Genetic Algorithms

This is CS50 on Twitch
March 15, 2019

Population


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Fitness


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Crossover / Breeding


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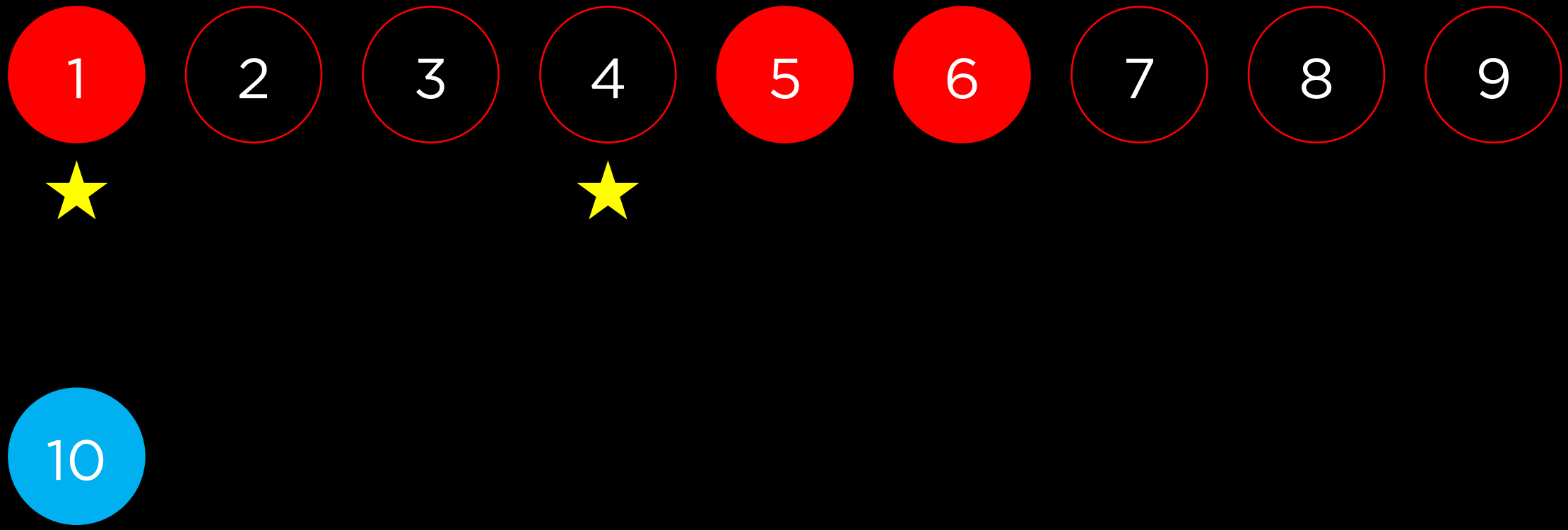
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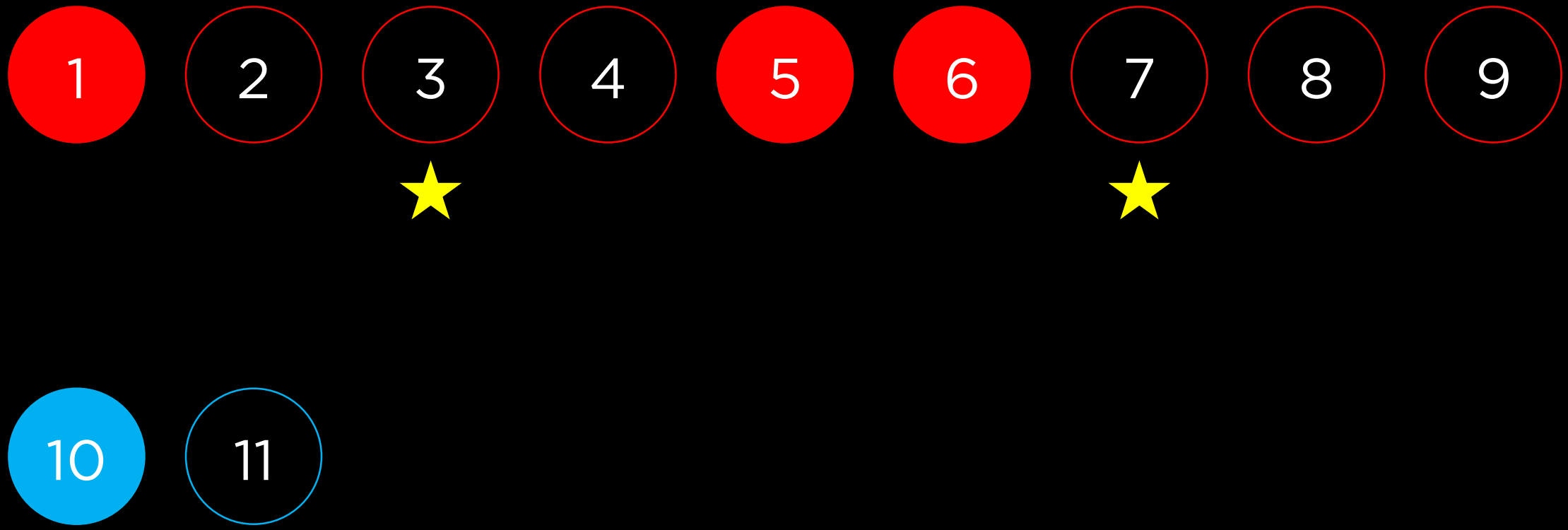
