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Assignment6: Genetic Algorithms for Local Search/Learning

```
run(10,3,0.01)
run(10,3,0.02)
run(35,5,0.01)
run(35,5,0.02)
run(75,10,0.01)
run(75,15,0.02)
run(100,25,0.02)
run(100,15,0.01)
```

For the above trials of run, the results varied each time the code is executed given the element of randomness. Less-optimal solutions were returned for low values of population size and generations. Elitism also affects the solutions. Elitism set to True gave better solutions than when set to False. Also elitism when False, code runs for longer time(since the randomness increases, with the parents also being randomly selected instead of choosing the elite parents)

For sanity-check and easy instances:

As the population sizes and number of generations increased, the results were optimal almost all of the times.

For medium and easy instances:

Medium gave zero score most of the times for low values of population size and generations. The score was close to optimal as these are increased.

With elitism:

The best score, chromosome for sanity-check: 100, [1 0 0]

The best score, chromosome for easy: 15, [0 1 1 0 0]

The best score, chromosome for medium: 160, [1 0 0 1 1 1 0 0 0 0 1 0 1 0 1 1 0 1 0 1 0]

The best score, chromosome for difficult: 20075.04212344446, [1 0 1 1 1 1 1 1 1 1 1 1 1 1 1]

Without elitism:

The best score, chromosome for sanity-check: 100, [1 0 0]

The best score, chromosome for easy: 15, [0 1 1 0 0]

The best score, chromosome for medium: 155.0, [1 0 0 1 1 1 0 1 0 0 1 0 1 0 0 1 0 0 0 0 0]

The best score, chromosome for difficult: 13072.844281099222, [0 0 0 1 1 1 1 0 0 0 1 1 0 0 0 1 0 1 1 0 1 1 1 1 1 1 0 1 0 0 0 0 0 1 1 1 1 0 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 0 1 1 1 0 1 1 1 0 1 0 0 1 0 1 1 1 1 1 1 1 1 1 0 0 0 1 0 1 0 0 0 1 0 0 0 0 0 1 0 0 0 1 1]