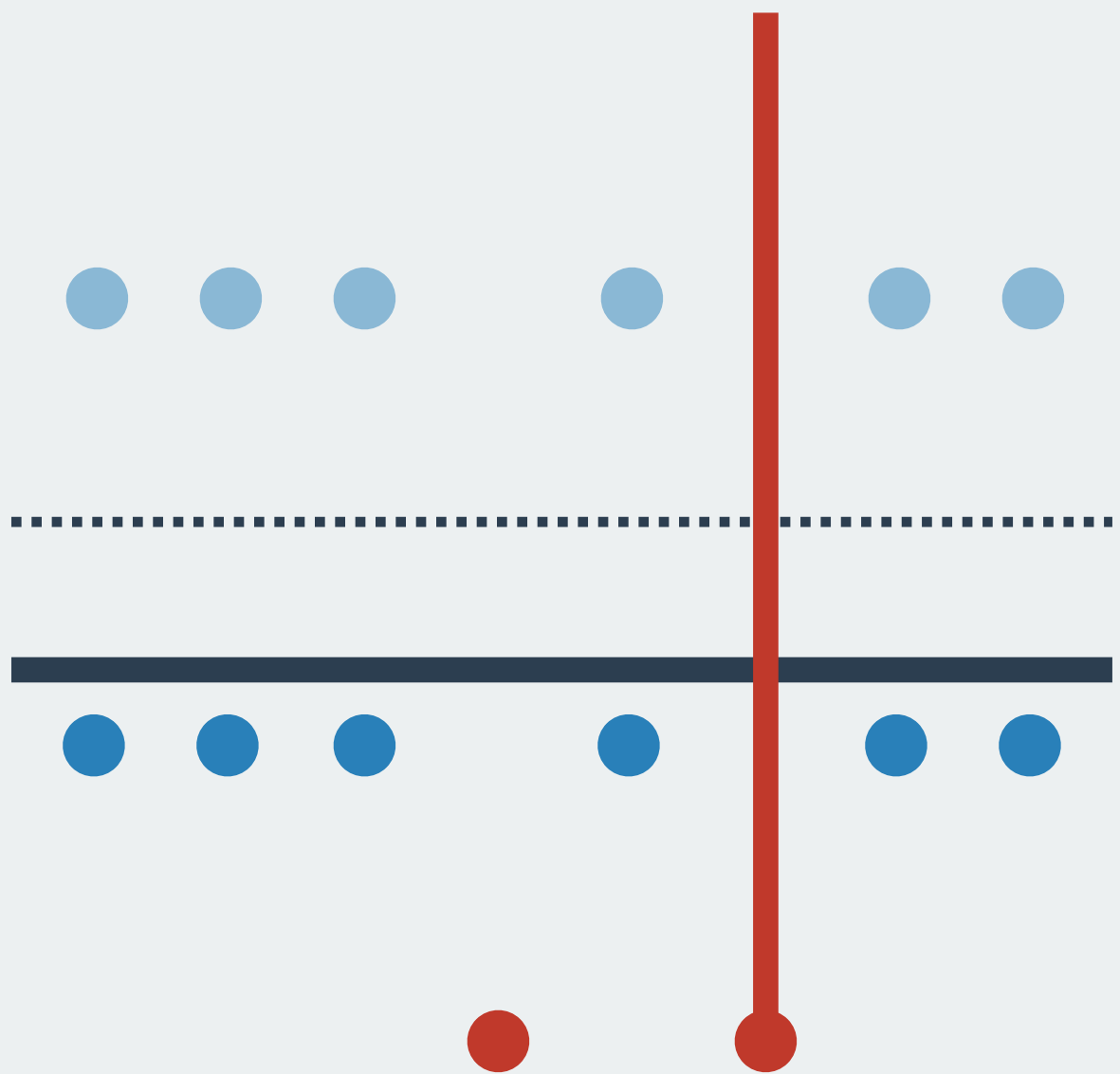


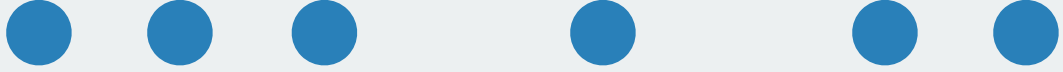
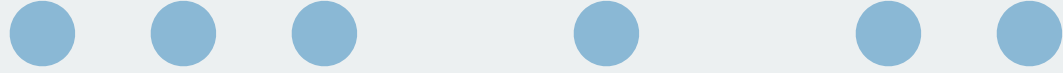


