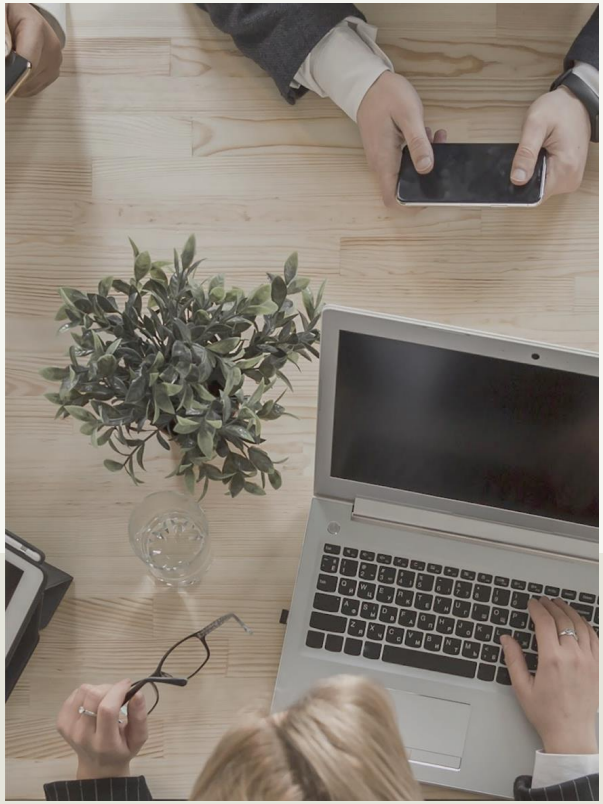

N- Queens using GA

Presented by : XXXXXXX
Supervised by: XXXXXXX

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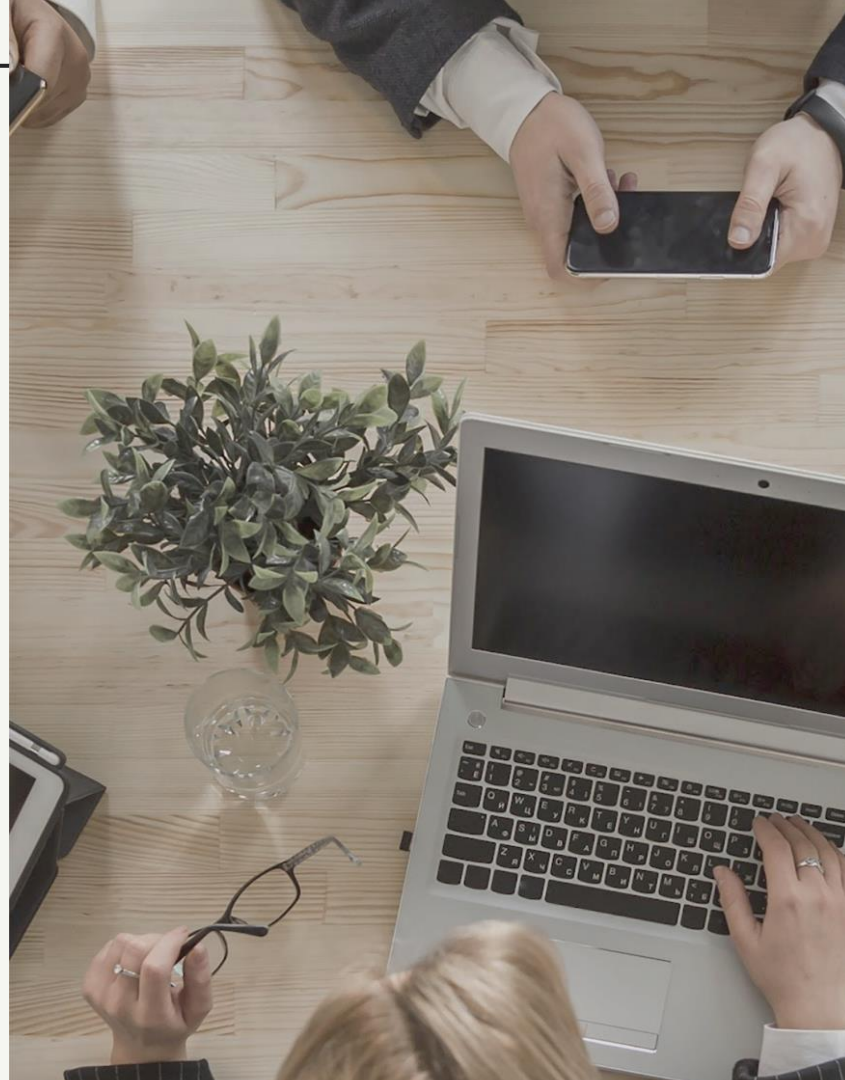
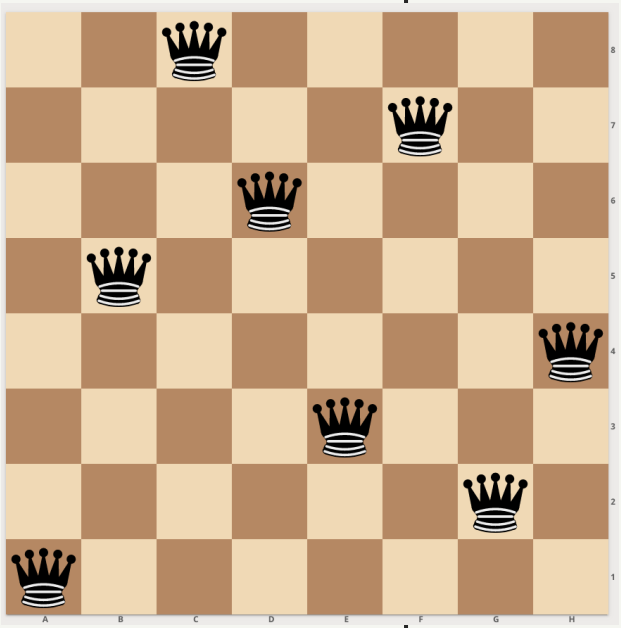




N-Queens Problem

- **N** number of **Queens** are placed on **NxN** chess board
