**Sample File**

To setup which configurations to run you need to edit configs.json file. This is json file which gets loaded into SD\_R00183334.py file. This file contains a list of dictionaries and each dictionary is a configuration having values for initial population generation, parent selection, crossovers and mutations. Other than this the dictionary also have mutation rate value, population size and max iterations.

Below are the choice and their numbers (By default, the config is setup as per the assignment requirements.):

1. Population generation (pop\_generation\_choice):

‘0’: Random

‘1’: Heuristic

1. Parent Selection (selection\_choice):

‘0’: Random

‘1’: Stochastic

1. Crossovers (crossover\_choice):

‘0’: Uniform Crossover

‘1’: PMX Crossover

1. Mutation (mutation\_choice):

‘0’: Inversion Mutation

‘1’: Reciprocal Exchange Mutation

**Input Command:**

You need to have python3 or above to run the file. You below command to execute the GA algorithm program.

python SD\_R00183334.py <file-name>.tsp

**Output format:**

The output of each run gets logged into an output file which gets stored in <file-name>/config<config-number>.txt

For eg: if you are running 1st configuration for inst-5.tsp dataset, then a new directory will be created in the same directory and the output file will be stored there.

inst-5/config1.txt

Below is the output text which will be there inside each file for each dataset’s config:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*CONFIG NUMBER 1\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Main iteration 0 started

Time taken to for current iteration 0:10:51.652429 and best fitness is 492110258.29393643

Main iteration 1 started

Time taken to for current iteration 0:14:21.468838 and best fitness is 490914691.0725325

Main iteration 2 started

Time taken to for current iteration 0:14:28.502325 and best fitness is 490298778.2671692

Main iteration 3 started

Time taken to for current iteration 0:14:57.591725 and best fitness is 492659373.40145576

Main iteration 4 started

Time taken to for current iteration 0:13:37.494114 and best fitness is 488880358.579373

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Population size=100, mutation rate= 0.1, max iterations=500

Average fitness=490972691.92289335

Total time taken to run all iterations 1:08:16.709591