Binary Search

Introduction:

Binary search is a classic algorithm in computer science. It is much faster than linear search for large lists, but it requires the list to be sorted beforehand. The time complexity of binary search is O(log n), where n is the number of elements in the list.

Complexity:

Best case: O(1)

Average case: O(log n)

Worst case: O(log n)

Function Definition:

def binary\_search(ar, target):

Perform a binary search on a sorted array to find the target value.

Parameters:

ar (list): A sorted list of elements to search.

target (any): The value to search for in the array.

Returns:

int: The index of the target in the array if found, otherwise -1.