- The solution is the **placement** of the N-queens in which **no queen is endangered** by any other queen on that chessboard
- A queen can move **diagonally**, **horizontally** and **vertically**
- The Search space is **N!**

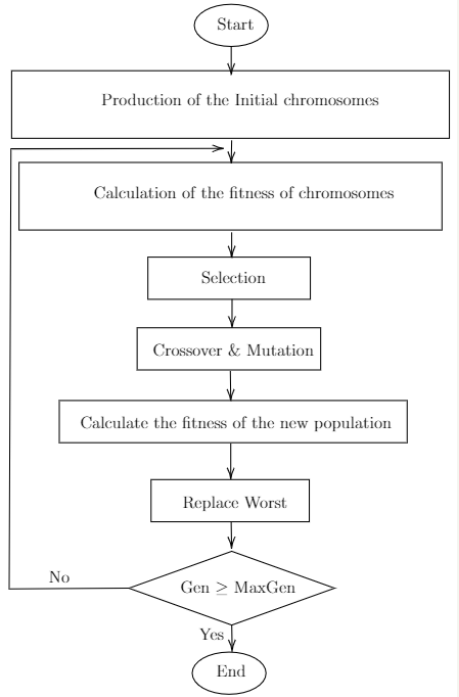
Genetic Algorithm(GA)