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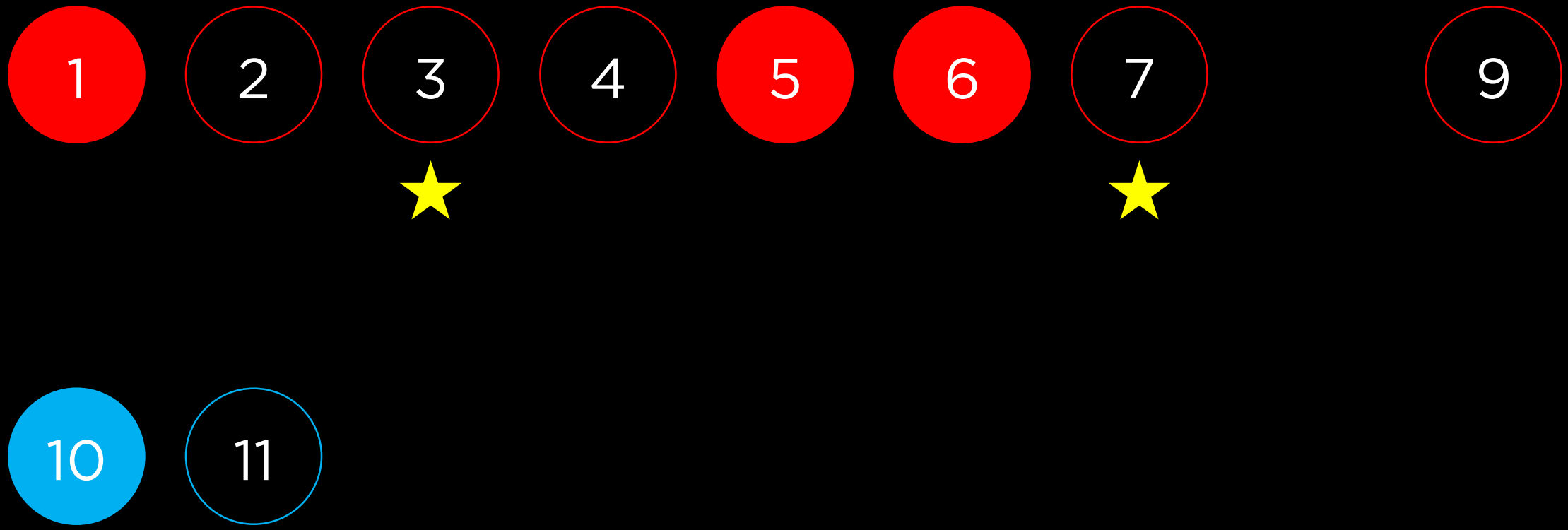
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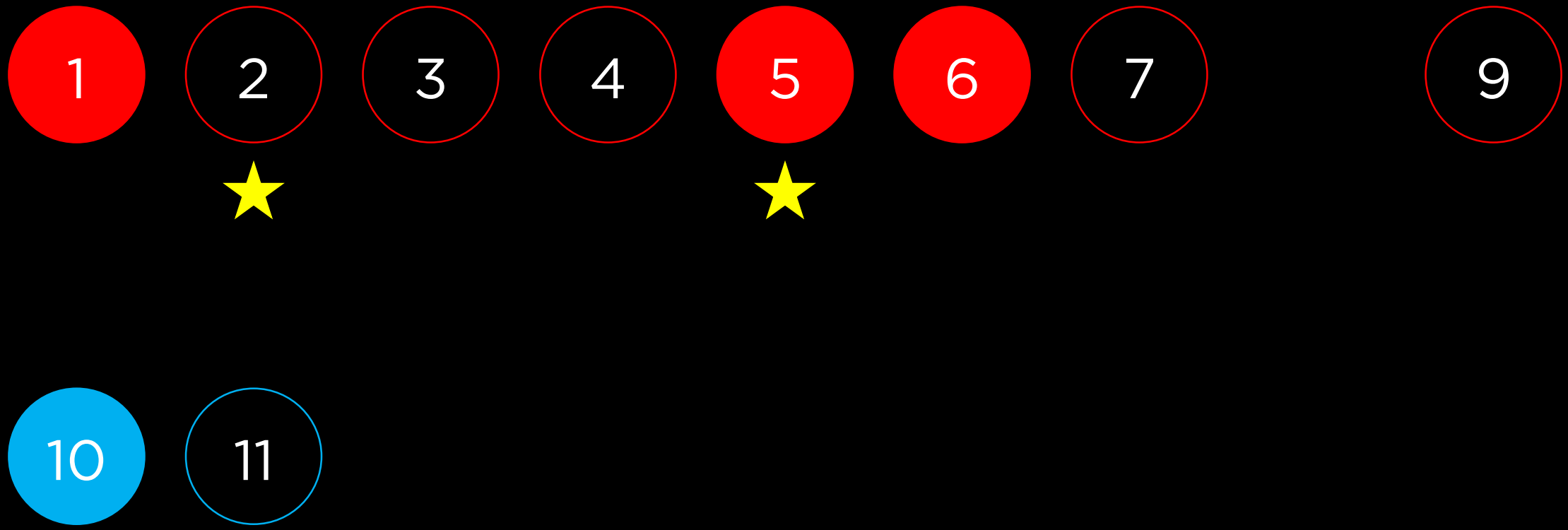
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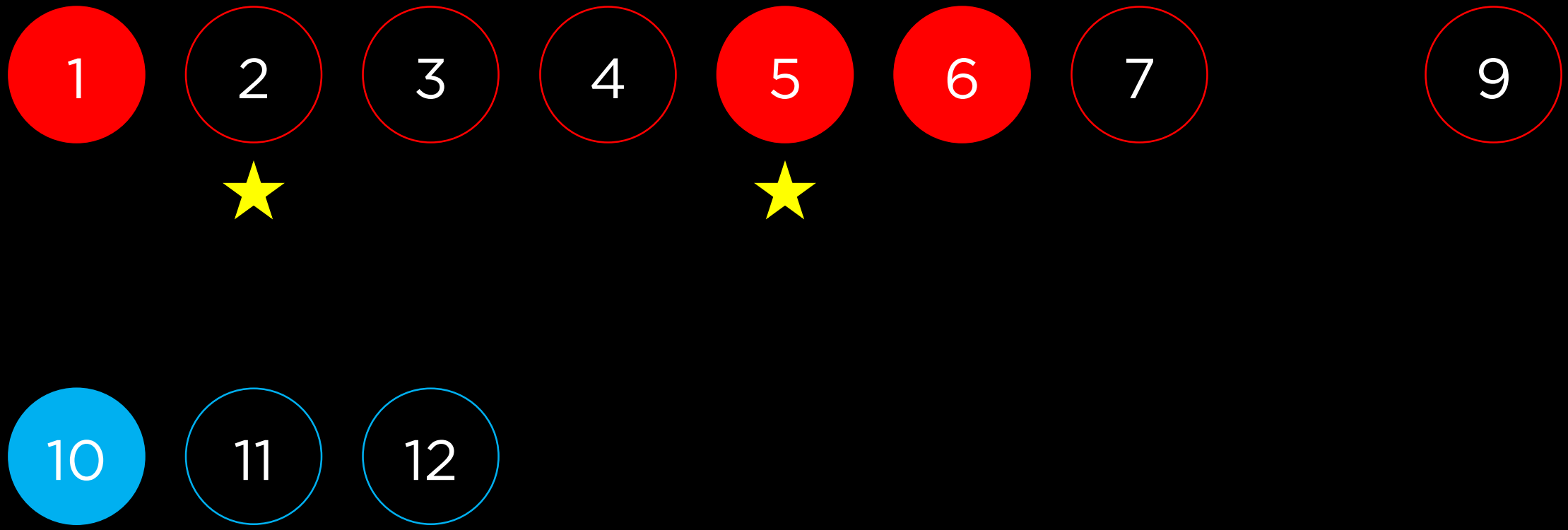
