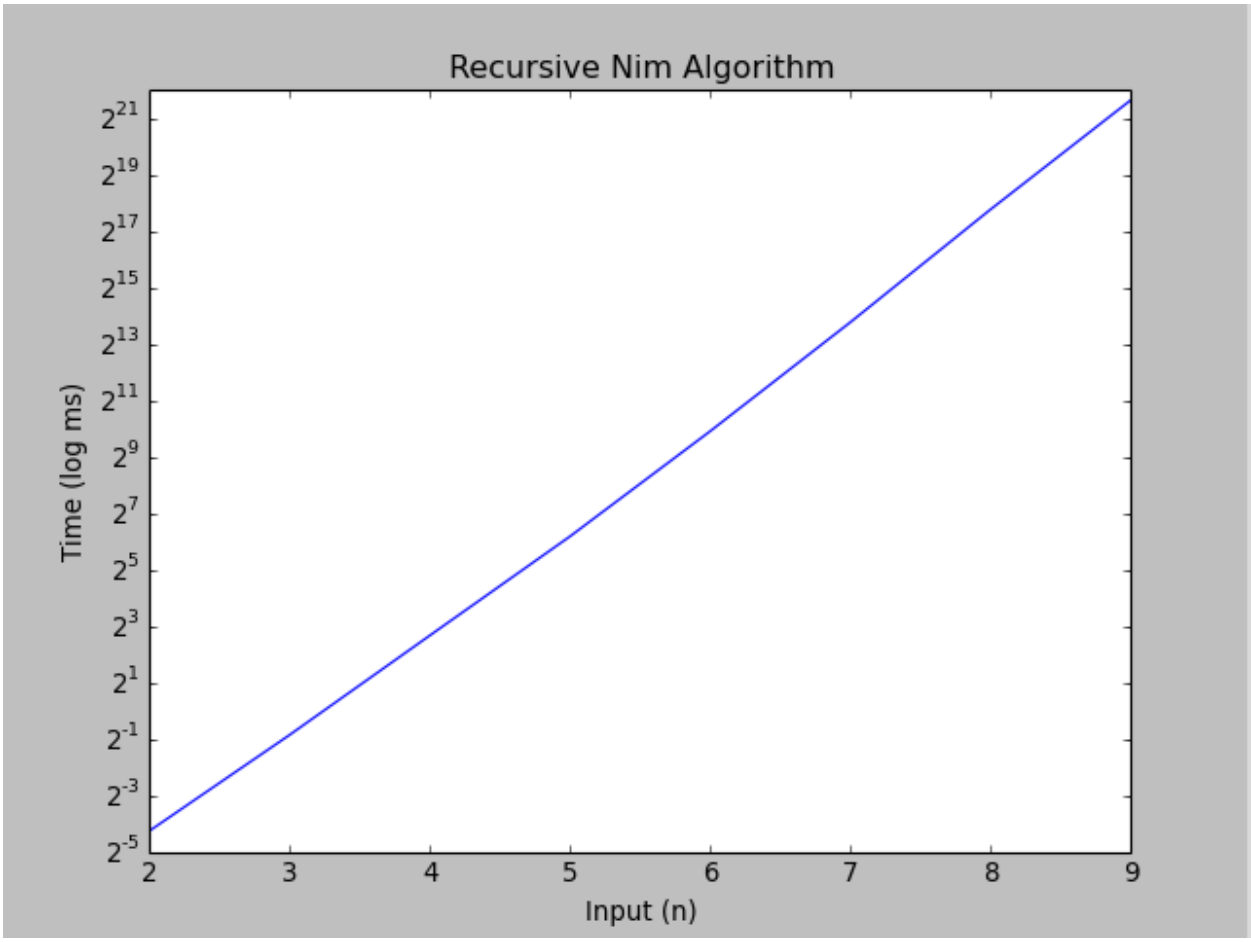
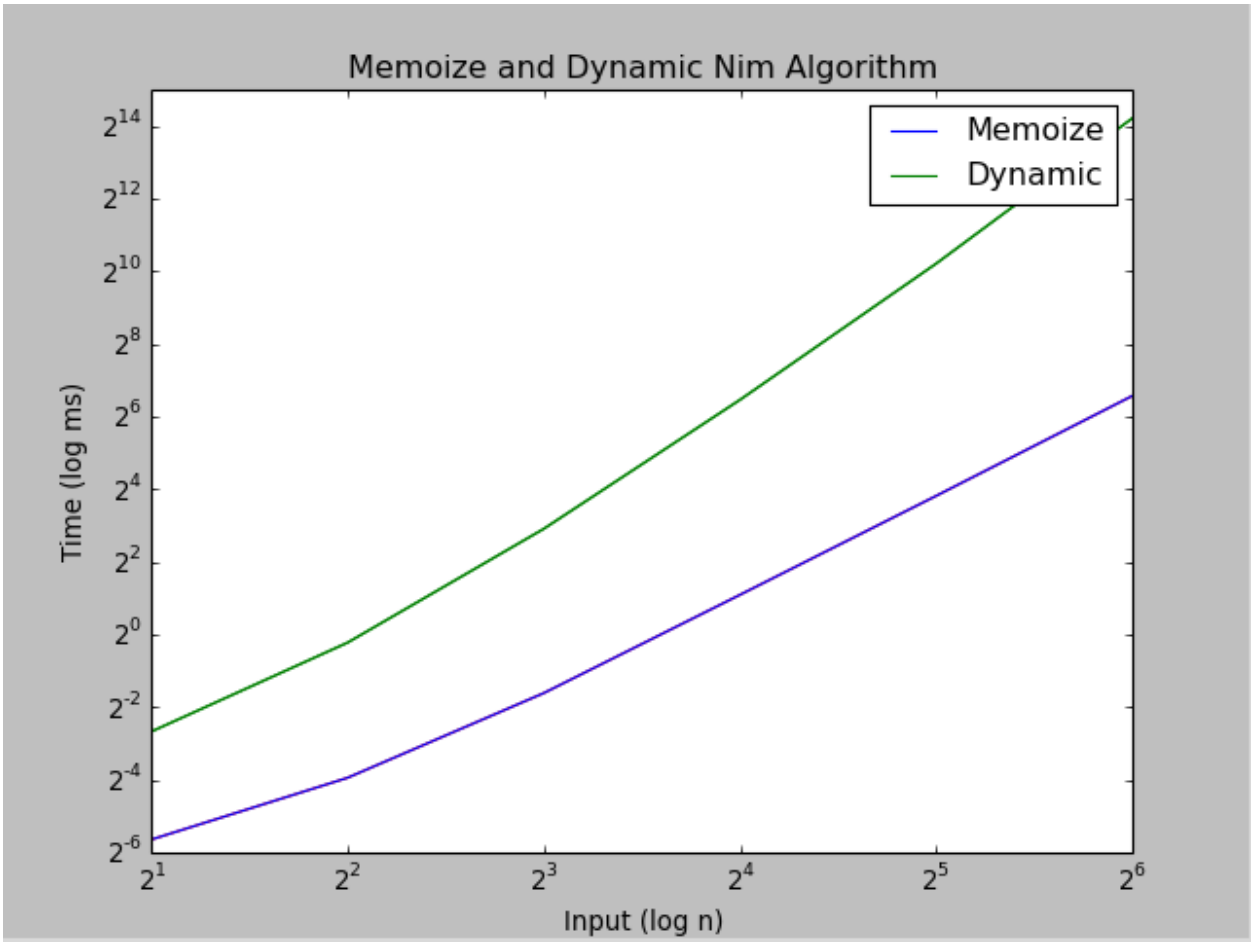
The mathematical analysis was done in class. We determined that the recursive algorithm is order $O(a^n)$ and both the memoizing and dynamic algorithms are order $O(n^3)$. Using some points from the recursive graph, we can construct an equation for the line and get the slope. Slope (m) = 1.12



The slope for the memoize graph is m = 2.7527, and the slope for the dynamic algorithm is m = 8.0469.



In conclusion I've determined that the empirical studies are close to supporting our mathematical evaluation that we did in class. The recursive graph is linear which is what we predicted. The memoize and dynamic graphs are nearly linear but slightly curved. We predicted that memoize and dynamic had the same speed but in our empirical test we learn that memoize if faster initially (when x=0, memoize finishes faster) and that it remains faster as the problem size grows. Comparing the slope of the dynamic algorithm with the memoize algorithm we see that dynamic has a steeper slope, so the dynamic algorithm distances itself from the memoizing algorithm even more as input size grows. If input size were massive, the dynamic algorithm would be significantly slower than the memoizing algorithm.