4511W, Fall-2017
WRITING ASSIGNMENT 2 :
Assigned: 10/15/17 Due: 10/22/17 at 11:55 PM (submit via moodle) Submit only pdf files (you may also submit a tex and pdf in a zip)

Written

For this written assignment, we will extend problem 5 of homework 2. Again we will look at the N-Queens problem and compare different algorithms. The algorithms you need to compare are:

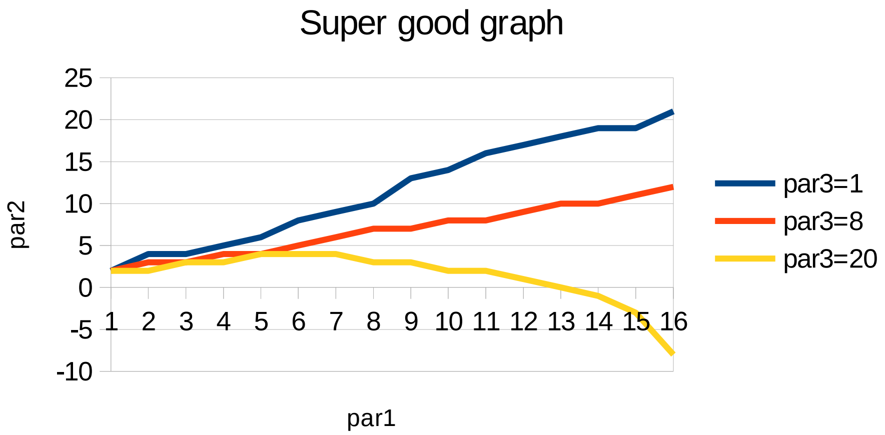
(1) Breadth first search
(2) Depth first search
(3) Genetic algorithm

Both breadth first search and the genetic algorithm are provided in the book's code in search.py (see homework 2 description). For depth first search, you can either use my naive recursive code (from homework 2) or the depth first search in search.py. To get the breadth first search to run on N-Queens, see the modified breadth first search code (bfs.py).

For this writing assignment, you need to have both a table and a figure in addition to an analysis for each. The file “writing2sample.tex” shows how to create tables and figures (or you could google).

The table must compare the run-times of all three algorithms above for at least 5 different board sizes. If an algorithm runs out of memory or takes longer than an hour, you can leave that part of the table blank. (You cannot have an entry in your table where all three algorithms are blank, say by picking a board size of 1 million by 1 million.)

The figure should compare the quality of results of the genetic algorithm by varying two parameters for performance. Shown below is an example not related to genetic algorithms. The y-axis (par2) should be the quality of the results and the x-axis (par1) is the first parameter you are exploring. You must also make three different lines (par3) by varying a second parameter (other than the x-axis parameter).



For both the figure and table, you must write an analysis of your results. This should include a brief summary. How you analyze the data is up to you. For example, you could try to generalize the trends of the data or explain why the data makes sense from the way the algorithm works.

Grading

Latex 20%
Figure 20%
Table 20%
Analysis 40%