Project 2

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For this assignment I am just going to give a quick run down of what I have been working on in my Genetic Program(GP). An overview of the addition of a conditional as well as the evolution of my populations. Mutation, crossover, selection, and elitism will all be part of my generational model. I will be using a generational model with elitism. More details can be found below.

CONDITIONAL For my conditional I chose to go with a simple if statement that utilizes a less than between its two values. For now I believe the left hand side will just be the input, while the right will be a generated tree. Therefore another two trees will be generated, one for use as a then statement and another as an else.

MUTATION For now what I wish to do with mutation is with some probability, change the type of node that a certain node is. This would be completely random and with elitism couldn't hurt the new generation that much if I create a worse individual.

CROSSOVER This is very easy to conceptualize because all that is being done is two random numbers are being generated and those two nodes from each tree are being swapped at that point. Doing so with a breadth first search on an individual to number the nodes will hopefully help in switching lower in the tree and not higher.

SELECTION I used Tournament selection to select my new generation. Before I do this however I copy over the best individual twice. Then I pick five random individuals and take the best of them and repeat this process until I have a full generation to copy into the population.

For now I have everything but Crossover working as I would like and can run it using just single node mutation to see some conformation in the average fitness. I do need to create a better fitness function as well as fix a bug I am having with divide by zero errors still. These problems will easily be fixed when I put a little more time into finding them and removing them.

Right now crossover is set up how I would like in code and works greatly on paper moving nodes around. The problem I have run into is getting a queue created and having a breadth first search add members of the tree to that queue. I have not had enough time to get it to work properly. As mentioned before though with more time, spring break, I will easily have it finished and giving results, whether they be good or bad.
