2 Lecture - CS502

Important Subjective

1. **What is the purpose of using asymptotic notation in algorithm analysis?**
Answer: The purpose of using asymptotic notation is to describe the growth rate of a function and simplify the analysis of algorithms by ignoring constant factors and lower order terms.

What does Big O notation represent?
Answer: Big O notation represents the upper bound of a function or the worst-case running time of an algorithm.

What does Omega notation represent?
Answer: Omega notation represents the lower bound of a function or the best-case running time of an algorithm.

What does Theta notation represent?
Answer: Theta notation represents both the upper and lower bounds of a function or the tightest possible bounds on the running time of an algorithm.

What is the difference between worst-case and average-case running time?
Answer: Worst-case running time represents the maximum time required for an algorithm to complete, while average-case running time represents the expected time required for an algorithm to complete.

Which notation is used to describe the growth rate of an algorithm that has constant running time?
Answer: Theta notation is used to describe the growth rate of an algorithm that has constant running time.

Which notation is used to describe the best-case running time of an algorithm?
Answer: Omega notation is used to describe the best-case running time of an algorithm.

Which notation is used to describe the tightest possible bounds on the running time of an algorithm?
Answer: Theta notation is used to describe the tightest possible bounds on the running time of an algorithm.

What is the relationship between f(n) and g(n) if f(n) is O(g(n))?
Answer: If f(n) is O(g(n)), it means that f(n) grows no faster than g(n) as n approaches infinity.

What is the relationship between f(n) and g(n) if f(n) is Omega(g(n))?
Answer: If f(n) is Omega(g(n)), it means that f(n) grows at least as fast as g(n) as n approaches infinity.