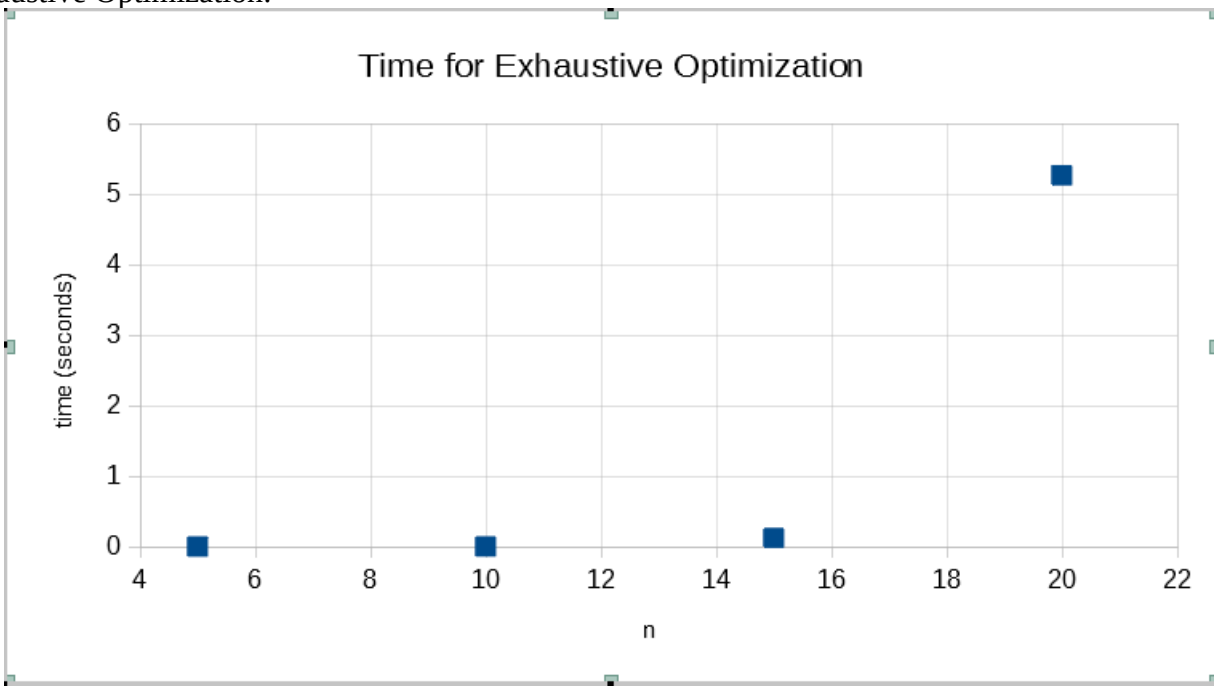
cjacobsen2016@csu.fullerton.edu
Carla Jacobsen CPSC 335 2:30-3:45 pm Fall 2019

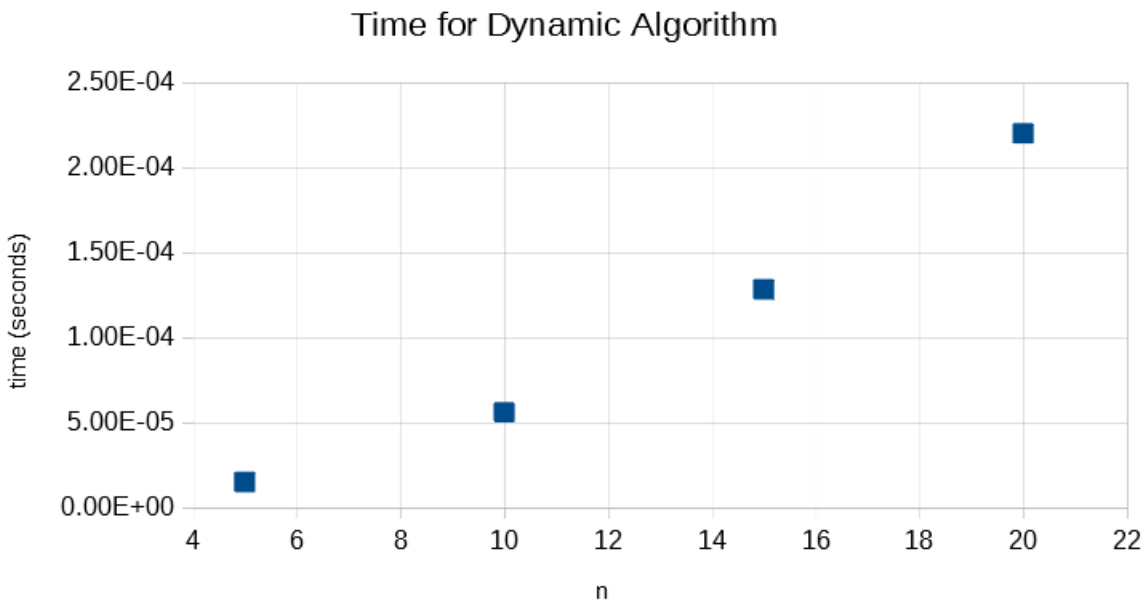
Project 4

Scatterplots:

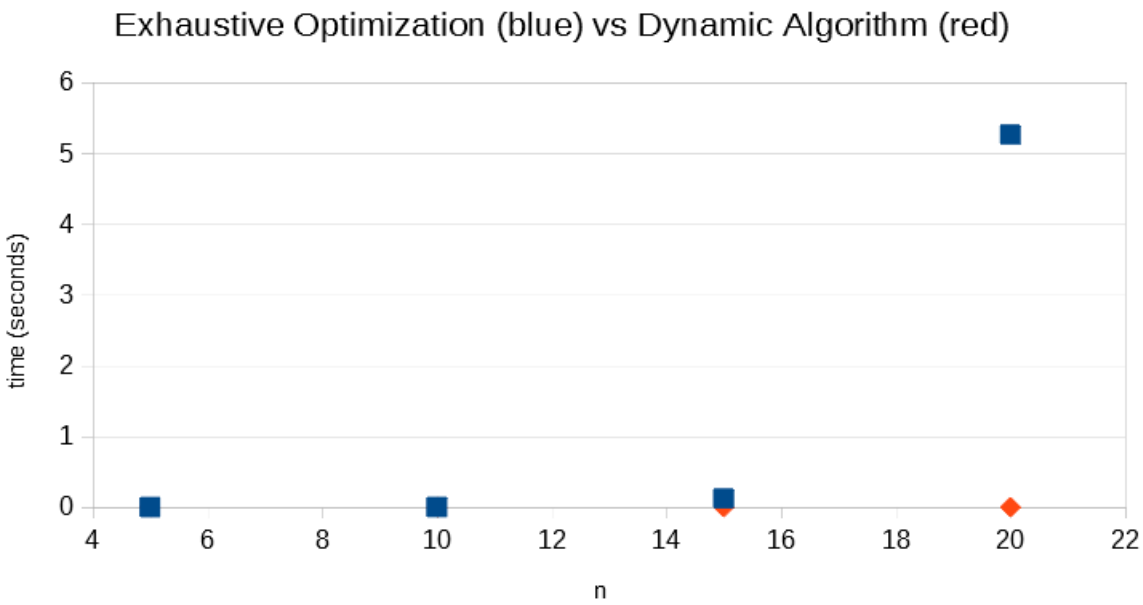
Exhaustive Optimization:



Dynamic Algorithm:



Exhaustive Optimization vs Dynamic Algorithm:



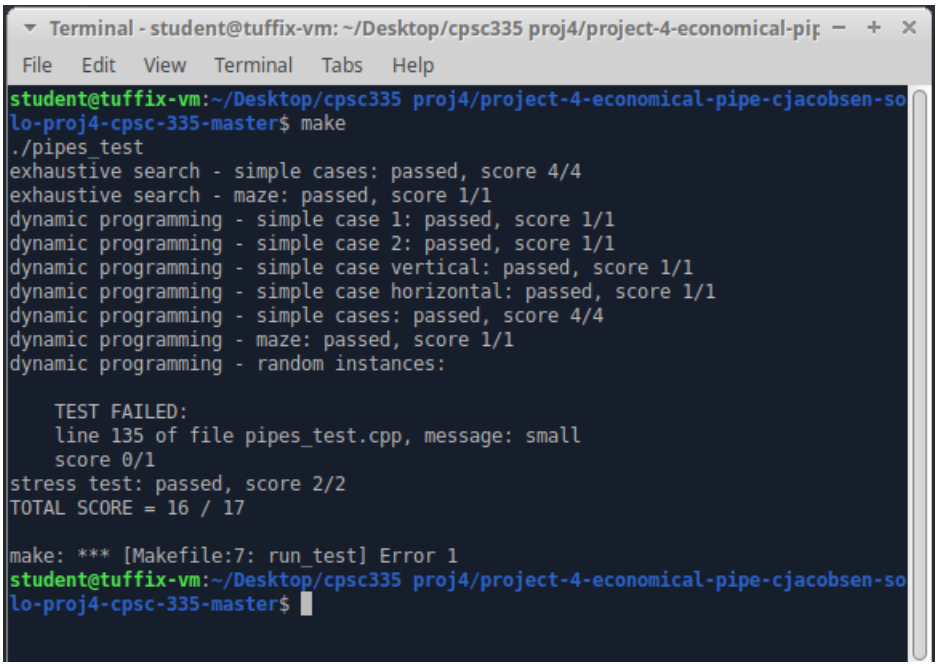
This graph shows that the dynamic algorithm is significantly faster than the exhaustive optimization algorithm. This is consistent with the efficiency classes because the dynamic algorithm has polynomial time complexity, which is much faster than the exhaustive optimization algorithm, which has exponential time complexity.

This information supports the hypothesis that the dynamic algorithm is more efficient than the exhaustive optimization algorithm.

The most challenging part of the exhaustive optimization algorithm was the bit manipulation. It made it hard for me to visualize what was going on, so this was the more difficult of the two algorithms to implement. The most challenging part of the dynamic algorithm was setting up and adding steps to the paths.

I prefer the dynamic algorithm because it is easier for me to visualize it.

Screenshot:


Terminal - student@tuffix-vm: ~/Desktop/cpsc335 proj4/project-4-economical-pip
File Edit View Terminal Tabs Help
student@tuffix-vm:~/Desktop/cpsc335 proj4/project-4-economical-pipe-cjacobsen-so
lo-proj4-cpsc-335-master$ make
./pipes_test
exhaustive search - simple cases: passed, score 4/4
exhaustive search - maze: passed, score 1/1
dynamic programming - simple case 1: passed, score 1/1
dynamic programming - simple case 2: passed, score 1/1
dynamic programming - simple case vertical: passed, score 1/1
dynamic programming - simple case horizontal: passed, score 1/1
dynamic programming - simple cases: passed, score 4/4
dynamic programming - maze: passed, score 1/1
dynamic programming - random instances:
TEST FAILED:
line 135 of file pipes_test.cpp, message: small
score 0/1
stress test: passed, score 2/2
TOTAL SCORE = 16 / 17
make: *** [Makefile:7: run_test] Error 1
student@tuffix-vm:~/Desktop/cpsc335 proj4/project-4-economical-pipe-cjacobsen-so
lo-proj4-cpsc-335-master$