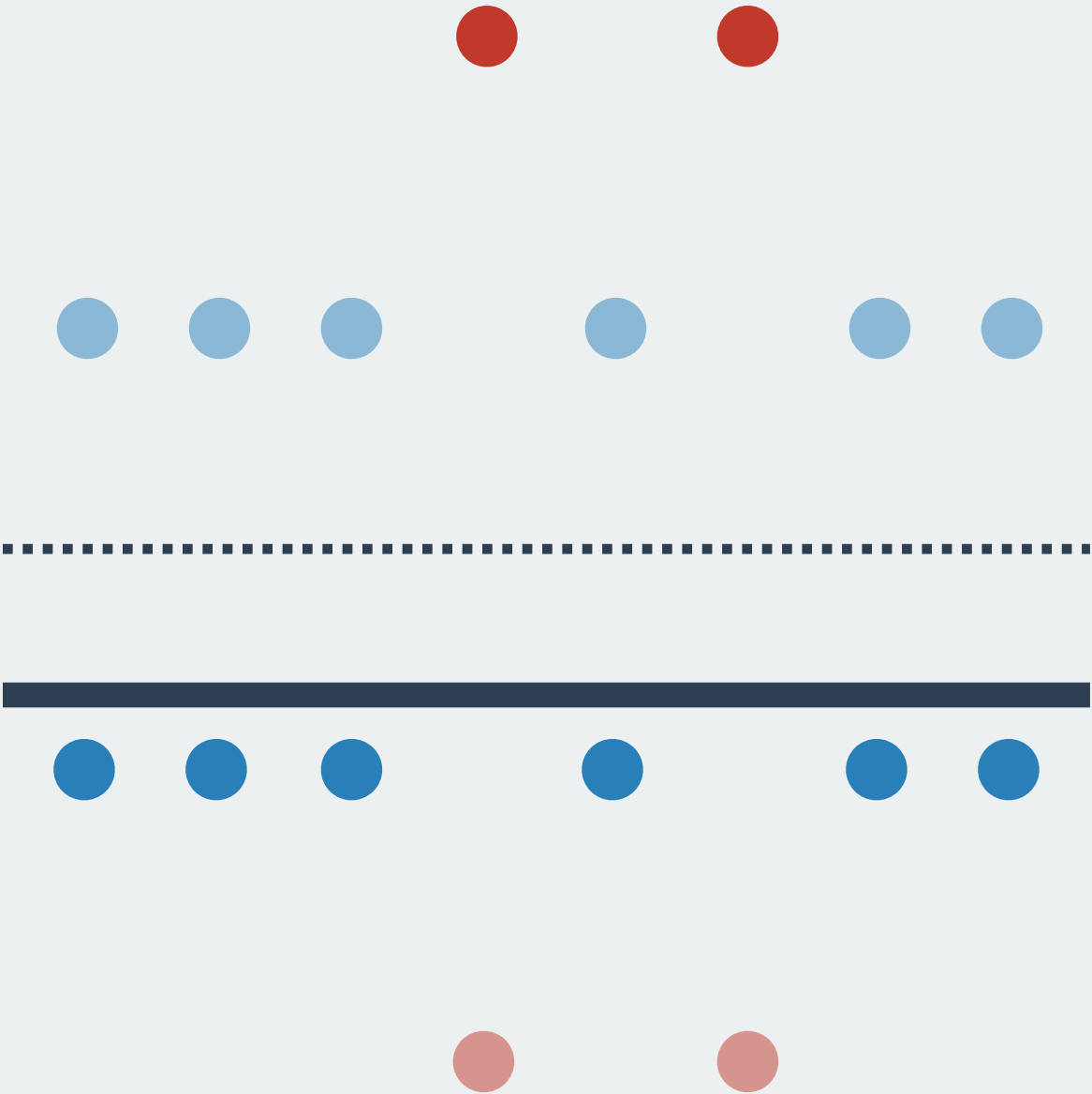


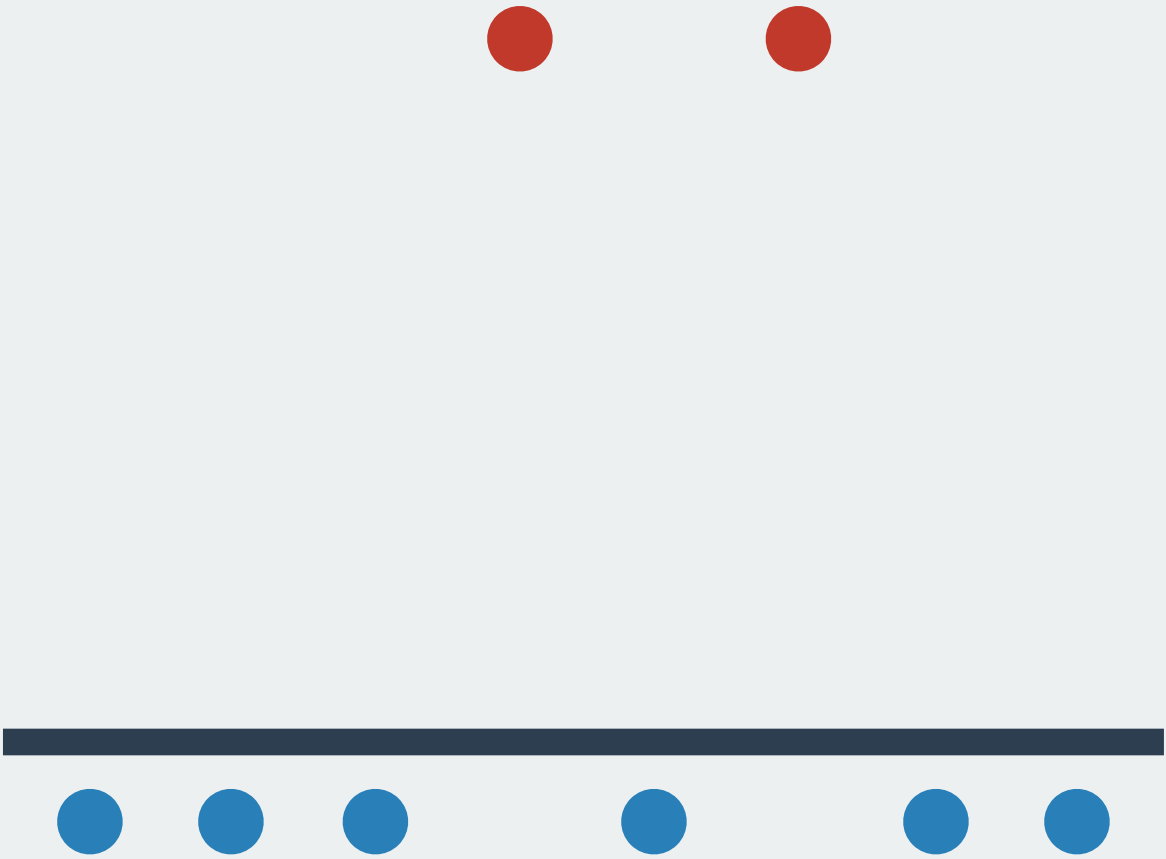


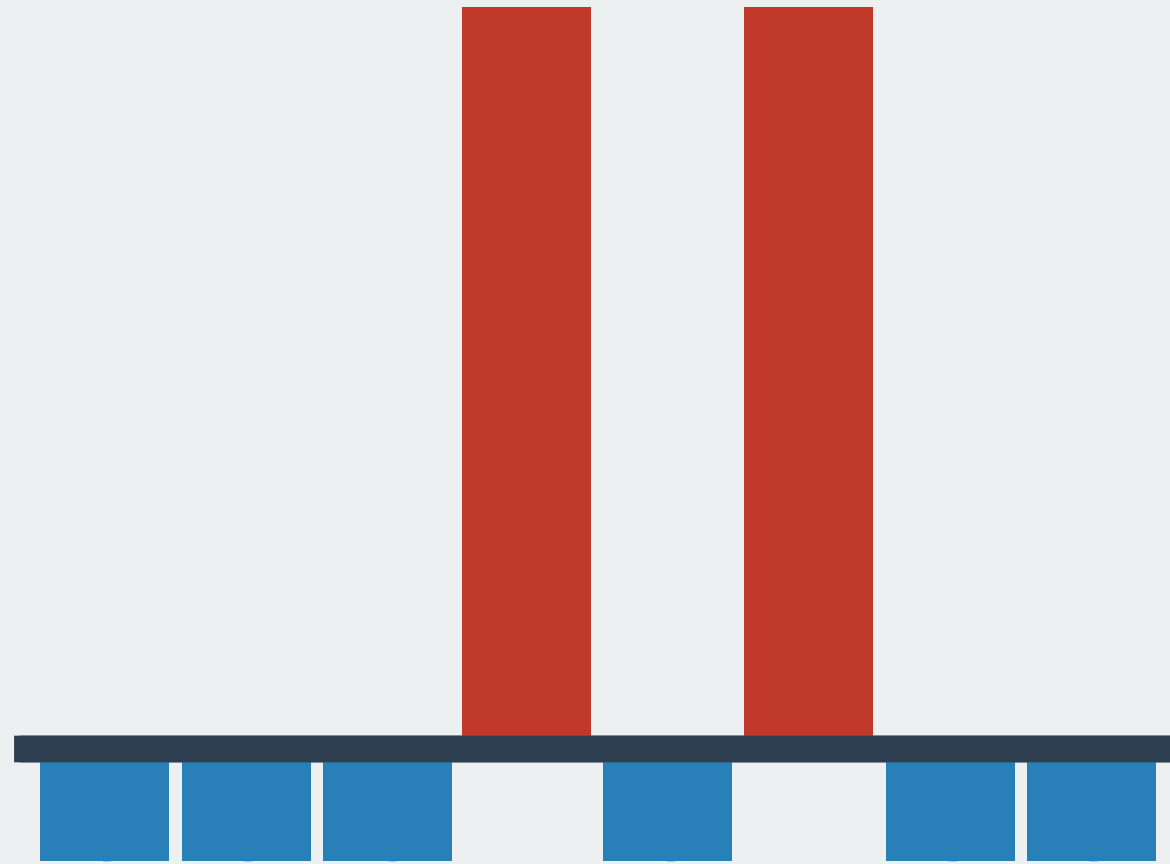


