

Question 1:

Write a program to implement the merge sort algorithm using the divide and conquer technique. The program should take an unsorted array of integers as input and output the sorted array.

Question 2:

Write a program to implement the Quick Sort algorithm. However, the process of pivot selection be as follows:

- Before selecting the pivot, check if the subarray contains the prime number. If it does, select the smallest prime number as pivot.
- If there are no prime numbers, and the subarray size is odd, select the middle element as the pivot.
- If the subarray size is even, then select the element at index $n/2 - 1$ as pivot.