Genetic Algorithm

Developed in USA in the 1960's by J. Holland, K. DeJong, D.Goldberg

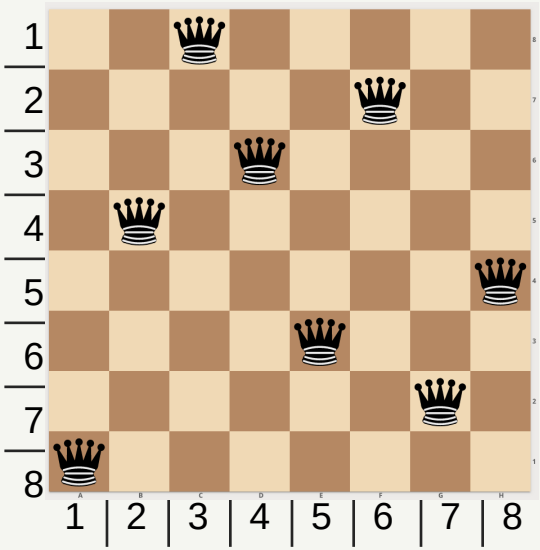
The Survival of the fittest

Inspired by Charles Darwin's theory of natural evolution



Solution Representation

Phenotype

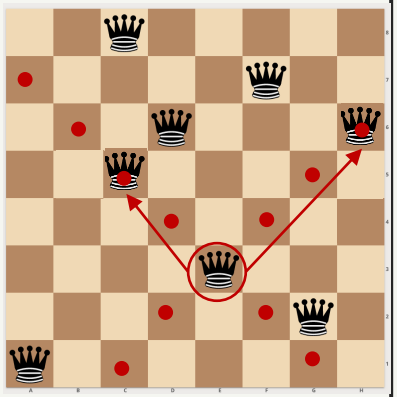


Genotype

8	4	1	3	6	2	7	5

Objective Function

$Fitness(Q_5) = 1 + 1$



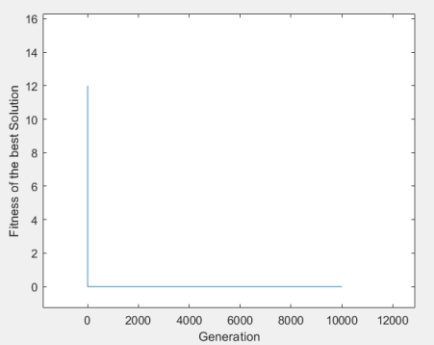
$$(\min) Fitness(chrom) = \sum_{i=1}^{N} Fitness(Q_i)$$

Paramters Details

representation	permutations
recombination	“Cut and Crossfill” crossover
Recombination probability	100%
Mutation	swap
Mutation	80%
Parent Selection	Best 2 out of random 5
Survival Selection	Replace Worst
Population Size	100
Number of Offspring	2
Initialization	Random
Termination condition	10,000 generation

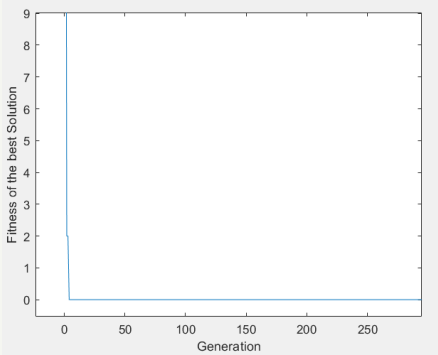
Results

Convergence curve graph



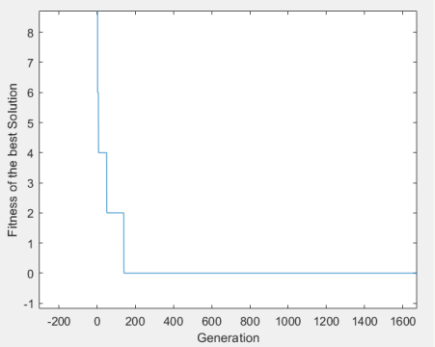
4-Queens

The solution was found within the 5 generation



8- Queens

The solution was found within the 50 generations



16-Queens

The solution was found within the 200 generations