CPSC 335 Project 1

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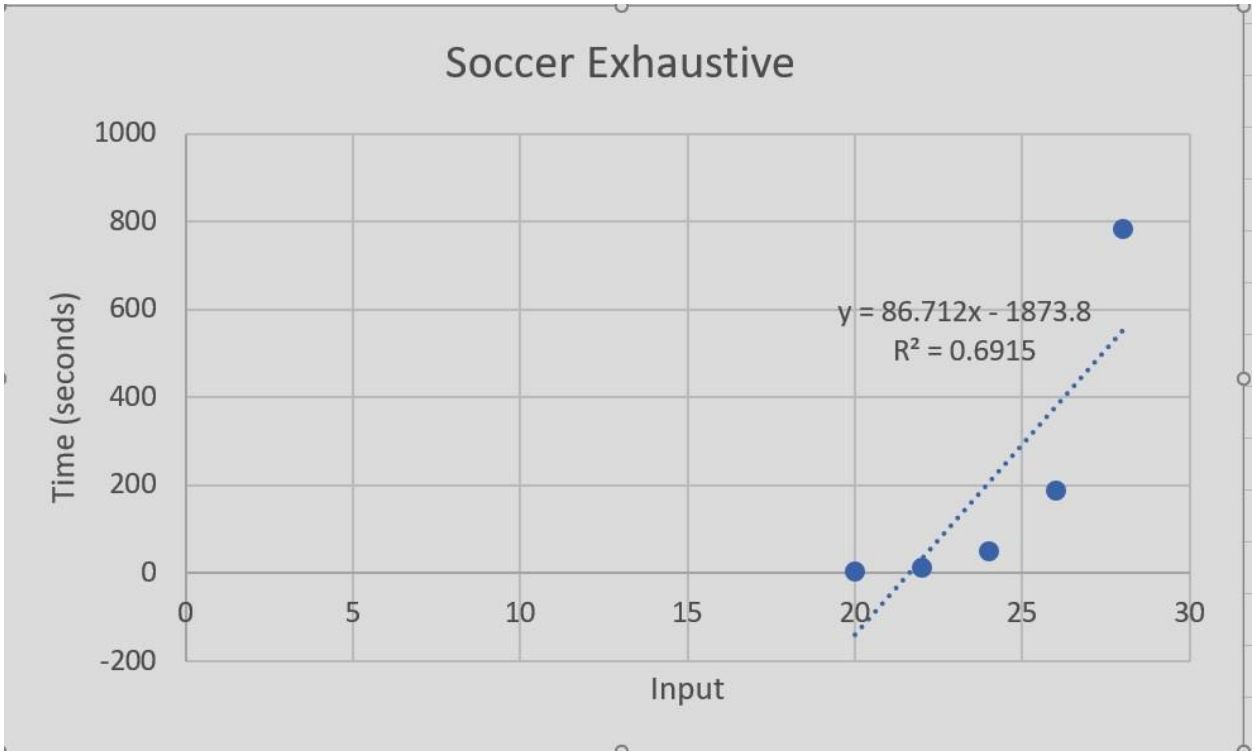
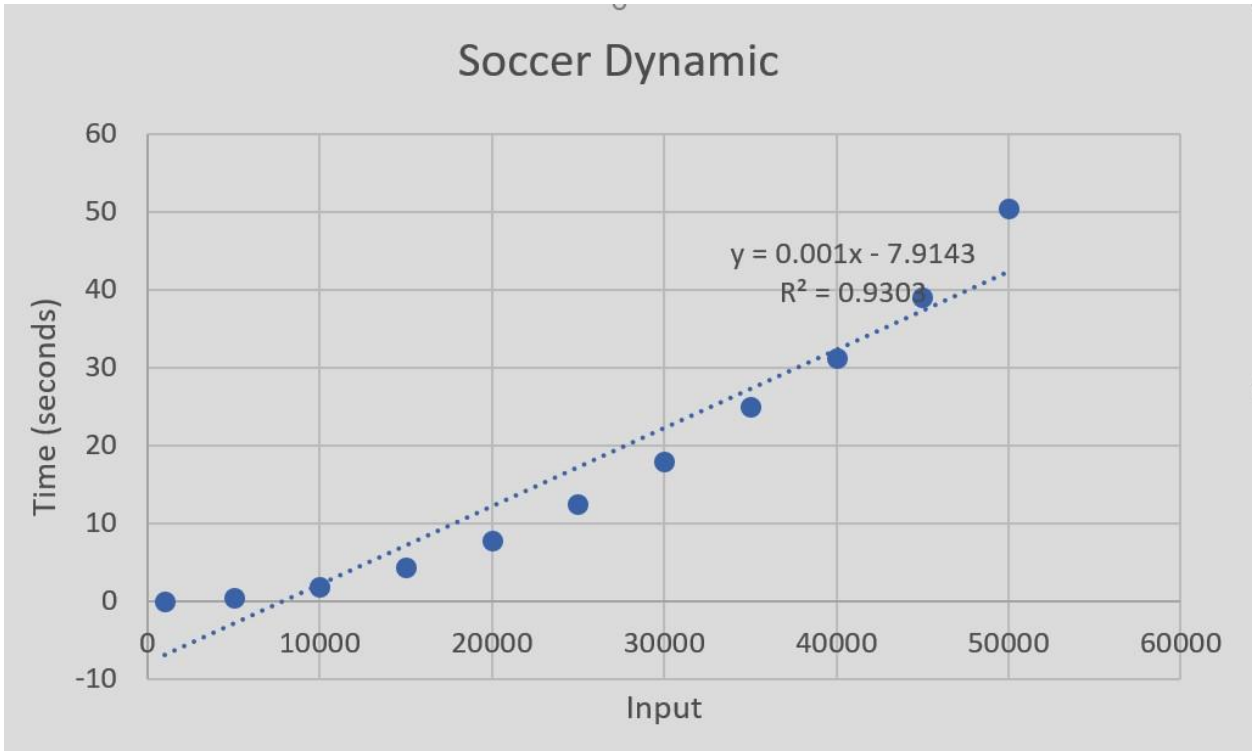
Scatter Plots

Soccer Exhaustive Algoritihm



Soccer Dynmaic Algoritihm



Questions

1. Yes there is an enormous difference in the performance of both algorithms, which is not surprising at all. The dynamic algorithm has a worst case time efficiency of $O(n^2)$, while the exhaustive algorithm has a worst case time efficiency of $O(n * 2^n)$.
2. Yes the empirical analysis is consistent with the predicted big O efficiency classes. Both graphs of the algorithms seem to match their respective behavior and both have high r values (mainly the dynamic algorithm). The exhaustive algotihim probably would have had a higher r value if there were more plot points included.
3. Yes the evidence is consistent with hypothesis 1. The exhaustive algorithm was possible to implement and did produce correct outputs.
4. Yes the evidence is consistent with hypothesis 2. Although the soccer exhaustive algorithm is feasible to implement, it is extrmmely inprofficient compared to its dynamic algorithm counterpart. For reference, an input size of 28 took around 700 seconds for the exhaustive algorithm while the dynamic algorithm was able to handle an input size of 50000 in under a minute.