Primordial Soup

Genetic algorithms.

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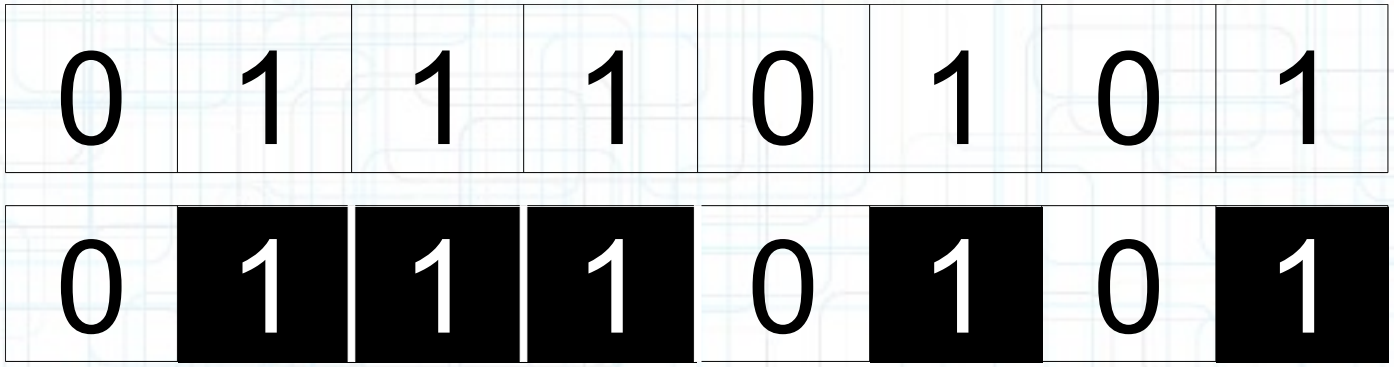
Introduction

- Why genetic algorithms?
- Chromosomes
- Populations
- When and where to use them
- Genetic Programming

