

FAQ

Module-3	
Question 1.	What is the primary difference between time complexity and space complexity?
Answer	The concept of time complexity is concerned with quantifying the computational efficiency of an algorithm by examining the number of operations it performs as a function of the size of its input. On the other hand, space complexity refers to the measurement of the memory resources used by an algorithm in relation to its input.
Question 2.	Why is Big-O notation commonly used in algorithm analysis?
Answer	The Big-O notation is a mathematical notation used to represent the asymptotic upper limit of the temporal complexity of an algorithm, which is determined by the amount of its input. This approach provides a streamlined method for evaluating the effectiveness of algorithms by emphasising their development rates, while avoiding excessive consideration of constant

	variables or lower-order terms.
Question 3.	Is it possible for an algorithm that requires a large amount of space to also be efficient in terms of time, or vice versa?
Answer	Indeed, a common occurrence is the existence of a trade-off between the allocation of time and space. It is possible for an algorithm to use a greater amount of memory in order to get quicker outcomes, and conversely, to employ less memory for slower results.
Question 4.	What distinguishes the divide-and-conquer approach from other computational strategies?
Answer	The divide-and-conquer approach entails the decomposition of an issue into smaller sub-problems, which are then solved in isolation, followed by the integration of the individual answers. Contrasting with methodologies such as dynamic programming, which decompose issues into overlapping sub-problems, or greedy algorithms that iteratively make decisions to get a locally optimum solution at each stage, this approach exhibits distinct characteristics.

Question 5.	Is it always the case that recursive algorithms provide the most efficient solution for a given problem?
Answer	<p>It is not always the case. Although recursion may provide attractive solutions, its efficiency in terms of time and space may not always be optimal.</p> <p>Conducting a thorough analysis of the particular issue and its corresponding environment is necessary in order to ascertain the most optimal method.</p>