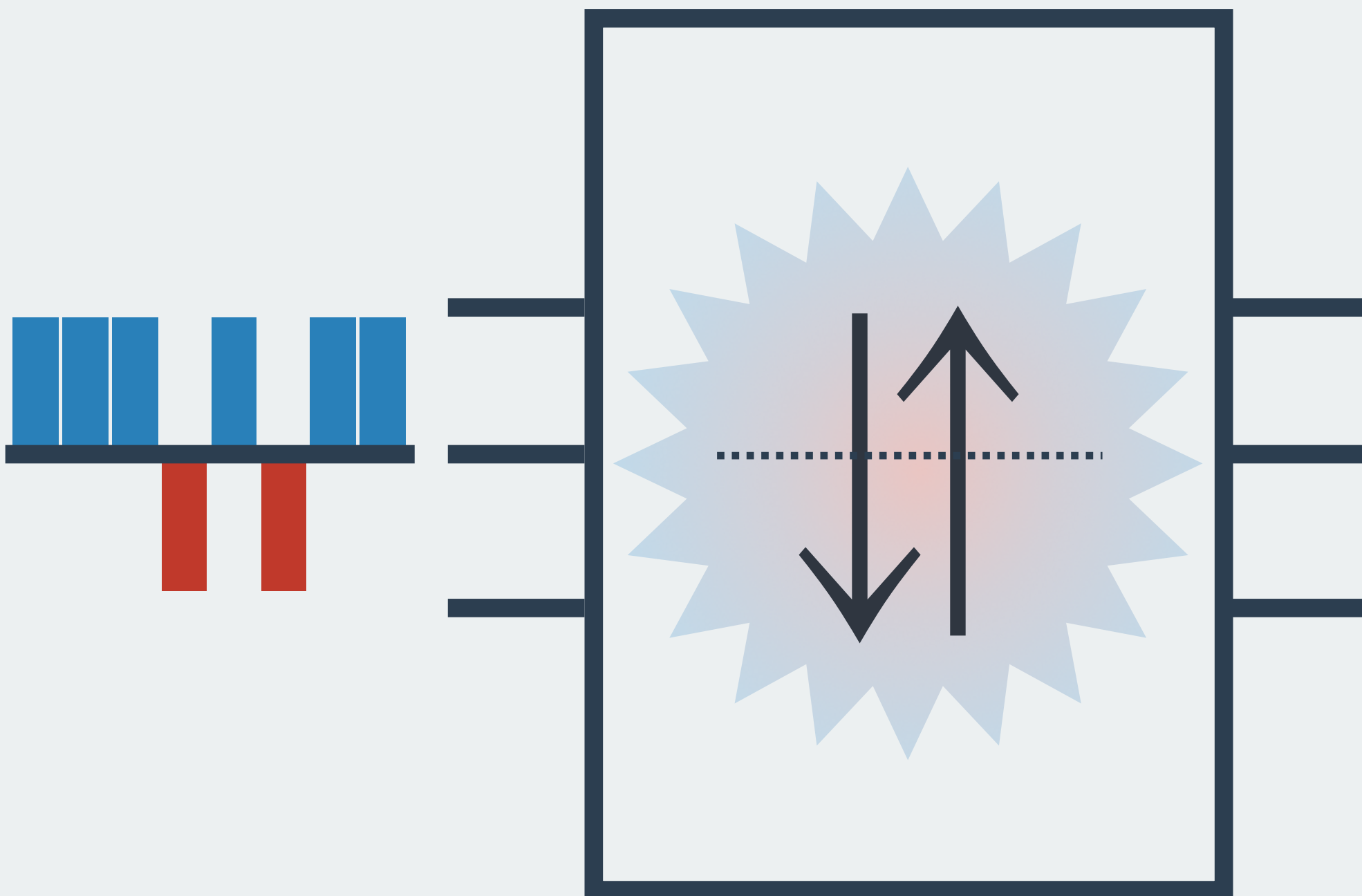


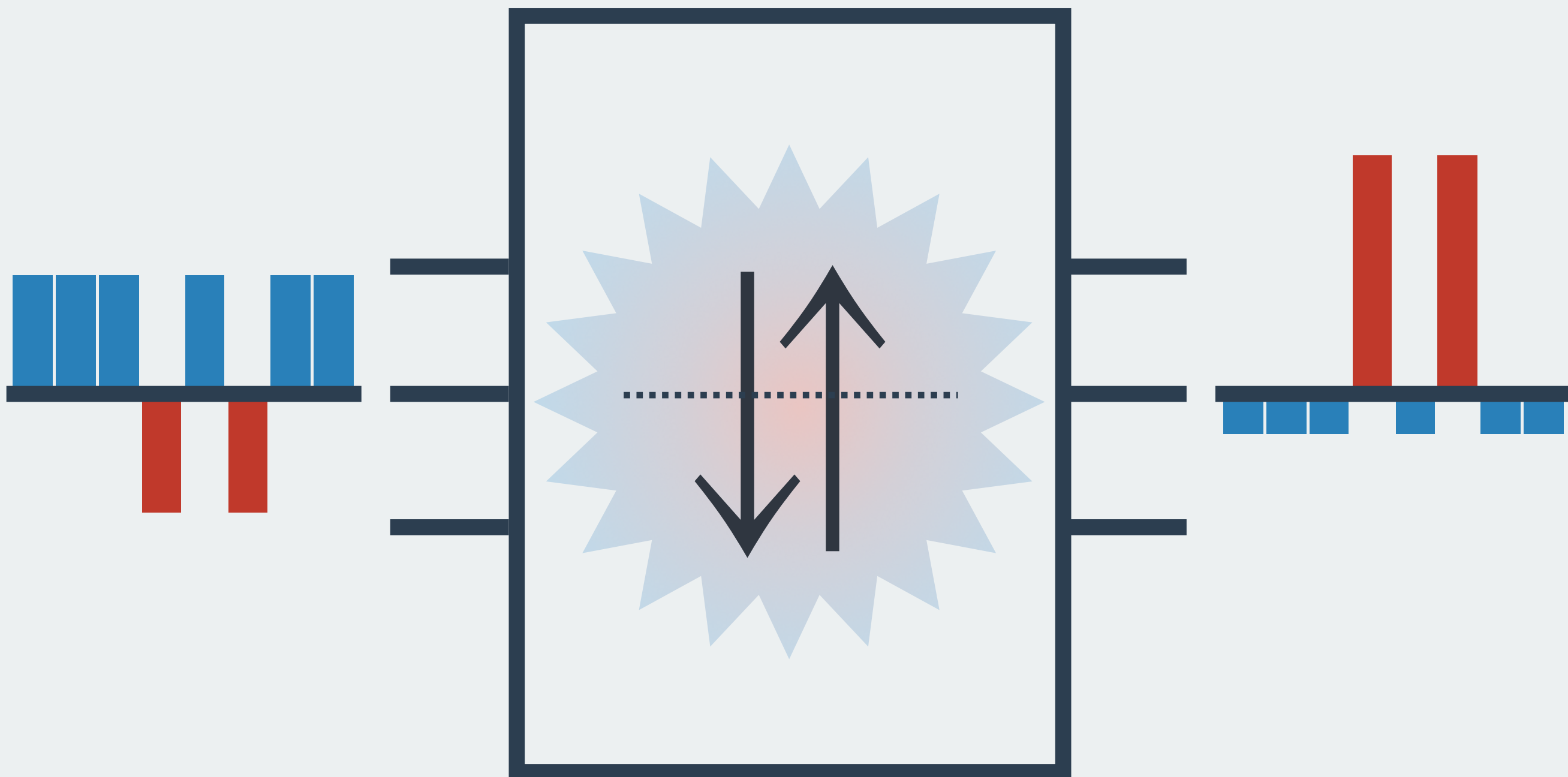


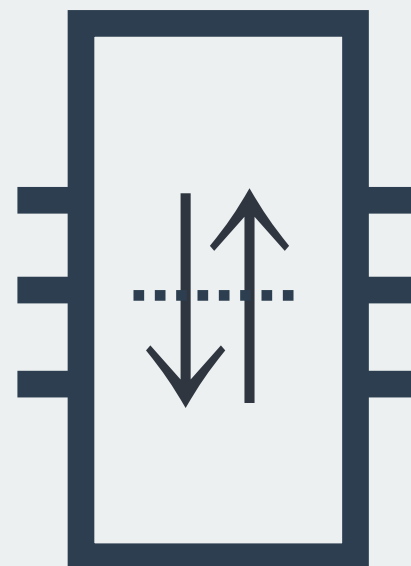
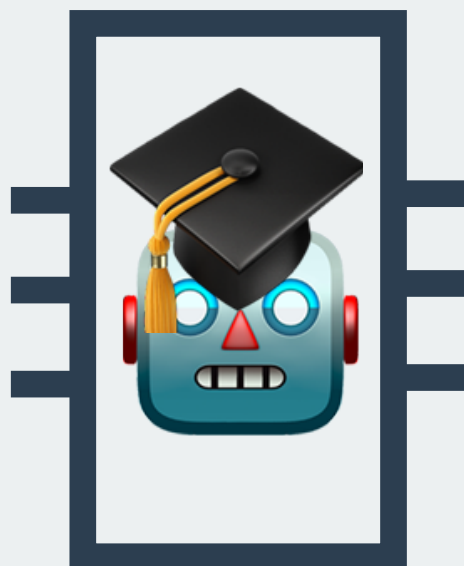