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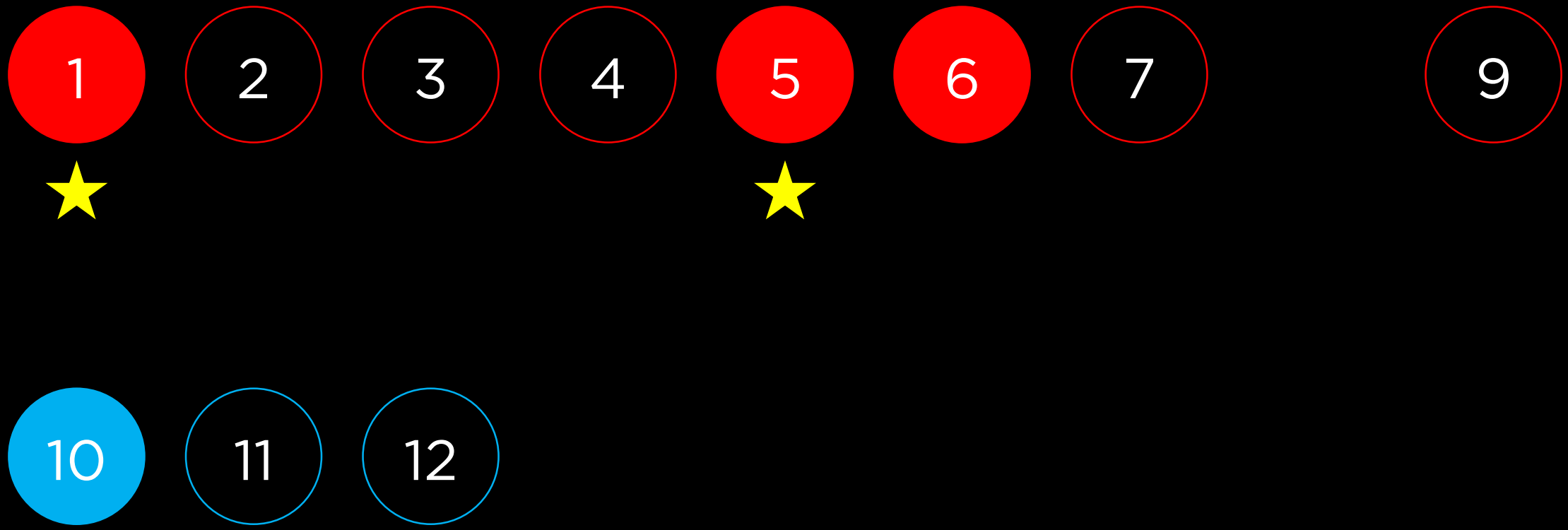
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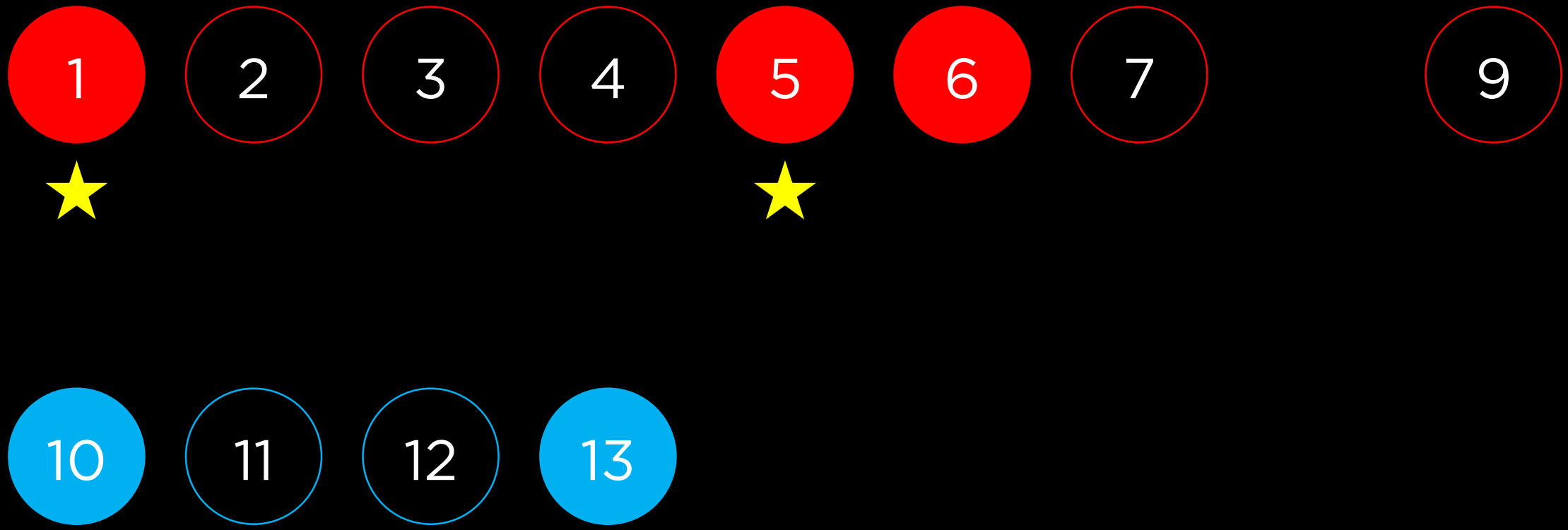
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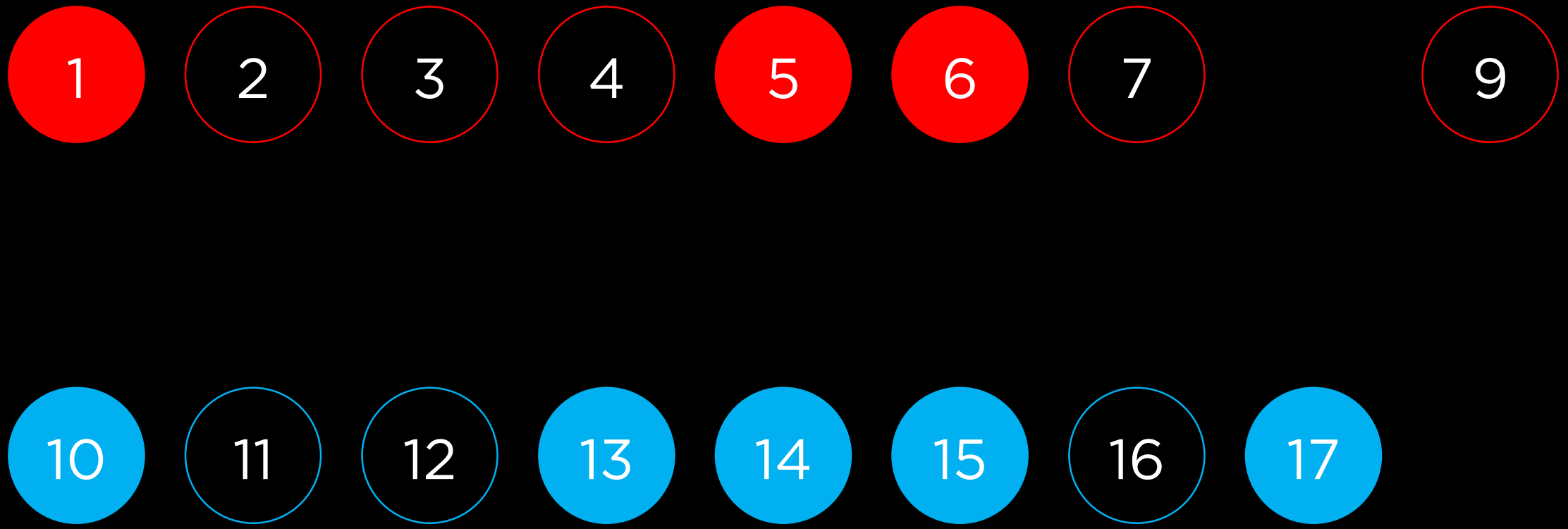
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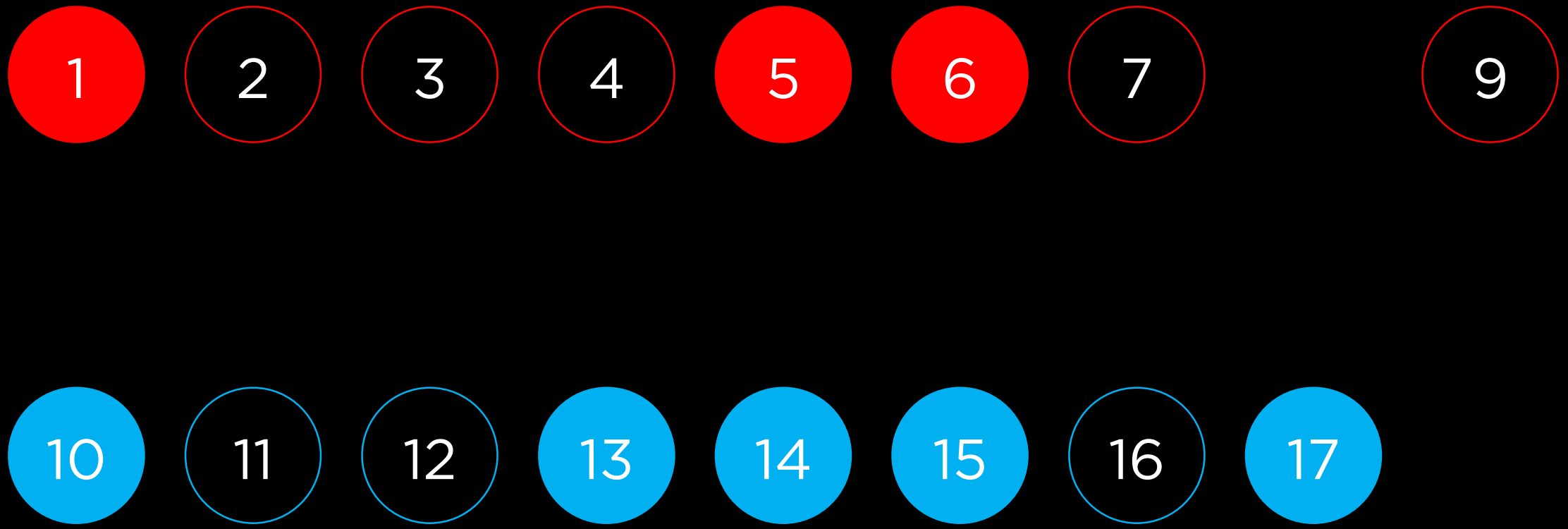