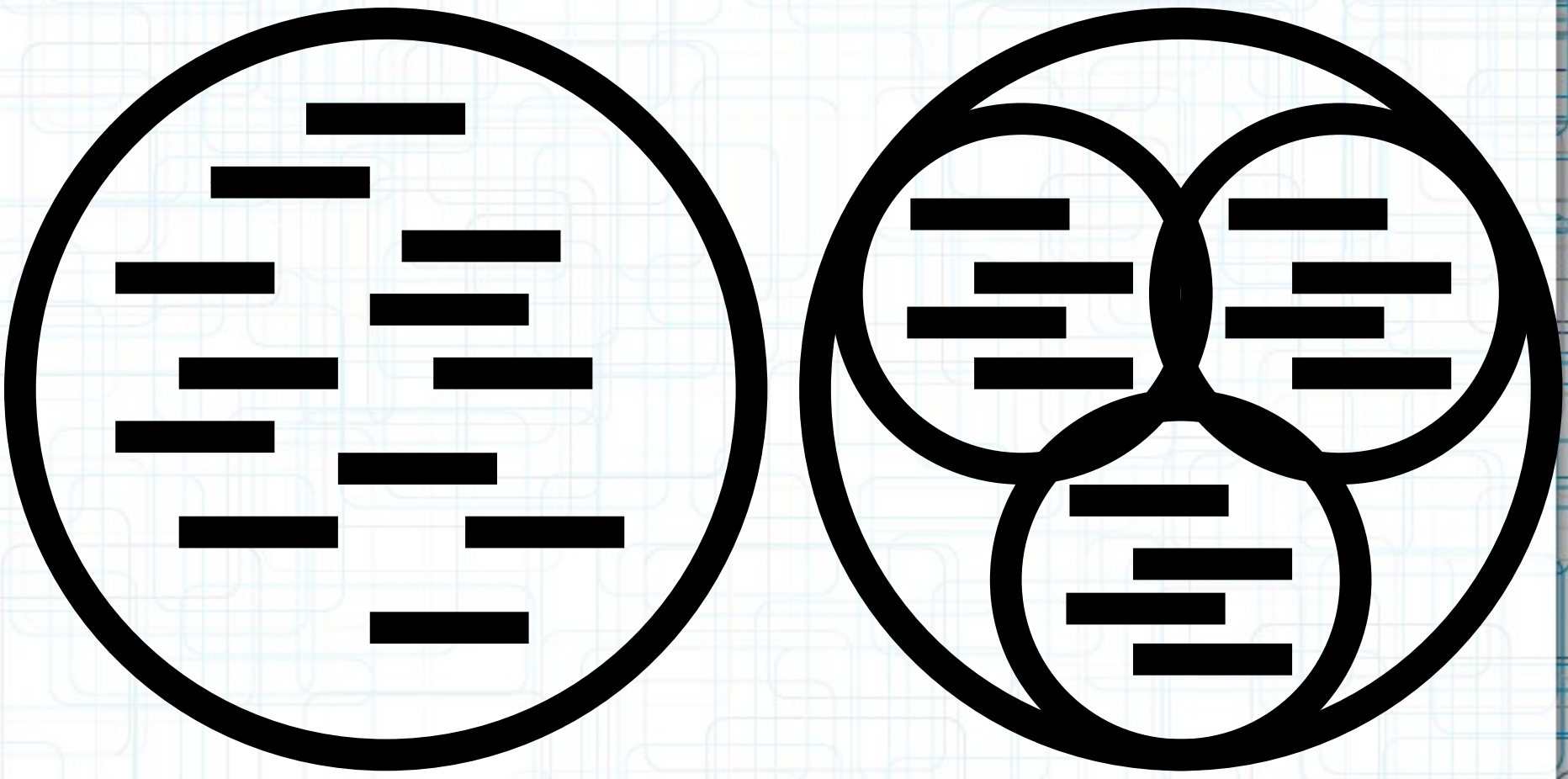
Chromosome

- Looks like:
- Bool, int, Whatever you like



Population

- Single or multiple

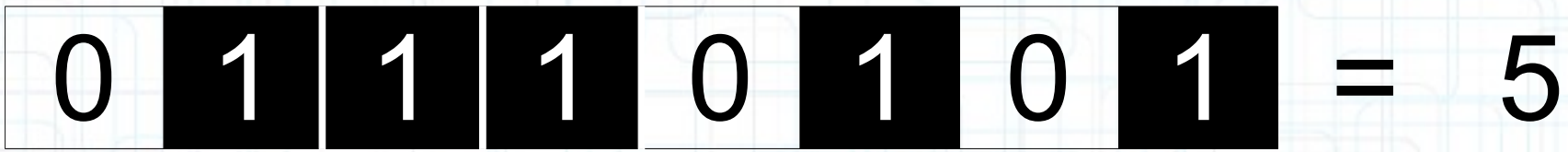


Breeding

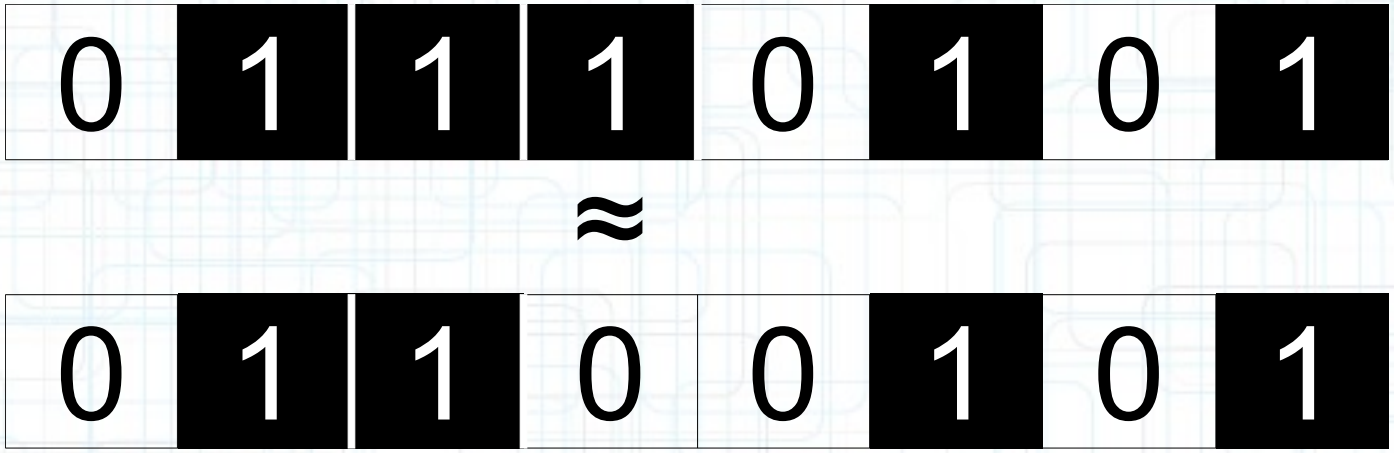
