

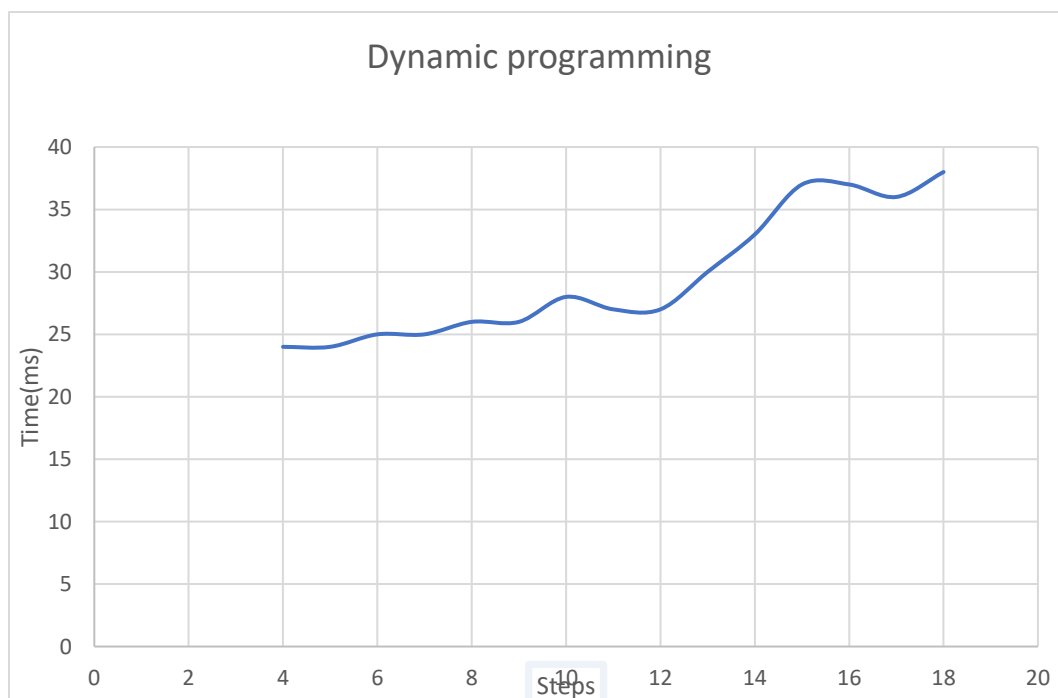
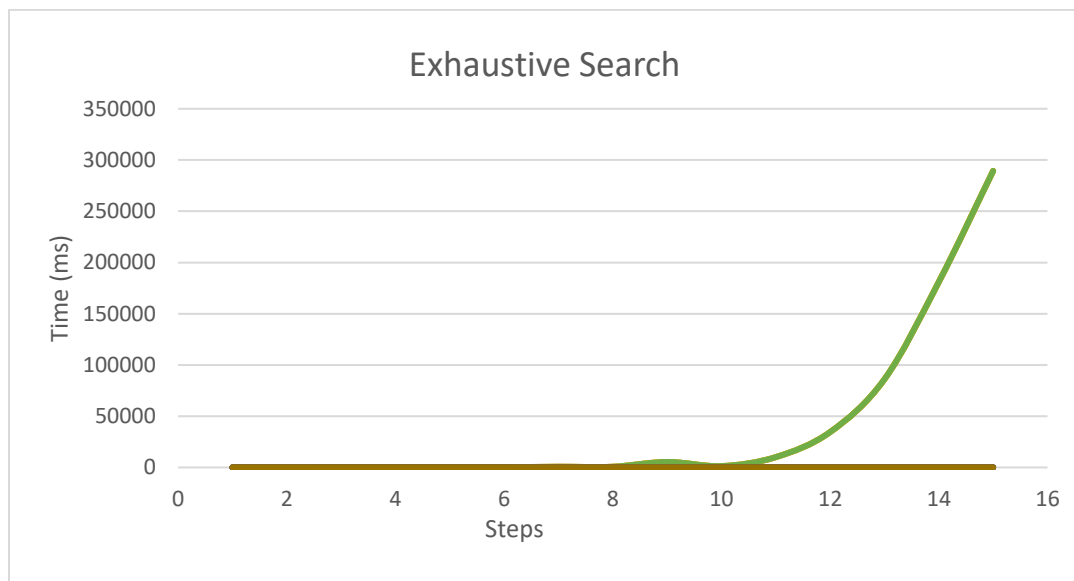
Project 4 Report(CPSC 335 Spring 2020)

