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## Student Information

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Due Date: **Mon, 21-Sep 4:00pm.**

Submit written answer on paper in class or electronic version online through dropbox. Submission without student information will **NOT** be marked!

## Exercises

(Note: May be multiple choices in problem 4.)

1. The asymptotic complexity of  $n^2 + n + 100$  is  $O(n^2)$ . (T/F)  $\top$
2. The asymptotic complexity of  $n^2 + n^{0.5} + 100$  is  $\Omega(n^2)$ . (T/F)  $\top$
3. The asymptotic complexity of  $100n^3 + n + 100$  is  $\Theta(n)$ . (T/F)  $\text{F}$
4. The asymptotic complexity of  $n \ln n + 4n + 4$  is (  $\text{B}$  ).
  - A.  $\Theta(n^2)$
  - B.  $O(n^2)$
  - C.  $\Omega(n^2)$
  - D.  $\Theta(n)$
5. The asymptotic complexity of the following program is  $\Theta(n^3)$ . (T/F)  $\top$ 

$$\begin{aligned} &\text{for } (int\ i=0; i < n^2; i++) \\ &\quad \text{for } (int\ j=0; j < n; j++) \\ &\quad\quad \text{print } (Great); \end{aligned}$$
6. The asymptotic complexity of the following program is  $\Theta(n^2)$ . (T/F)  $\text{F}$ 

$$\begin{aligned} &\text{for } (int\ i=0; i < n; i++) \\ &\quad \text{for } (int\ j=0; j < i; j++) \\ &\quad\quad \text{print } (Great); \end{aligned}$$
7. Given  $f(n) = 10n^3 + n^2 + n$  and  $g(n) = 0.01n^4$ , so  $f(n) = \Theta(g(n))$ . (T/F)  $\text{F}$
8. Given  $f(n) = 0.01n$  and  $g(n) = 100n^{0.5} + 50$ , so  $g(n) = O(f(n))$ . (T/F)  $\top$