Mutation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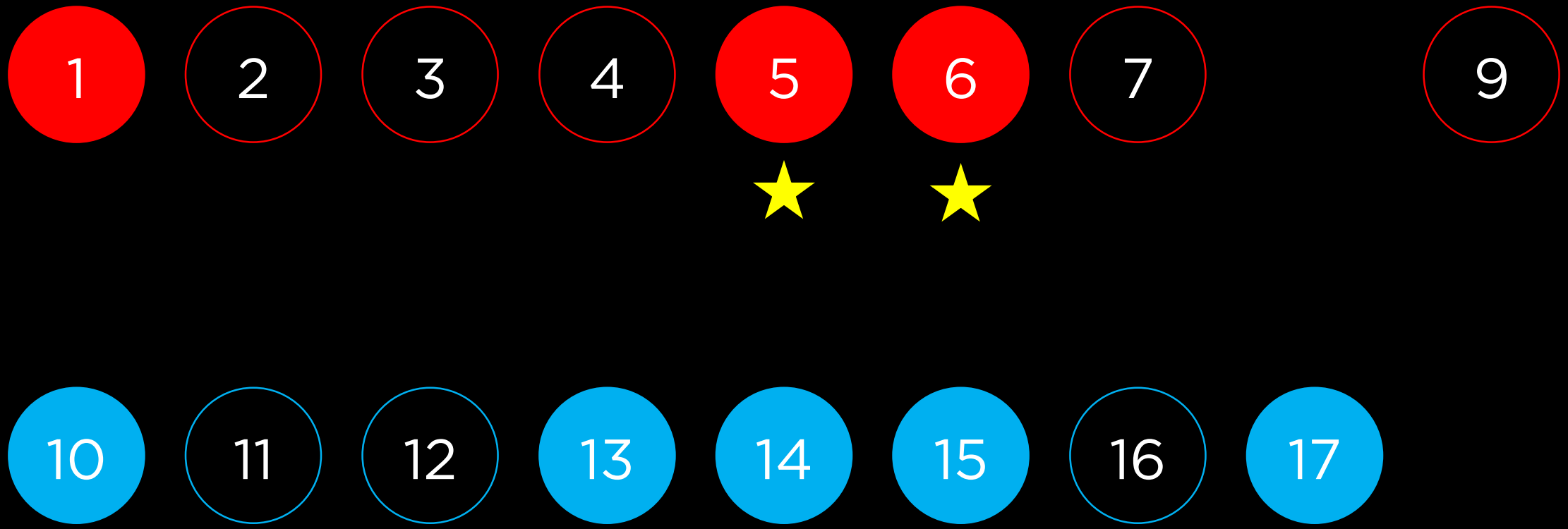
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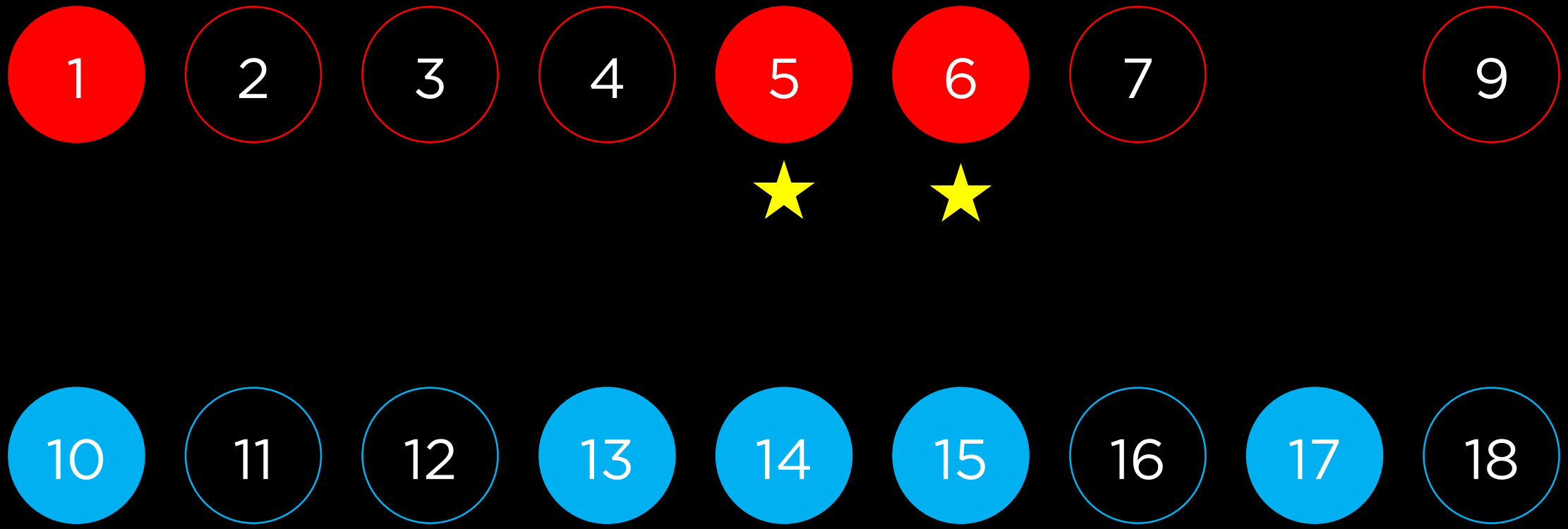
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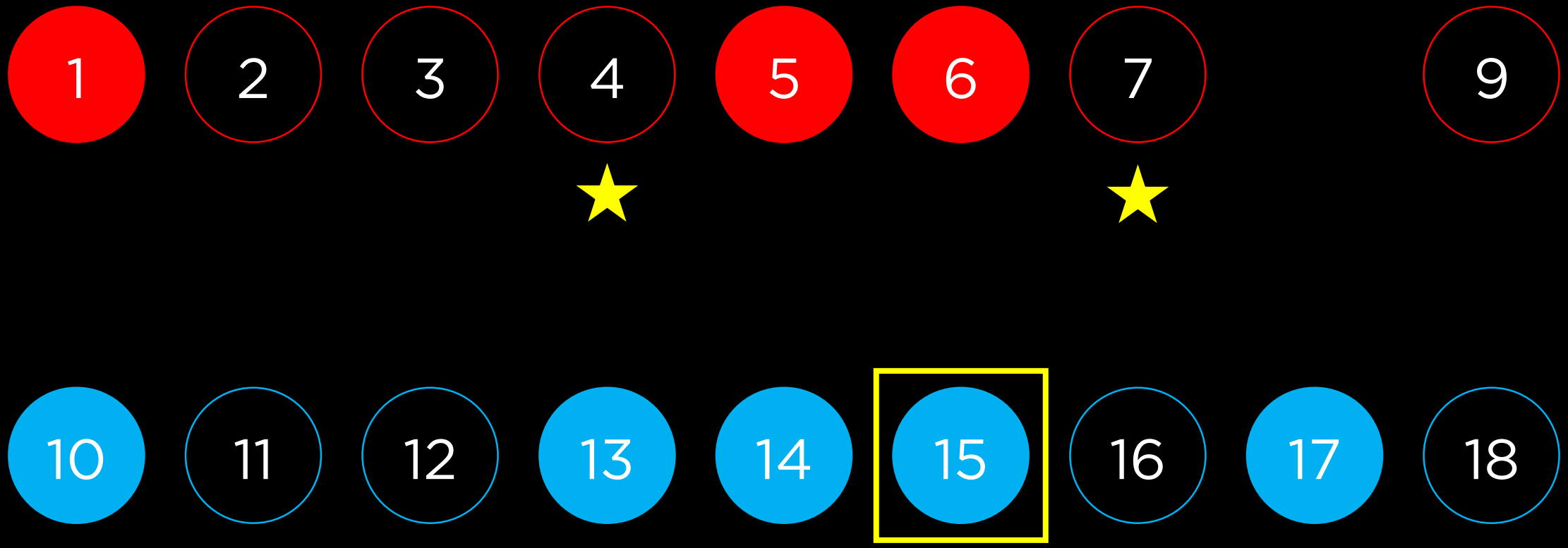
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Evolving a String

