Artificial Intelligence: Assignment 1

Part A Code Structure

Listed on GitHub as ‘part01’, ‘part02’, and ‘part03’.

‘part01’

This is the base code for the entire problem. It focuses on the ‘One-Max Problem’. Within the file, the methods are defined for calculating mutation, crossover and fitness scores. These methods are then implemented within the separate method focusing on the genetic algorithm itself. This is where the final values for the fitness scores etc. are calculated. This file, as requested in the assignment brief calculates a random string of ones and zeros, of length 30.

‘part02’

For this section, the code was essentially copied and pasted, and there were slight adjustments made to follow the assignment instructions. The change is in the addition of a target string. This target string is set in the beginning of the file, for it to be compared with the randomly generated string. The use of both the target and generated string is within the method to calculate fitness.

‘part03’

In this final part, the calculation of fitness is edited. The base code was used from ‘part01’ and the rest of the code remained the same. The new function of the method to calculate fitness is to first of all calculate the sum of all the ones in a randomly generated string. If the sum is greater than zero the sum is returned in the results, if not the length of the string multiplied by 2 is returned.