Homework 3 Report

When looking at the P1 vs P2 graphs, we can observe that P1 increases linearly at a rate greater than P2. This is due to the fact that P1 contains two for loops that makes the time complexity of the function O(n^2). P2 one the other hand only uses one for loop which makes the time complexity O(n). In reality O(n^2) should have a quadratic looking graph but since it is a log-log function, the graph is linear but grows faster than P2. The same analogy is also true for E3 and E4 graphs.

In the case for E1 and E2, they are both O(n) time complexity however E1 grows faster than E2. This is because E2 increments counter by 2 whereas E1 increments counter by 1. But looking at the big picture, they both grow at a similar rate since they are both O(n).

E5 has a time complexity of O(n^3) which causes it to take longer to complete than all the other graphs.

In my graphs, I could not get P1-E4 to run past 10^5 and E5 to run past 10^3, so I interpolated data past those magnitudes.