

PROBLEM:

Implement the findMaxSum method or pseudocode that, efficiently with respect to time used, returns the largest sum of any two elements in the given list of positive numbers. For example, the largest sum of the list { 5, 9, 7, 11 } is the sum of the elements 9 and 11, which is 20

PSEUDOCODE:

```
def findMaxSum(numbers):  
    # Sort the list in descending order  
    numbers.sort(reverse=True)  
  
    # Return the sum of the two largest elements  
    return numbers[0] + numbers[1]
```

Here's the explanation:

Sorting the list in descending order takes $O(n \log n)$ time, where n is the length of the list. Since the list is sorted in descending order, the two largest elements are at the beginning of the list. We can simply return the sum of the first two elements, which is the largest sum of any two elements in the list.

This solution has a time complexity of $O(n \log n)$ due to the sorting step.

Alternatively, you can use a more efficient solution that avoids sorting:

```
def findMaxSum(numbers):  
    max1 = max2 = 0  
    for num in numbers:  
        if num > max1:  
            max2 = max1  
            max1 = num  
        elif num > max2:  
            max2 = num  
    return max1 + max2
```

Here's the explanation:

Initialize two variables max1 and max2 to 0, which will store the two largest elements.

Iterate through the list, and for each element:

If the element is greater than max1, update max2 to the current value of max1, and update max1 to the current element.

If the element is greater than max2 but not greater than max1, update max2 to the current element.

Return the sum of max1 and max2, which is the largest sum of any two elements in the list.

This solution has a time complexity of $O(n)$, which is more efficient than the sorting-based solution for large lists.

IMPLEMENTATION:

```
import java.util.Arrays;
```

```
public class Main {  
    public static int findMaxSum(int[] numbers) {  
        // Sort the array in descending order  
        Arrays.sort(numbers);  
        int n = numbers.length;  
  
        // Return the sum of the two largest elements  
        return numbers[n-1] + numbers[n-2];  
    }  
}
```

```
public static void main(String[] args) {  
    int[] numbers = {5, 9, 7, 11};  
    System.out.println("The largest sum of two elements is " + findMaxSum(numbers));  
}  
}
```