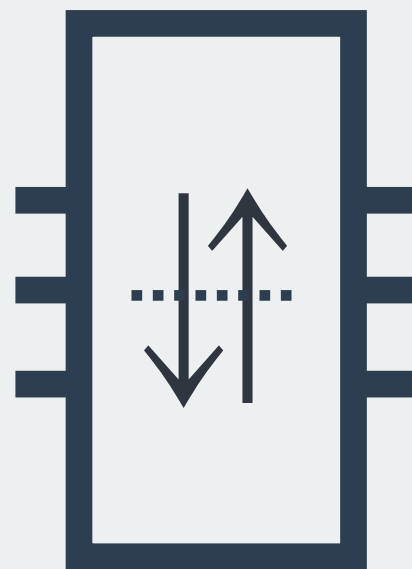
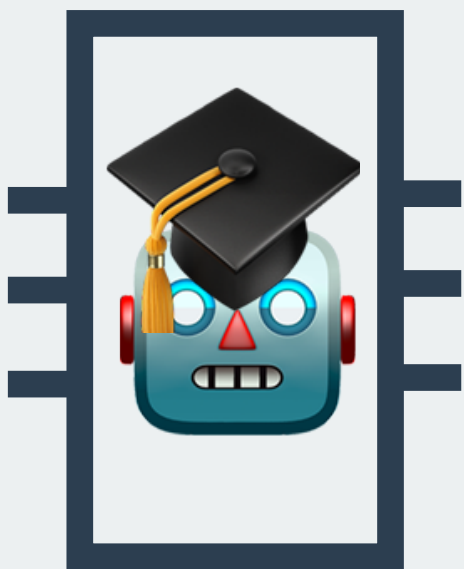
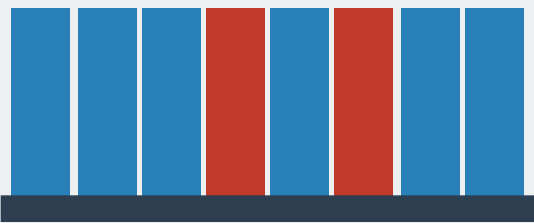