Evolving a String

https://medium.com/generative-design/evolving-design-b0941a17b759

Evolving a String

Evolving a String

- Figure out what we want our target to be.

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Evolving a String

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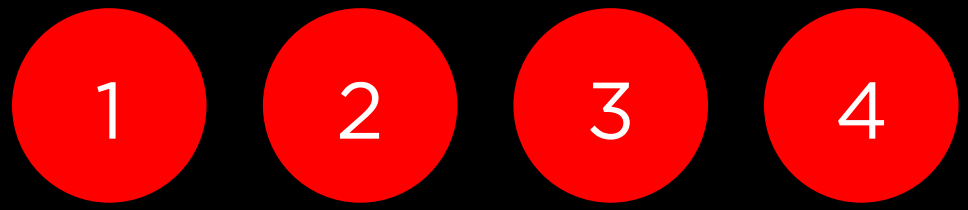
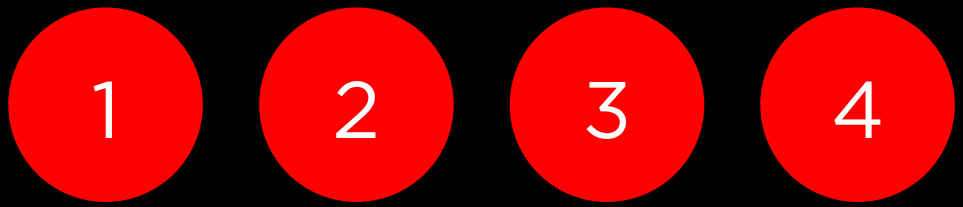
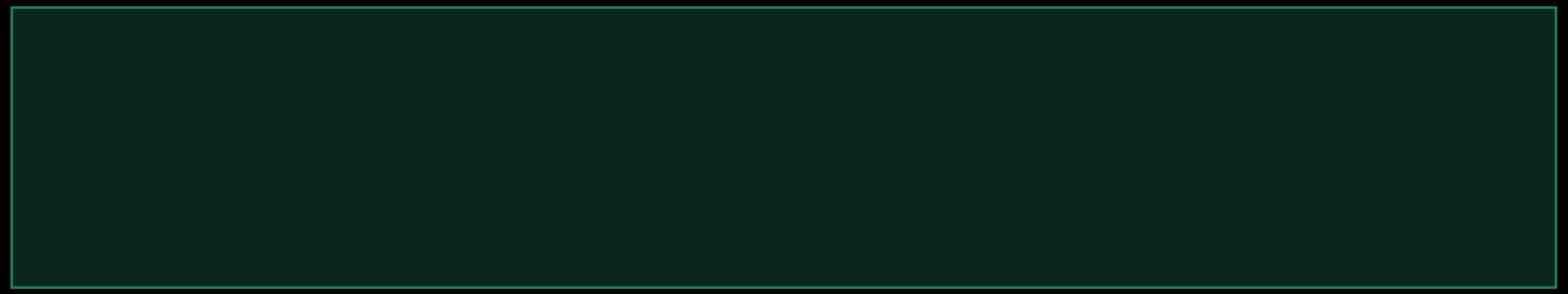


