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Exercise #1 CS361 Winter 2017 Due 1/30/2017.

I. Multiple choice

1. $T(n) = 3T(n/2) + n = \Theta(\underline{n^{\sim 1.58}})$. In addition, you achieve this by using Master Theorem's with case?
   - a. Case 1
   - b. Case 2
   - c. Case 3

$$n^{\log_b a} = n^{\log_2 3} = n^{\sim 1.58} > f(n)$$

2. $T(n) = 4T(n/2) + n = \Theta(\underline{n^2})$. In addition, you achieve this by using Master Theorem's with case?
   - a. Case 1
   - b. Case 2
   - c. Case 3

$$n^{\log_2 4} = n^2 > f(n)$$

3. $T(n) = 3T(n/3) + n = \Theta(\underline{n \log n})$. In addition, you achieve this by using Master Theorem's with case?
   - a. Case 1
   - b. Case 2
   - c. Case 3

$$n^{\log_3 3} = n = f(n)$$

4. $T(n) = 2T(n/2) + n = \Theta(\underline{n \log n})$. In addition, you achieve this by using Master Theorem's with case?
   - a. Case 1
   - b. Case 2
   - c. Case 3

$$n^{\log_2 2} = n = f(n)$$

5. $T(n) = 7T(n/3) + n = \Theta(\underline{n^{\sim 1.77}})$. In addition, you achieve this by using Master Theorem's with case?
   - a. Case 1
   - b. Case 2
   - c. Case 3

$$n^{\log_3 7} = n^{\sim 1.77}$$