- Selection
- Mutation
- Crossover

Selection

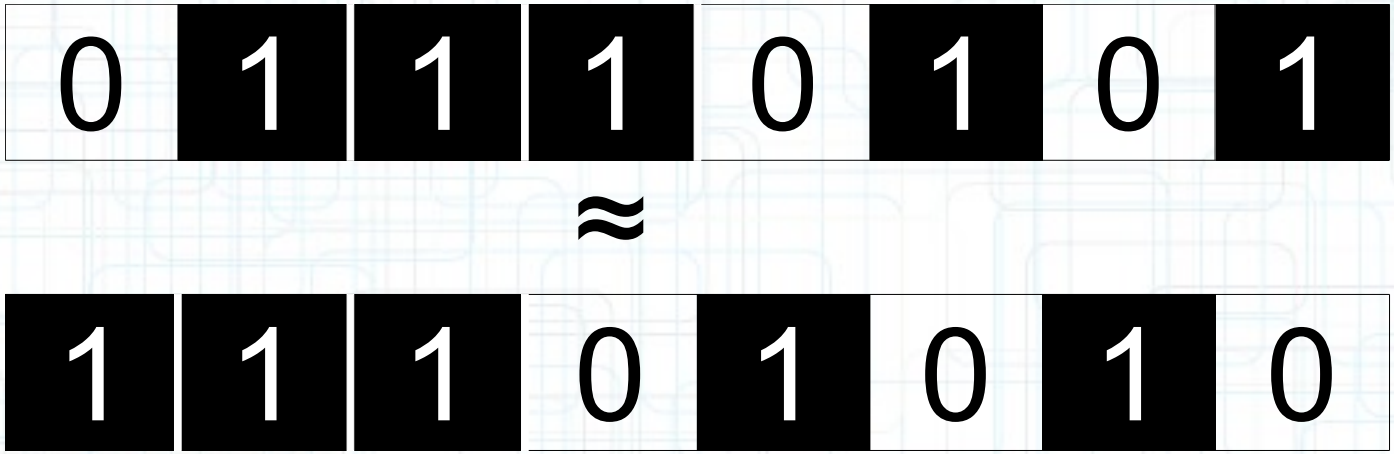
- Fitness
- Selection method
  - Ranking
  - Stochastic Universal Sampling
  - Replacement or Merging