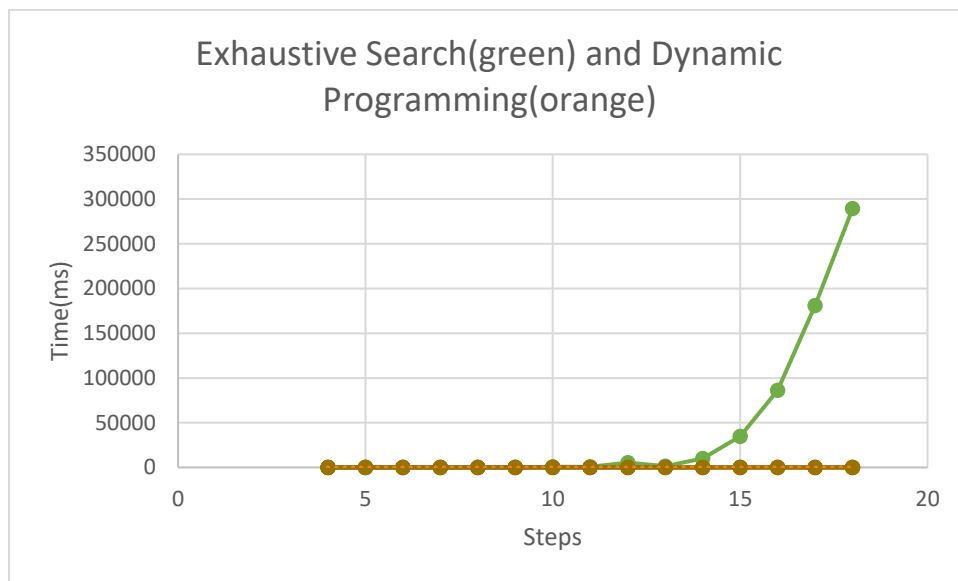
Pathfinding using exhaustive and dynamic programming

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Are the fit lines on your scatter plots consistent with these efficiency classes? Justify your answer.

: Yes, the line is consistent. There is little fluctuation, but it is due to different process running at same time. The exhaustive search and the dynamic programming have consistent line in graph.

Exhaustive search graph increases exponentially, and dynamic programming graph increases linearly.

Is this evidence consistent or inconsistent with the hypothesis stated on the first page? Justify your answer.

The graph is consistent with the hypothesis stated. The exhaustive search is inefficient as compare to dynamic programming.

Compare and contrast the difficulty you found in implementing the two algorithms. What was the most challenging part of implementing each algorithm? Overall, which implementation did you find harder, and why? Which algorithm implementation do you prefer?

The exhaustive search is most challenging part for me. As I need to work on the bit level. So for calculating the path bit has been used

```
vedantk@vedantk-virtual-machine:~/project-4-iceberg-avoiding-problem-vedant-project4$ make
g++ -std=c++17 -Wall ices_test.cpp -o ices_test
In file included from ices_test.cpp:14:0:
ices_algs.hpp: In function 'unsigned int ices::iceberg_avoiding_exhaustive(const ices::grid&)':
ices_algs.hpp:30:10: warning: unused variable 'begin_time' [-Wunused-variable]
    clock_t begin_time = clock();
           ^
./ices_test
<<count paths:
exhaustive search - simple cases: passed, score 4/4
exhaustive search - maze: 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 95 of file ices_test.cpp, message: small
score 0/1
stress test: passed, score 2/2
TOTAL SCORE = 12 / 13
Makefile:7: recipe for target 'run_test' failed
make: *** [run_test] Error 1
vedantk@vedantk-virtual-machine:~/project-4-iceberg-avoiding-problem-vedant-project4$
```