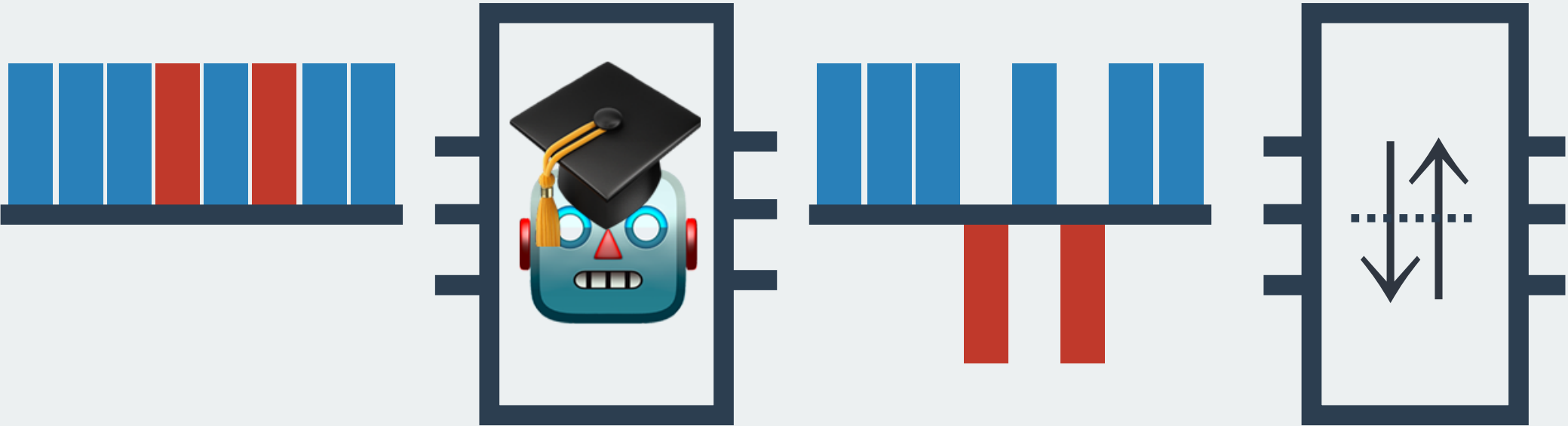


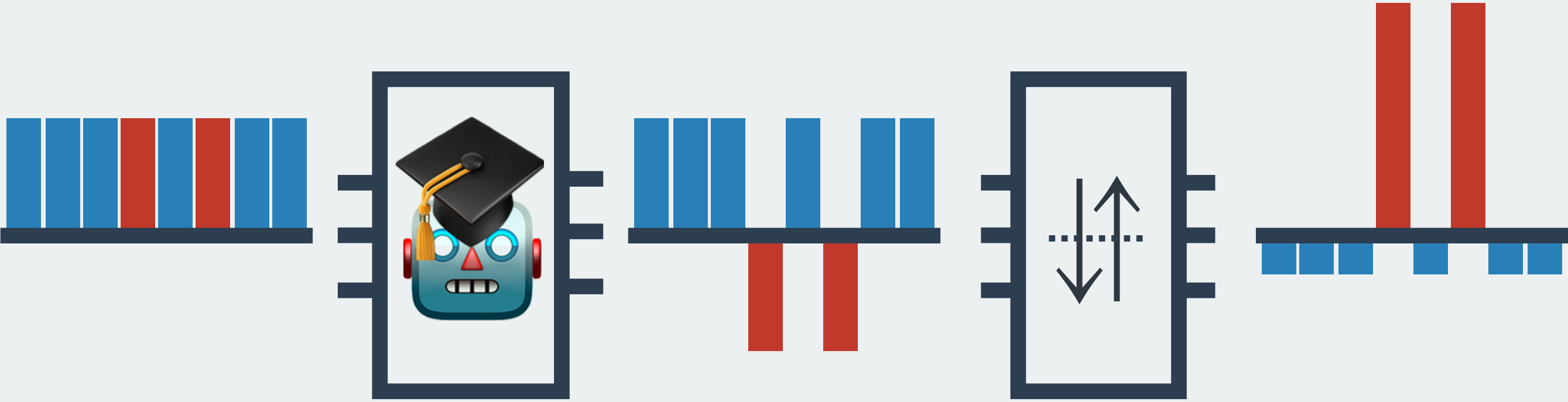


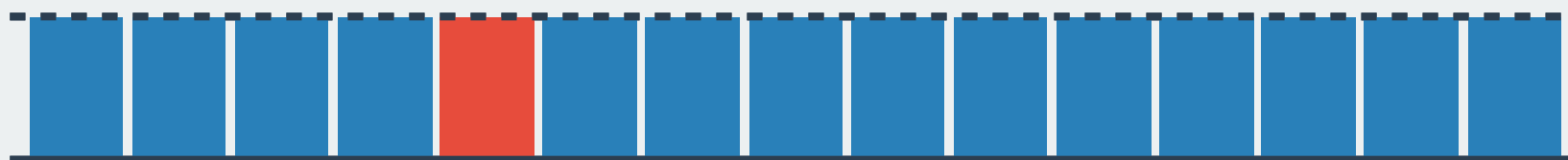


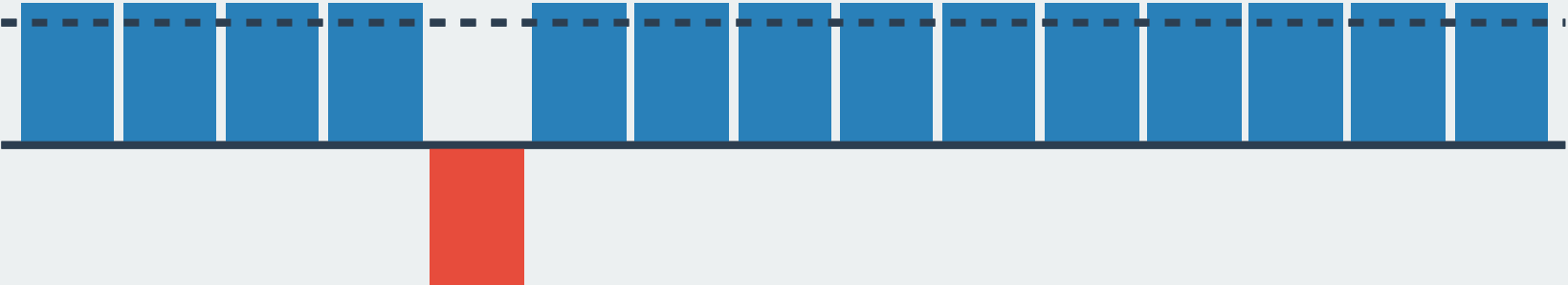


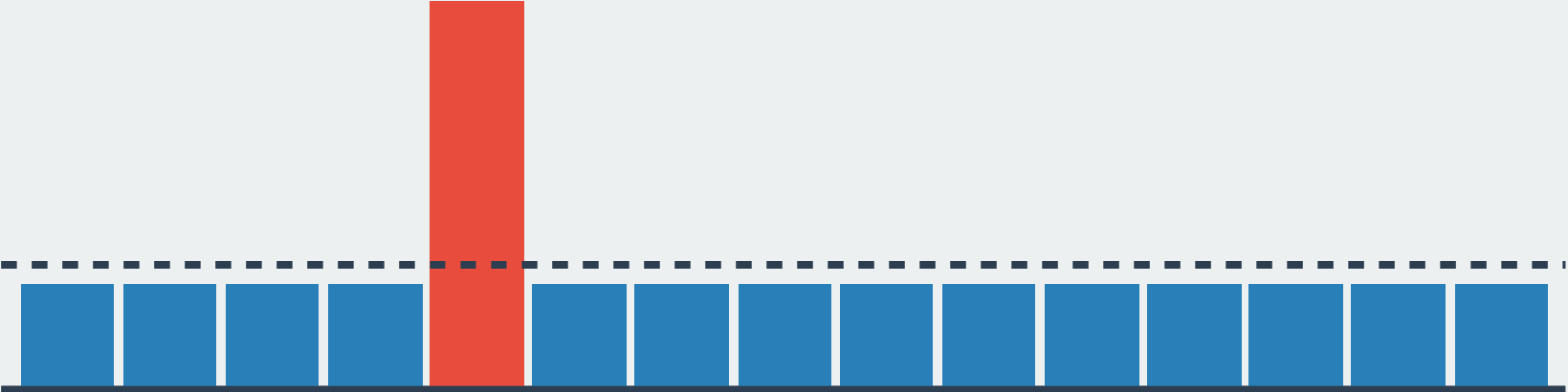


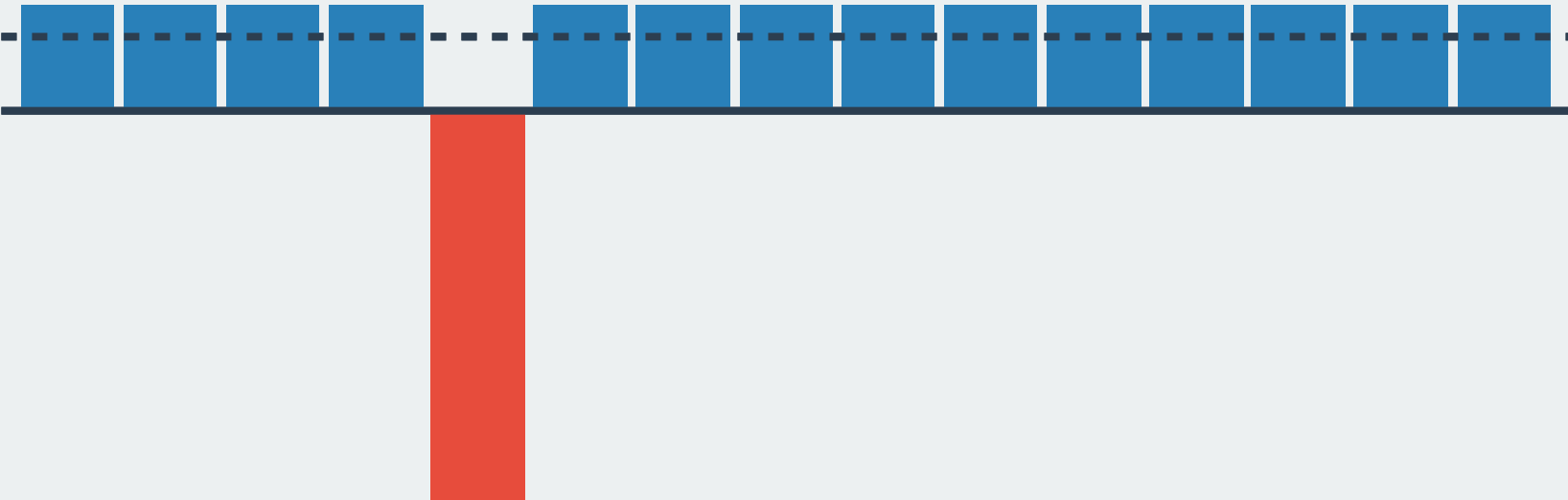


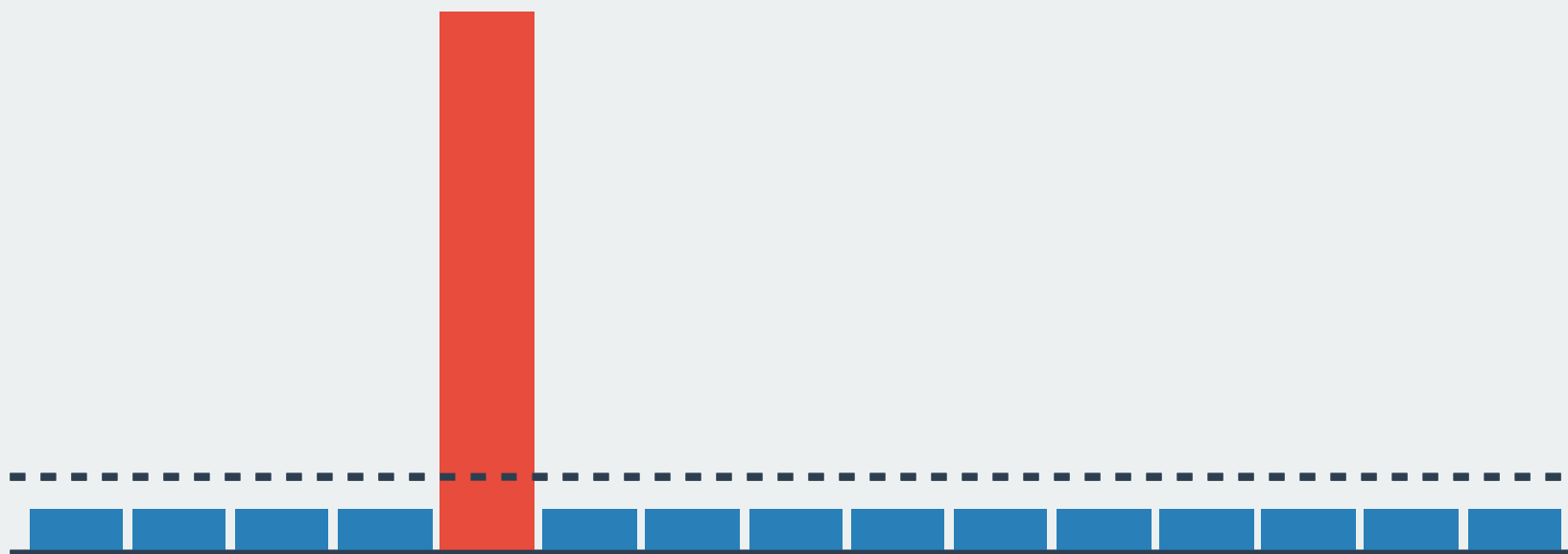


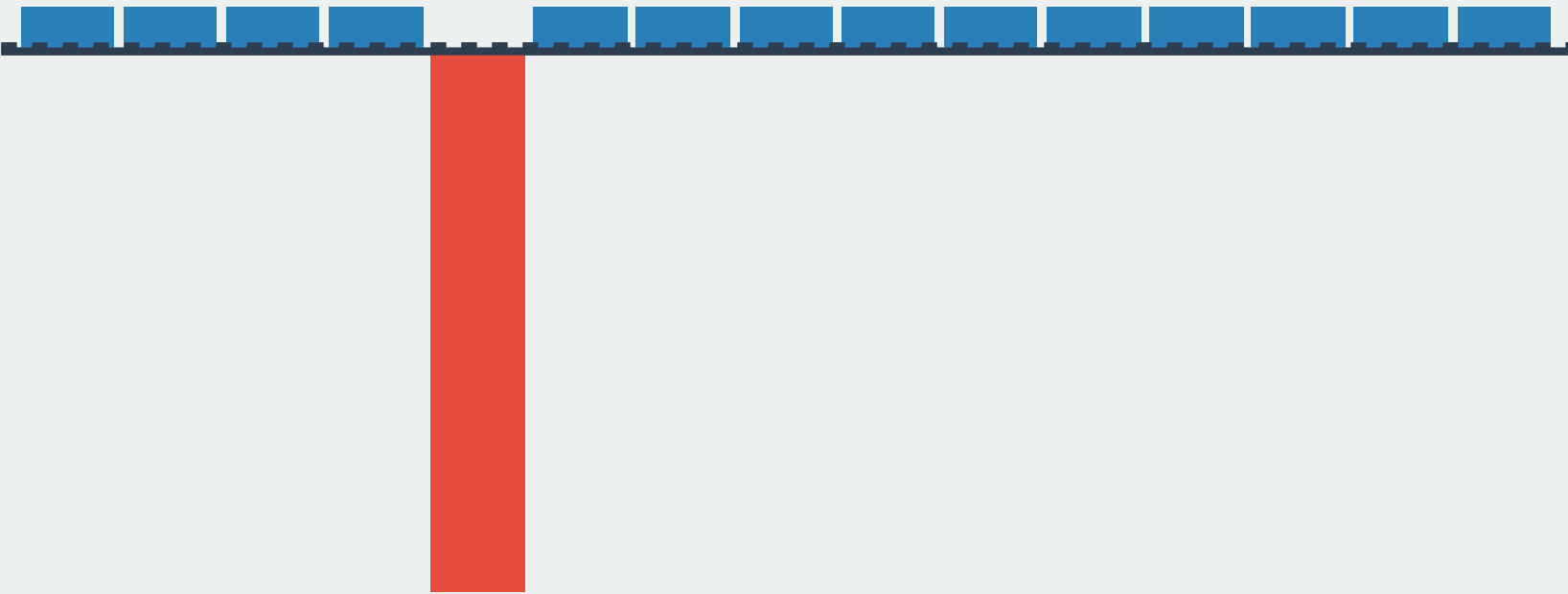


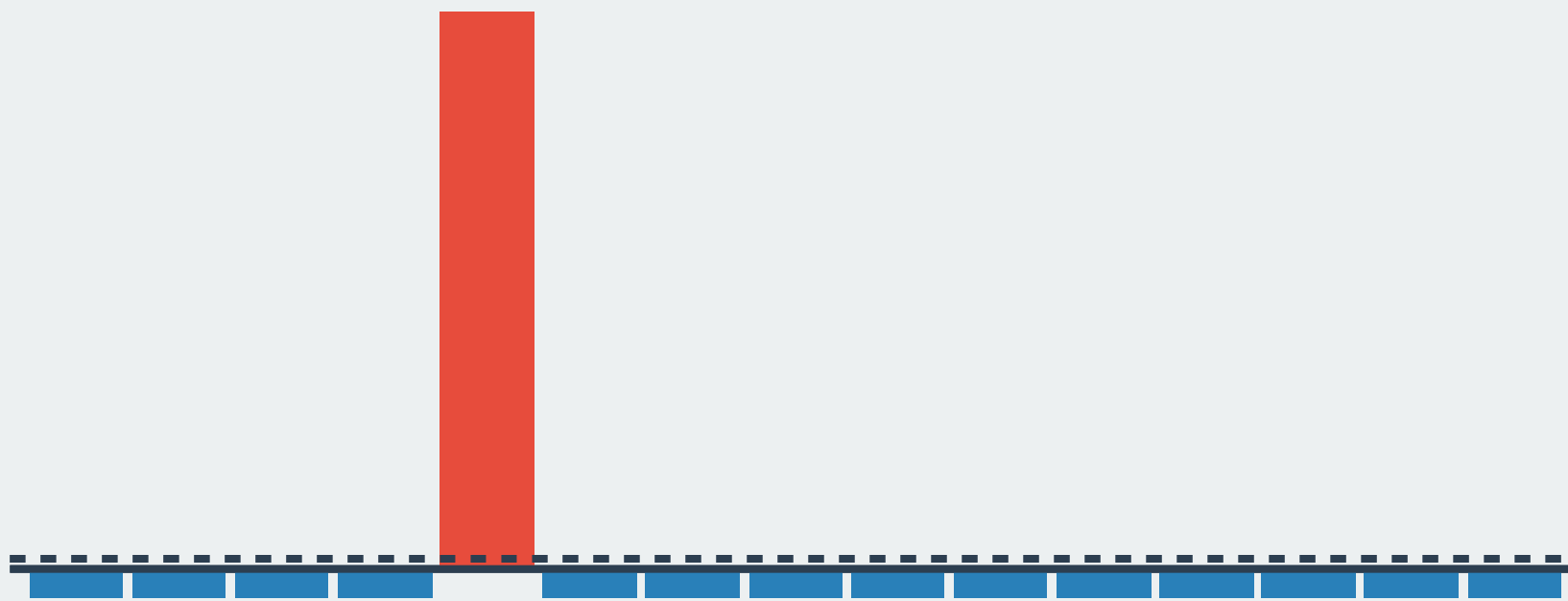