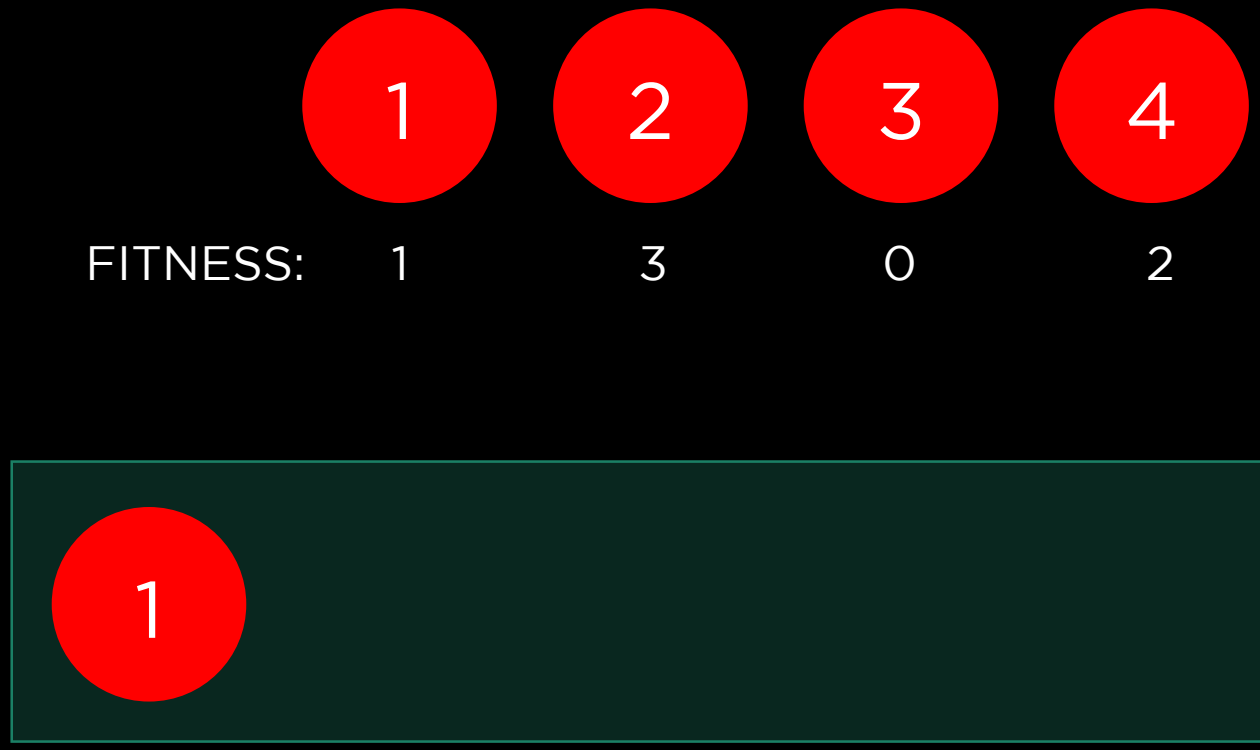
FITNESS: 1 3 0 2



FITNESS: 1 3 0 2



MATING POOL FOR NEXT GENERATION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FITNESS:
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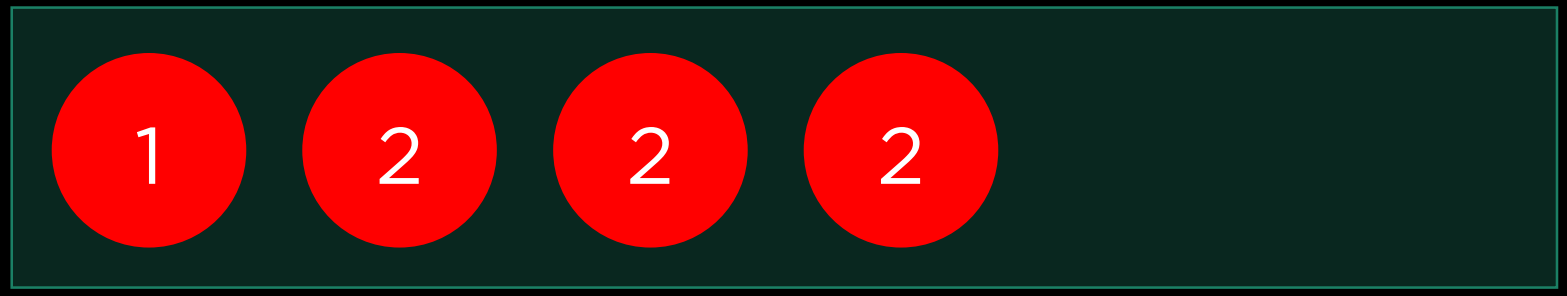
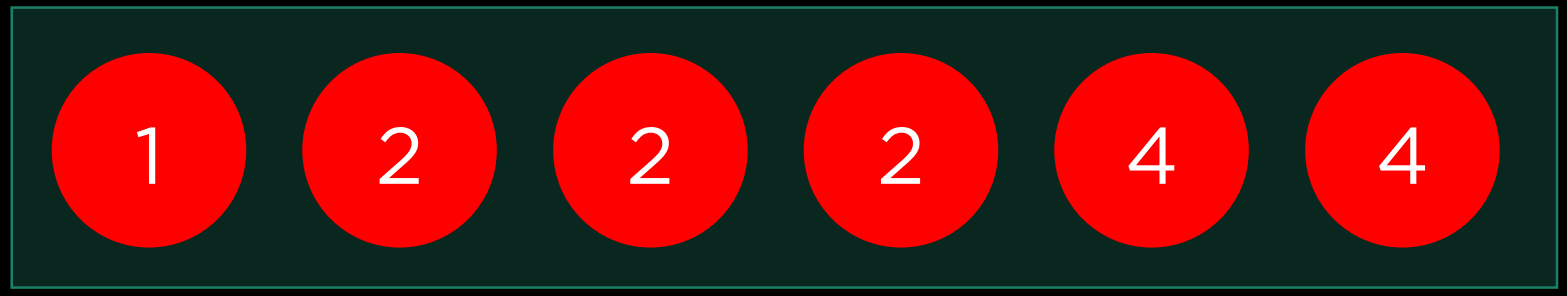
MATING POOL FOR NEXT GENERATION

