# STAT 243 : Project

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## Introduction

We have chosen a functional coding style. We identified 3 main parts in the implementation. The first one was the parents selection mechanism, then came the gene operator and the last one was to carry out the production of a new generation.

For each part, we have designed several approaches and the arguments can be changed by the user that can provide their own functions.

In order to ease up reading and debugging we designed utility functions for each step.

We will present each step

## Parent Selection Mechanism

indicate the different methods : prop/prop, prop/random, random, tournament selection for proportionality talk about deriving a fitness function from the objective criterion.

## Gene operator

k-points crossover, alleles swapping, permutation chromosomes (not done), mutations, using the one hot utlity function to ease up the operations.

## Iterations of the genetic algorithm

### Initialization

speak about most significant variables, interactions, random selection of covariates...

### Iterations

permutation gap, decrease of the population size,

## select function

describe it and how parameters can be changed saying that the use of as.name allow the user to enter their own function.