

## **C414 - Evolutionary Search Project**

### **Code Structure description**

Each python is named after each section they were created for, with them only functional for the section that it is named after.

Code follows the same structure throughout all files, using the same functions in each & each being used in combination with each other for the GA in the GA function within the code of each file.

Part A comments for code are mostly in file for section 1.1 as the code generally remains unchanged throughout Part A. Any changes that have been made to any of the functions have comments listed beside describing the change & its use.

Data required for Part B is within the code for Part B, with the data assigned to values as an array of tuples.

Each file contains the following functions;

- **Generate\_solution**- Generates random string/individual if required
- **Fitness**- Calculates fitness of individuals that is passed through the function.
- **Selection**- Tournament selection function carried based on individuals fitness.
- **Crossover**- Function that carries out crossover with individuals passed into function.
- **Mutation**- Carries out mutation on individuals passed into function.
- **Genetic Algorithm Function**- Combines all functions to carry out Evolutionary Search to find optimal solution.