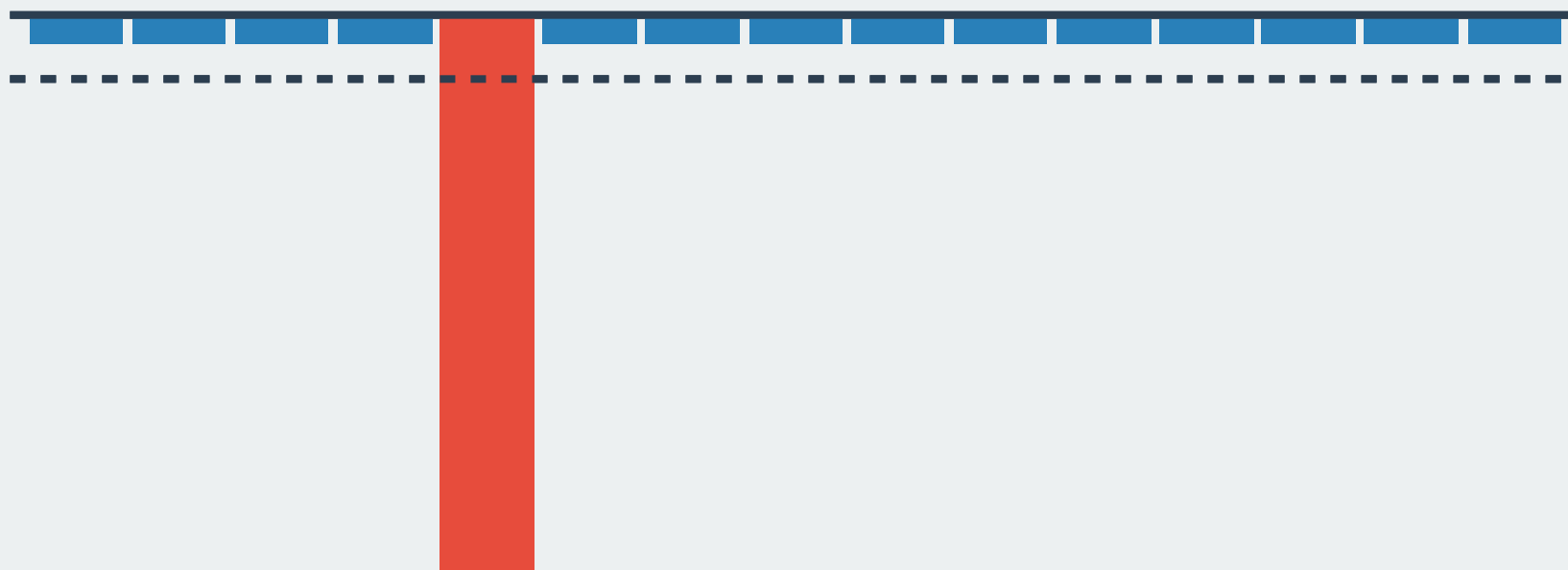


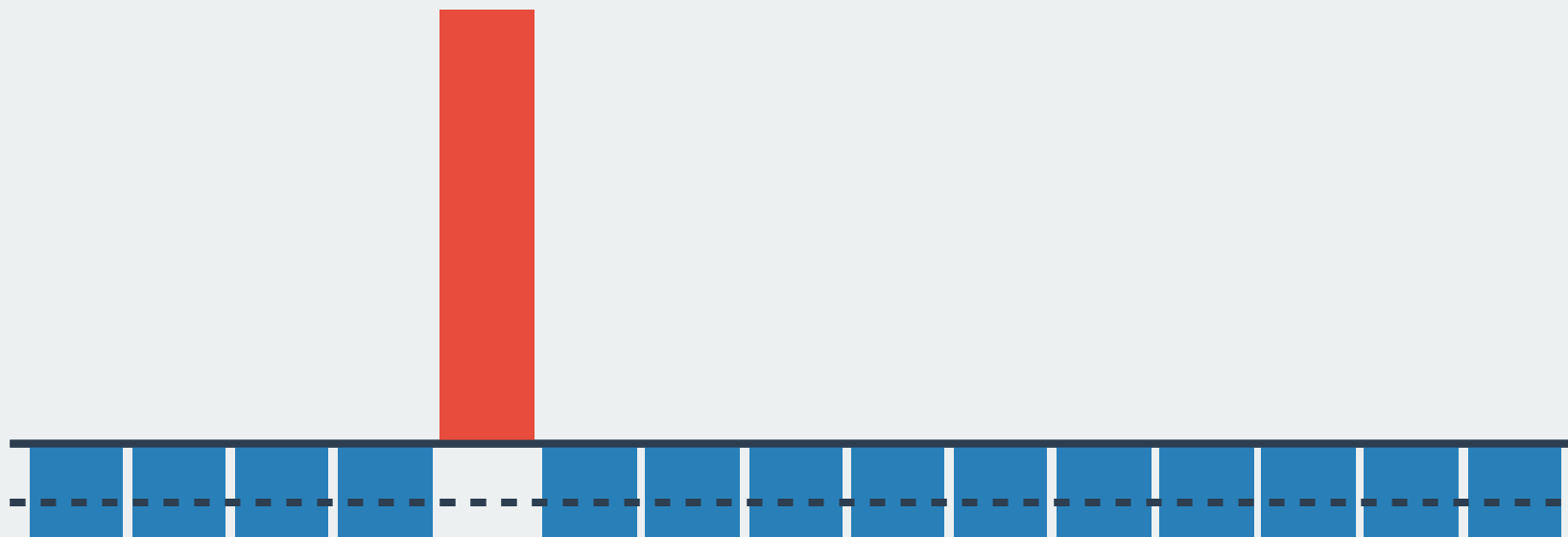


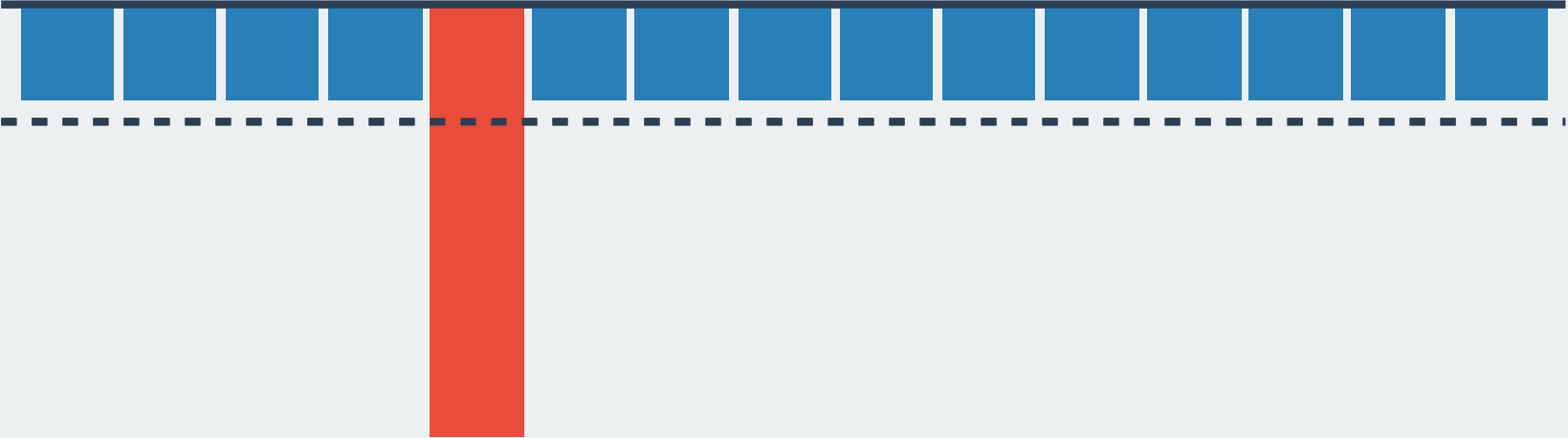


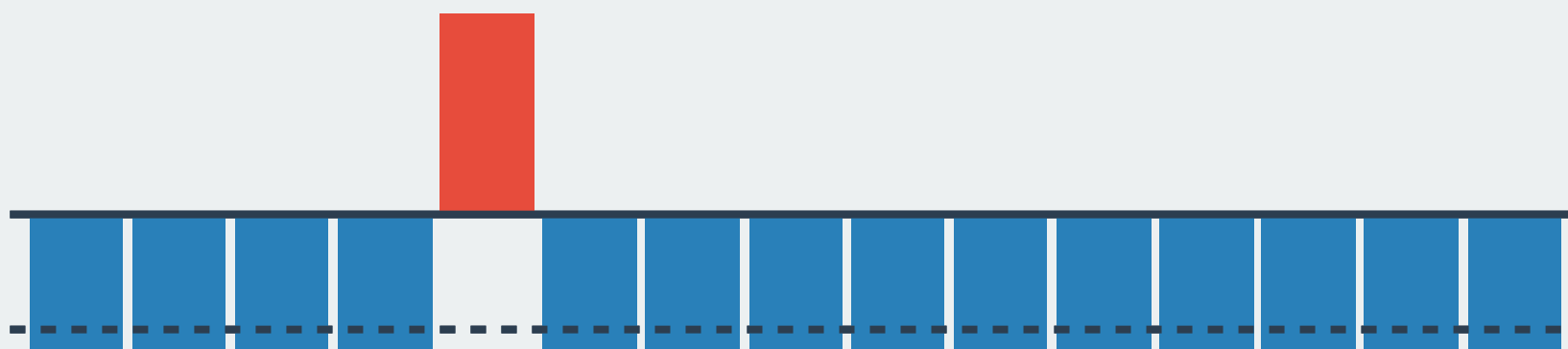




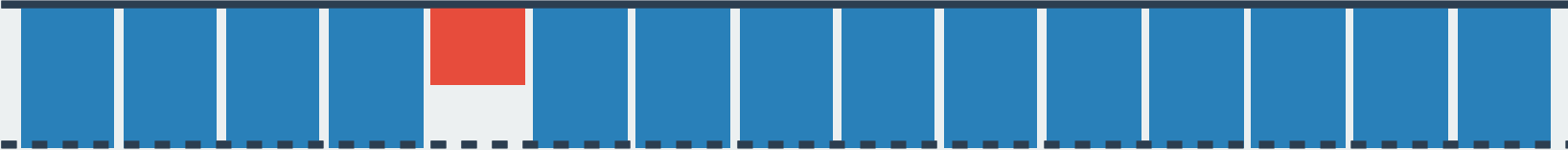












$$\approx \frac{\pi}{4} \sqrt{N/p}$$



naivno iskanje

Groverjev algoritem

naivno iskanje

Groverjev algoritem

N

naivno iskanje

Groverjev algoritem

$$N$$

$$\approx \frac{\pi}{4} \sqrt{N}$$

naivno iskanje

Groverjev algoritem

N

$$\approx \frac{\pi}{4} \sqrt{N}$$

1 000 000

naivno iskanje

Groverjev algoritem

N

$$\approx \frac{\pi}{4} \sqrt{N}$$

1 000 000

785

naivno iskanje

Groverjev algoritem

N

$$\approx \frac{\pi}{4} \sqrt{N}$$

1 000 000

785

1 000 000 000 000

naivno iskanje	Groverjev algoritem
N	$\approx \frac{\pi}{4} \sqrt{N}$
1 000 000	785
1 000 000 000 000	785 000

naivno iskanje	Groverjev algoritem
N	$\approx \frac{\pi}{4} \sqrt{N}$
1 000 000	785
1 000 000 000 000	785 000
12 dni	

naivno iskanje	Groverjev algoritem
N	$\approx \frac{\pi}{4} \sqrt{N}$
1 000 000	785
1 000 000 000 000	785 000
12 dni	1 sekunda

VPRAŠANJA?

HVALA!