

# Quiz 3 EECE4040 Spring 2022

**Due** Jan 31 at 11:59pm **Points** 10 **Questions** 10**Available** Jan 31 at 10am - Jan 31 at 11:59pm about 14 hours**Time Limit** 15 Minutes

This quiz was locked Jan 31 at 11:59pm.

## Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	13 minutes	8 out of 10

Score for this quiz: **8** out of 10

Submitted Jan 31 at 11:50pm

This attempt took 13 minutes.

Correct!

### Question 1

1 / 1 pts

The best-case complexity of Insertion Sort is approximately

☐ constant time

☒  $n$

☐  $\log_2 n$

☐  $n \log_2 n$

☐  $n^2$

### Question 2

1 / 1 pts

**Correct!**

The worst-case complexity of Insertion Sort is

☒  $\sim \frac{n^2}{2}$

☐  $\sim \log_2 n$

☐  $\sim n^2$

☐  $\sim \frac{n^2}{4}$

☐  $\Theta(n \log n)$

**Question 3****1 / 1 pts**

The average complexity of Insertion Sort is

☐  $\sim n^2$

☐  $\Theta(n \log n)$

☐  $\sim \frac{n^2}{2}$

☐  $\sim \log_2 n$

**Correct!**

☒  $\sim \frac{n^2}{4}$

**Question 4****1 / 1 pts**

A rule that is helpful when computing  $\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)}$ .

**Correct!**☐ De Morgan's Rule☐ Phat Rule☐ Hospital Rule☐ Newton's Rule☒ L'Hopital's Rule**Question 5****0 / 1 pts**

Which gives an order lower bound?

☐  $\Lambda$ **Correct Answer**☐  $\Omega$ **You Answered**☒  $O$ ☐  $\sim$ ☐  $\Theta$ **Question 6****1 / 1 pts**

Which gives the order?

☐  $\Omega$ ☐  $\sim$

**Correct!**☒  $\Theta$ ☐  $\Gamma$ ☐  $O$ **Question 7****1 / 1 pts**

Suppose  $\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)} = 0$ . Then,

☐  $f(n) \sim g(n)$ ☐  $f(n)$  and  $g(n)$  have the same order☒  $f(n)$  has smaller order☐  $g(n) \in O(f(n))$ ☐  $g(n)$  has smaller order**Correct!****Question 8****1 / 1 pts**

What is the symbol for strongly asymptotic?

☐  $\asymp$ ☐  $\equiv$ ☐  $\triangleright$ ☒  $\sim$ **Correct!**

☐  $\approx$ **Question 9****1 / 1 pts**

Which function has order strictly greater than  $n \log_2 n$

☐  $n \log_8 n$ ☐  $n \ln n$ ☐  $(\ln n)^{100}$ ☐  $10n \log_{10} n$ **Correct!**☒ None has strictly greater order.**Question 10****0 / 1 pts**

The smallest worst-case complexity for finding both the maximum and minimum elements in a list of even size  $n$ :

**You Answered**☒  $2n - 2$ **Correct Answer**☐  $3n/2 - 2$ ☐  $\log_2 n$ ☐  $n \log_2 n$ ☐  $n - 1$

Quiz Score: **8** out of 10