**Genetic Algorithm**

Creating population.

Calculating fitness.

Selecting the best genes.

Crossing over.

Mutating to introduce variations.

Breeding

**Genetic Algorithm:**

Genetic algorithm is started with a set of solutions (represented by chromosomes) called population. Solutions from one population are taken and used to form a new population.The new population will be better than the old one. Solutions which are selected to form new solutions (offspring) are selected according to their fitness, the more suitable they are the more chances they have to reproduce. This is repeated until some condition for example number of populations or improvement of the best solution is satisfied. Genetic Algorithm is a paradigm that has proved to be a unique approach for solving various mathematical problems which other gradient type of mathematical optimizers have failed to reach,Ant colony optimization has been applied successfully to a large number of difficult combinatorial optimization problems.

The selection operator takes the responsibility of guiding the search of GA toward the high quality or even optimal solution. The crossover operator plays the role of exchanging the information between the individuals in the population while the mutation operator is used to avoid GA from falling into local optima.

Randomly generate an initial population of chromosomes

Use the fitness function to select the fitter chromosomes.

Apply the crossover and mutation operators in order.

If a stopping criterion is satisfied, then stop and output the best chromosome.

Go to step 2.

300 words is not enough to explain what I did and how I did the whole assignment but I'm going to do it briefly.

student\_details function was obviously the easiest one.I just declared my Id number and my name and returned their value.

generate\_map function gets a range from the user for x and y values, and asks how many of locations they want.And randomly produces that quantity of map locations.

print\_map function gets the values of the speed, colour and thickness of the turtle and asks them to choose a map and then it draws the map.

calculate\_distance function asks the user the starting locations and the destination locations and returns the distance between them.

calculate\_path function asks the user to input a map and returns the every distance from one location to next location.

nearest\_neighbour\_algorithm function does try to find the nearest next location.

After genetic\_algorithm its getting more complex and I've used some helper functions.

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