FITNESS: 1 3 0 2



MATING POOL FOR NEXT GENERATION

FITNESS: 1 3 0 2



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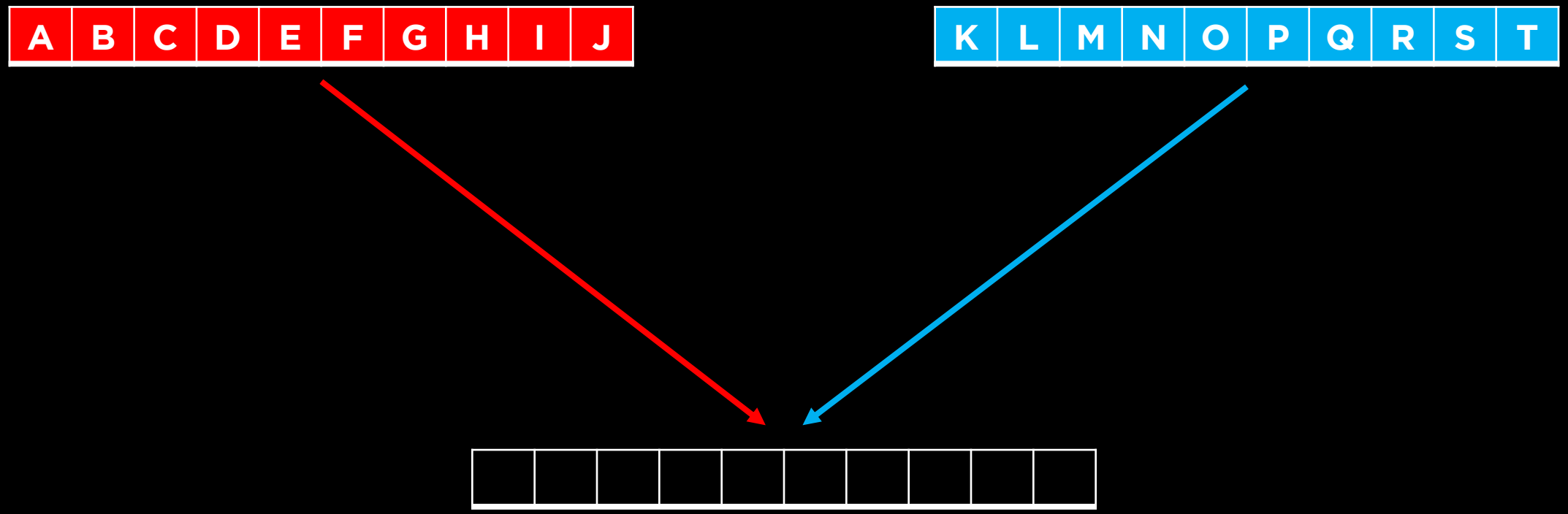
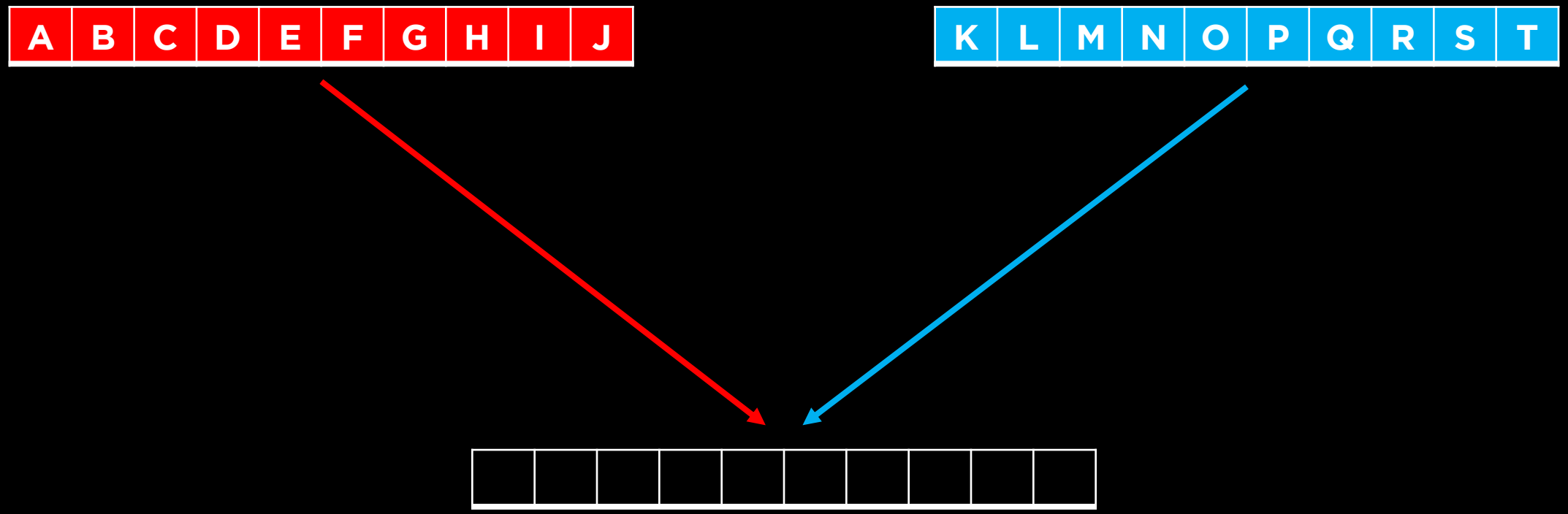
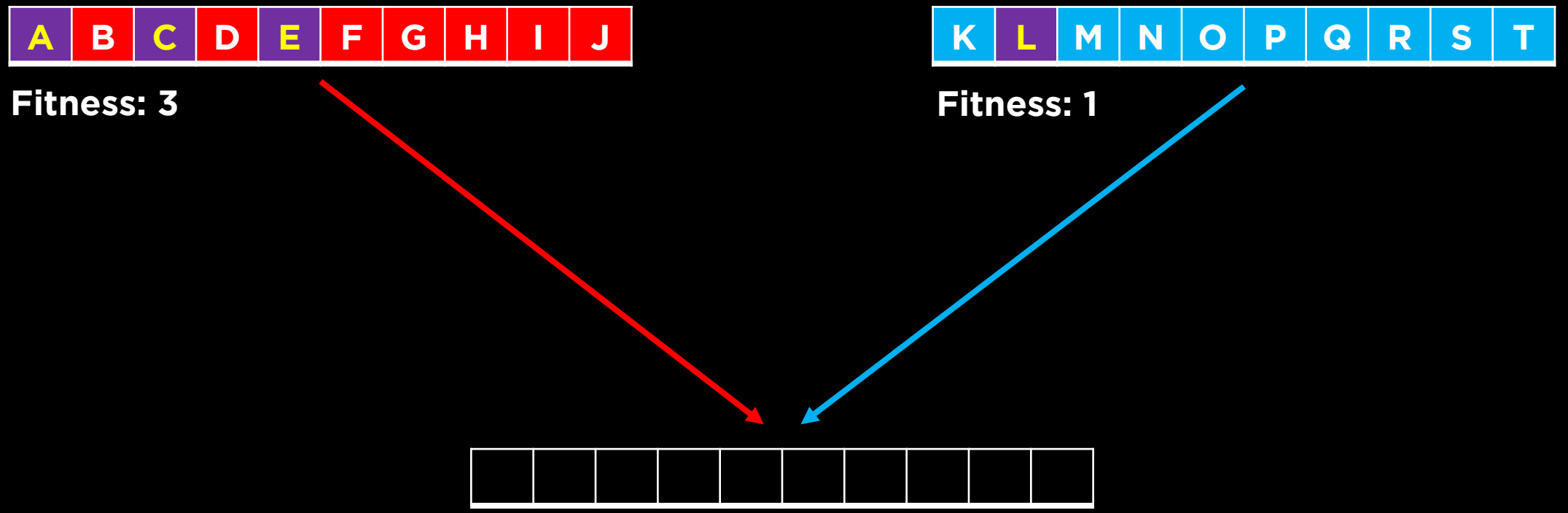
Crossover/Breeding


