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Assignment: Asymptotics Drill

2 Ordering Running Times

1. When the input size is doubled:
    1. n^2 - slows by a factor of 4
    2. n^3 - slows by a factor of 8
    3. 100n^2 - slows by a factor of 4
    4. nlogn - slows by a factor of approximately 2 (as n approaches infinity, the decrease in processing speed approaches a factor of 2)
    5. 2^n - as n approaches infinity, the decrease in speed rapidly approaches a factor infinity
2. When the input size is increased by 1
    1. n^2 - slows by a factor of slightly more than 1 (as n approaches infinity, the decrease in speed approaches a factor of 1)
    2. n^3 - slows by a factor of slightly more than 1 (as n approaches infinity, the decrease in speed approaches a factor of 1)
    3. 100n^2 - slows by a factor of slightly more than 1 (as n approaches infinity, the decrease in speed approaches a factor of 1)
    4. nlogn - slows by a factor of slightly more than 1 (as n approaches infinity, the decrease in processing speed approaches a factor of 1)
    5. 2^n - for each slows by a factor of 2

3 Really Understanding Order-of-Growth

1. n^2 - the largest input size n is 6,000,000
2. n^3 - the largest input size n is approximately 33,019
3. 100n^2 - the largest input size n is 600,000
4. nlogn - the largest input size n is approximately 2,889,100,000,000
5. 2^n - the largest input size n is approximately 45
6. 2^(2^n) - the largest input size n is approximately 5