Mutation

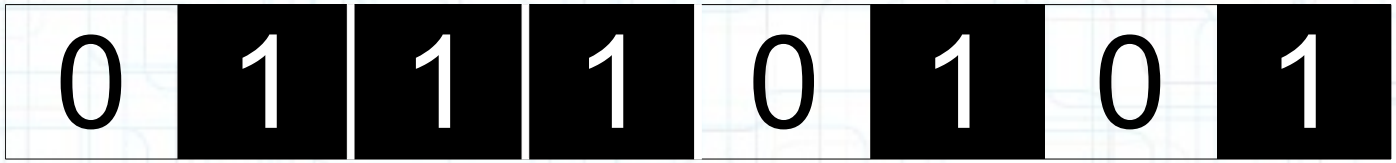


Permutation

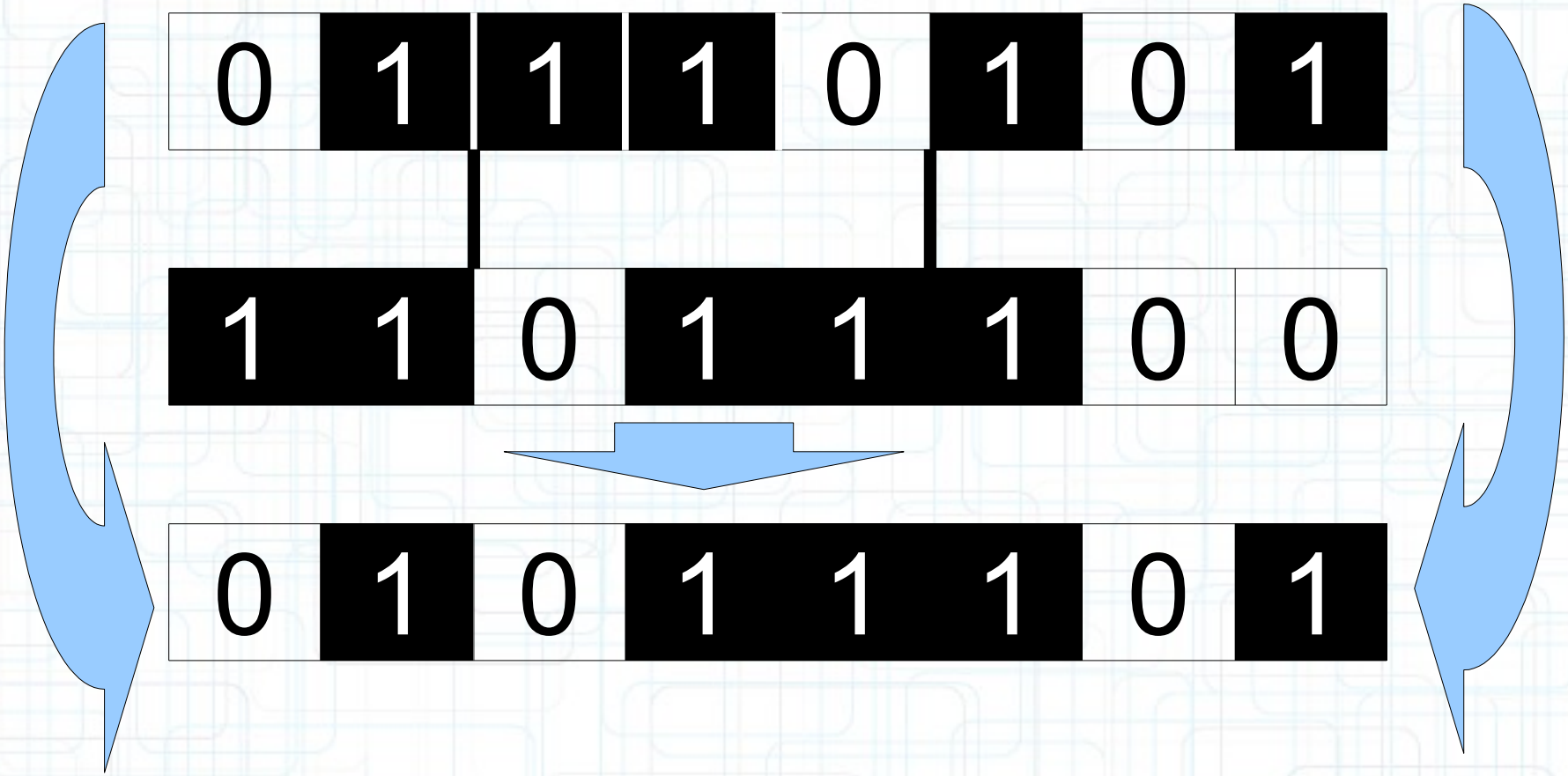


Crossover

- Single point
- 2-point



Two-Point Crossover



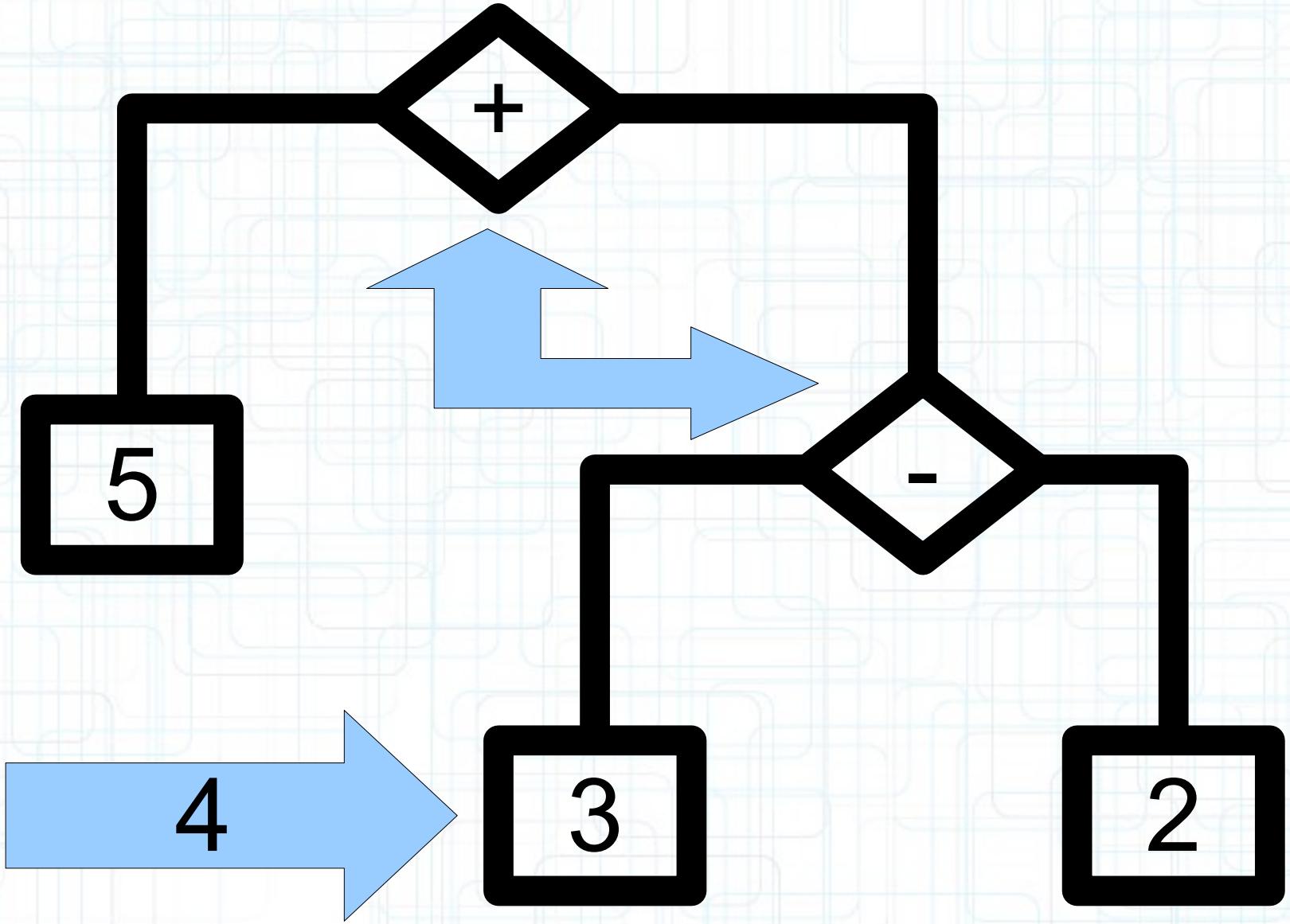
When to use them

- Large search space
- Hard to predict where answer is
- Easy to calculate fitness function

Things to watch

- Randomness & Seeding
- Defining the right chromosomes
- Setting the parameters correctly
  - Mutation Rate
  - Crossover Method
  - Selection Method

Genetic Programming



Thanks

- http://code.google.com/p/geneticalgorithmtemplates
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- craig.nicol@gmail.com
- Thank you for listening