A B C D E F G H I J
K L M N O P Q R S T

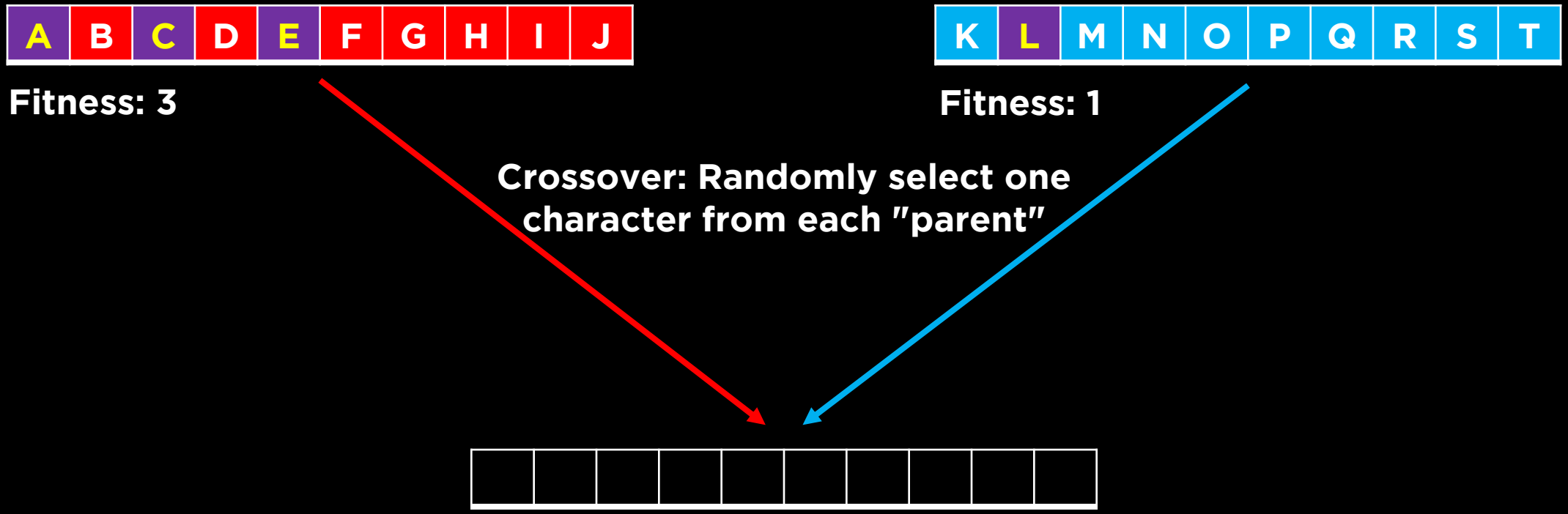
Target: ALCHEMISTS



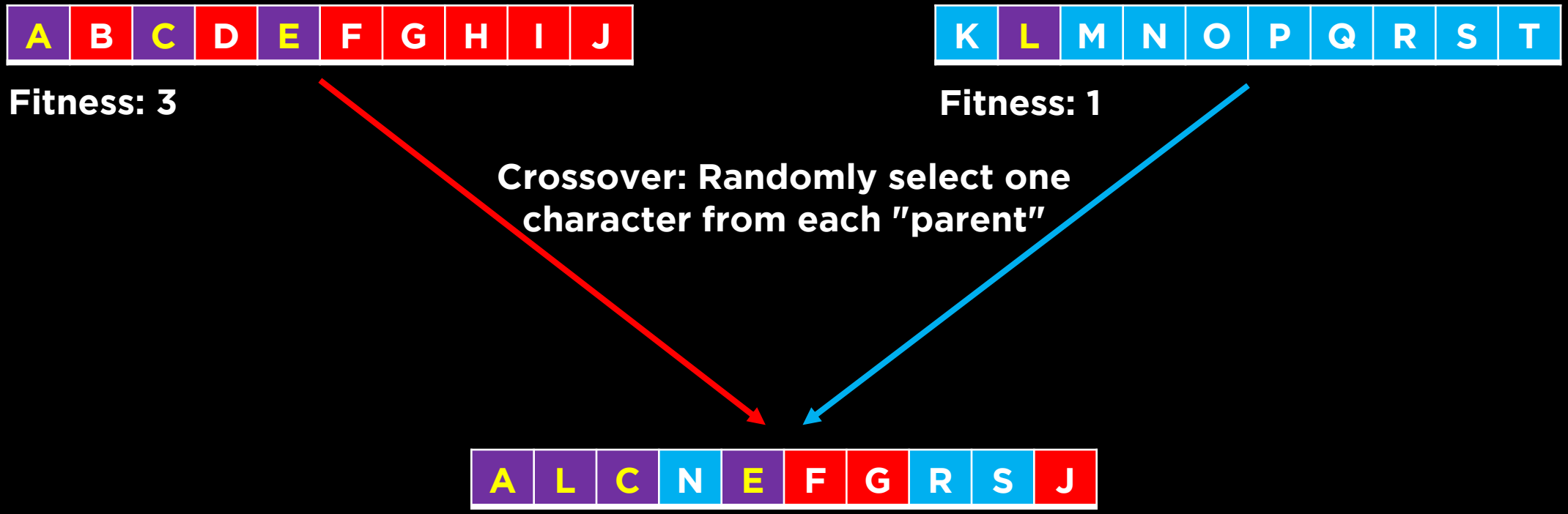
Target: ALCHEMISTS



Target: ALCHEMISTS



Target: ALCHEMISTS



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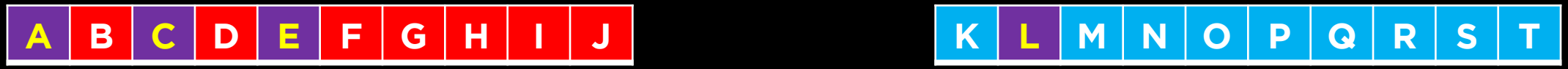

Fitness: 3

Fitness: 1

Crossover: Randomly select one character from each "parent"

Fitness: 0

Target: ALCHEMISTS

Fitness: 3

Fitness: 1

Crossover: Randomly select one character from each "parent"

Fitness: 2

Mutation

Target: ALCHEMISTS

Fitness: 3

Fitness: 1

Fitness: 2

Mutation: With small probability, some characters might become something completely random after crossover

Target: ALCHEMISTS

Fitness: 3

Fitness: 1

Fitness: 2

Mutation: With small probability, some characters might become something completely random after crossover

Target: ALCHEMISTS

Fitness: 3

Fitness: 1

Fitness: 3

Mutation: With small probability, some characters might become something completely random after crossover

Target: ALCHEMISTS

Fitness: 3

Fitness: 1

Fitness: 2

Mutation: With small probability, some characters might become something completely random after crossover

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Code!

github.com/dlloyd09/genetic