

1.

	Input	Output
A	Address	Directions
B	Courses	Schedule w/Courses
C	Search terms	Search Results
D	Vector with previously viewed Items	Recommended Items
E	Delivery Option and Date	Expected Arrival time

2. Traditional Bahraini Chicken Machboos

URL- <http://www.food.com/recipe/traditional-bahraini-chicken-machboos-machbous-304034>

While the author of the recipe does a great job of describing the recipe in a procedural and quantified manner, it's imprecise and ambiguous in a lot of areas. The author often asks the readers to put 'about half' and to fry onions 'until golden brown', which isn't precise enough algorithmically as it introduces user judgment into the procedure and ambiguity. In terms of recipe, only people who are seasoned in cooking the dish can accurately judge the amounts of spices and level of brownness accurately so this ambiguity will give wrong results for those unfamiliar with the dish. Bad algorithm.

3. Sigma is when the first one grows faster, O is when the 2nd one grows faster

a) Sigma. N^7 is greater than N^5

b) O. If you raise both to the e, we get n^2 vs n^3 which n^3 wins.

c) Sigma. 3^n is exponential vs n^5 which is polynomial so 3^n wins.

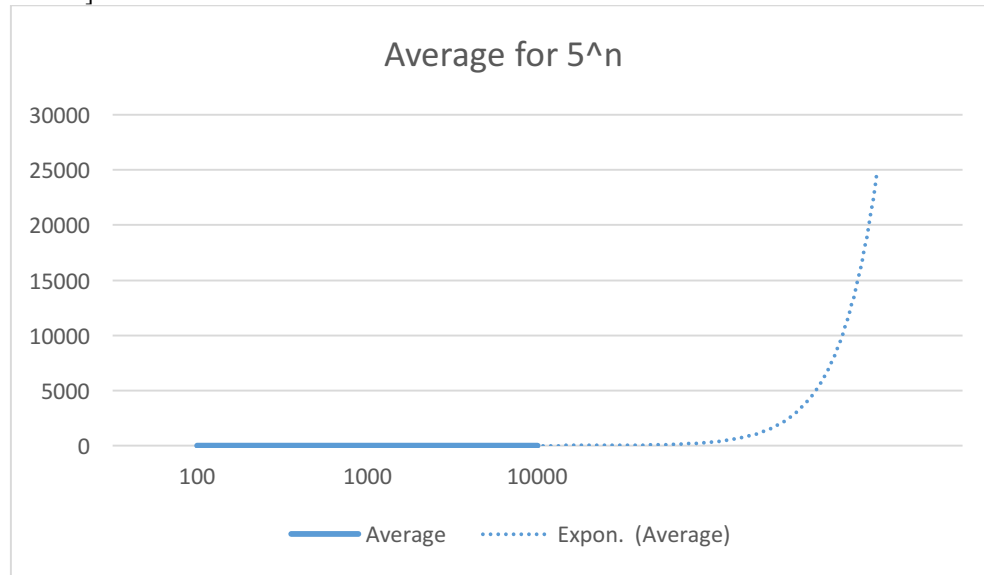
d) Sigma. Again, exponential > polynomial.

e) Equal. Factorials are equal, at effectively high values of n then the constants don't really matter.

4. The program took too long to run increments past 10^4 , so I decided to do a smaller but similar sequence. I did $n=5^3, 5^4, 5^5$ and 5^6 . The results were as follows.

N	Minimum (s)	Maximum (s)	Average (s)
5^3	0.0005400180816650391	0.0012860298156738281	0.0009311914443969726
5^4	0.012299060821533203	0.02359795570373535	0.016370749473571776
5^5	0.3314990997314453	0.4116051197052002	0.3537497043609619
5^6	8.336928844451904	10.314213991165161	9.843411898612976

[Finished in 102.5s]



The results are clearly exponential, so we plotted a trend line with 3 given points and extrapolated the next 2 points for 10^n using the predicted formula:

N	Average (s)
10^2	0.0005648851394653321
10^3	0.0344332695007324200
10^4	3.9566275596618654000
10^5	6.79168E+27
10^6	2.7384E+301

[Finished in 102.5s]