Name: Vivek Vikram Pundkar

Roll no: 77

GR no: 11910860

Division: C

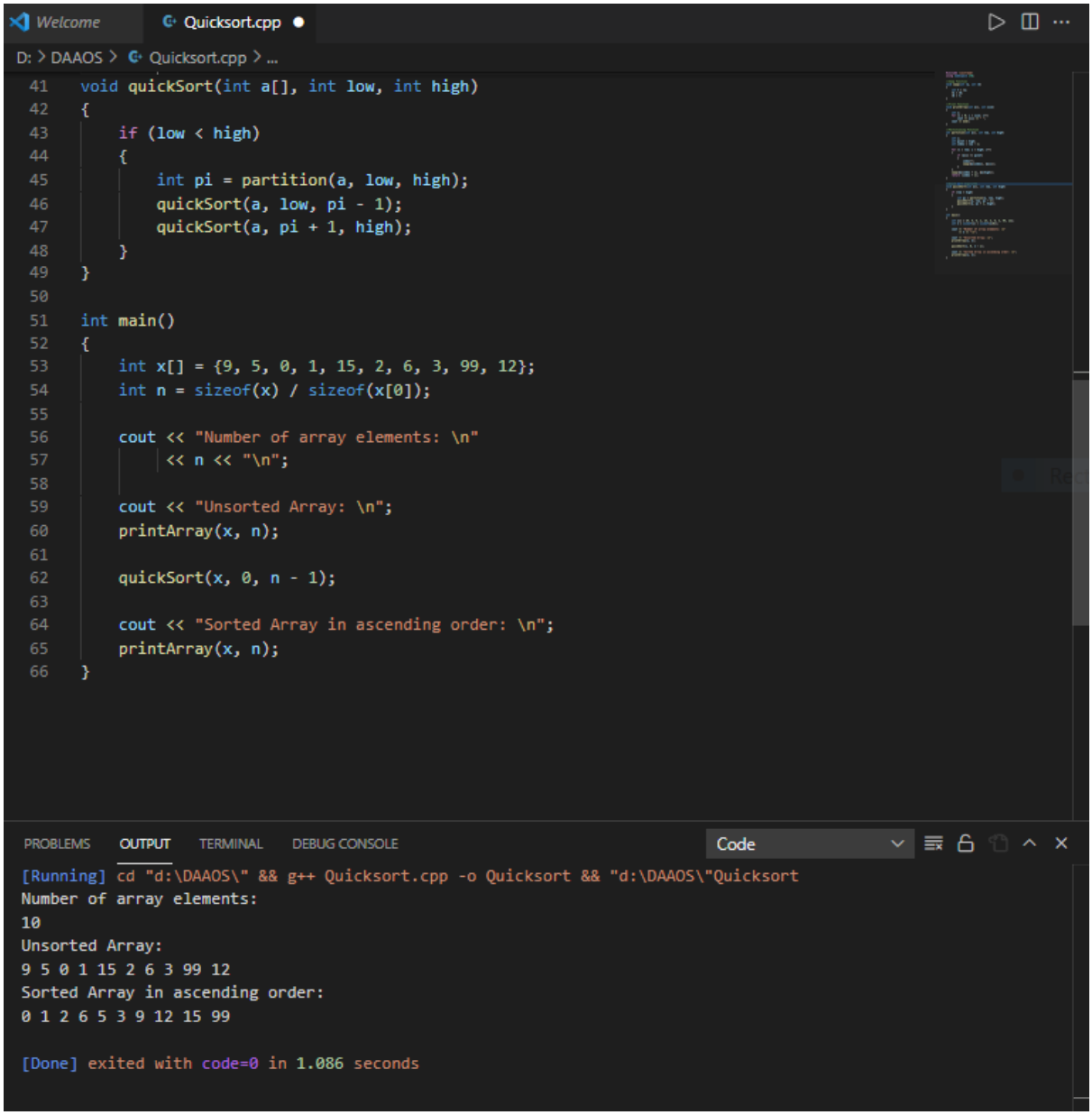
Batch: 3

Quick Sort

Code:

```
//Quick Sort algorithm
void quickSort(int array[], int low, int high)
{
  if (low < high)
  {
    int pi = partition(array, low, high);
    quickSort(array, low, pi - 1);
    quickSort(array, pi + 1, high);
  }
}
```

Output:



Analysis:

Time Complexity of Quick Sort

Best case:

The best-case time complexity of Quick Sort is **O(nlogn)**. When we consider pivot as mean element.

Worst case:

The worst-case time complexity of Quick Sort is **$O(n^2)$**. When the array is sorted and we consider smallest or largest element as pivot.

Average case:

The average case complexity of the quick sort algorithm is **O(n logn)**. Here the number of chances to get a pivot element is equal to the number of items.

Space Complexity of Quick sort

We are only considering the given array, so the space complexity of Quick sort is **O(n)**