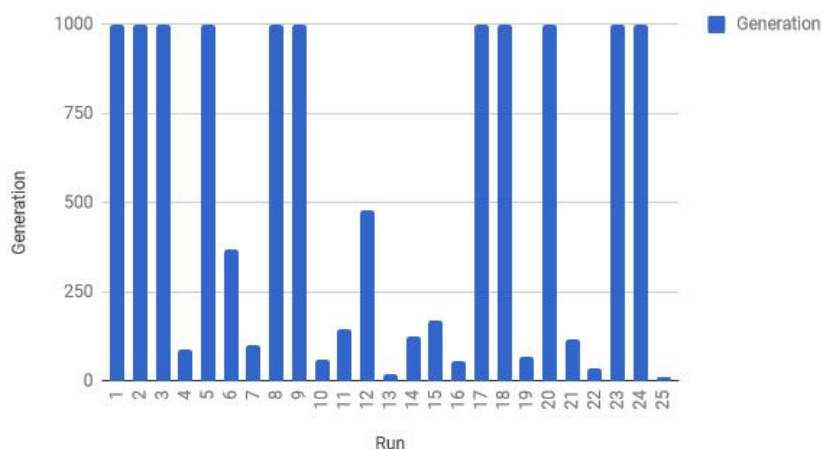


N-Queens Genetic Algorithm Analysis

My implementation of the N-Queens genetic algorithm allows for any board size and any amount of iterations. In this implementation, population size is always $10 \times$ size of board. All individuals mutate with a rate of 10%, and a mutation involves swapping two random indices of the genotypic array. 10% of the entire population is chosen to be parents for every generation, where the each parent is selected by taking three random individuals from the population and adding to fitness, where the two most fit parents are paired, the two second-most fit are paired, and the most fit one to a pool of parents. In the pool of parents, the pairs are chosen according. Conflicts are calculated by checking if any queens can diagonally attack each, with only 1 conflict occurring per 2 queen attack. Children are generated by choosing a random index for each parent, and copying, for two children, up until the index of the first parent, and filling in the rest of the values for the second parent. After all the children are added to the original population, the population kills off the least fit individuals until the original population size is achieved.

Generation vs. Run



Average Iterations: 514.44

Max Iterations: 478

Min Iterations: 14

