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// *****
// Description: This program sorts, search, and finds the average of the data set
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// COMSC-165-5065
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// Status: Complete
// *****

#include <vector>
#include <iostream>

void sort(std::vector<int>& listOfNumbers);

int binarySearch(std::vector<int> listOfNumbers, int target);

double findAverage(std::vector<int> listOfNumbers);

int main () {
    std::cout << "Enter the amount of the values you'd like to enter." << std::endl;
    int MAX = 0;
    std::cin >> MAX;

    std::vector<int> numList;

    for(int i = MAX; i > 0; i--){
        std::cout << "Enter your number: " << std::endl;
        int value;
        std::cin >> value;

        numList.push_back(value);
    }

    sort(numList);

    std::cout << "Enter the numebr you are looking for" << std::endl;
    int target;

    std::cin >> target;

    std::cout <<"The number is at the position: "<< binarySearch(numList, target) <<
std::endl;

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    std::cout << "The average number in the list is: " << findAverage(numList) <<
std::endl;
}

void sort(std::vector<int>& listOfNumbers) {
    bool swapped = false;

    for (int i = 0; i < listOfNumbers.size() - 1; ++i) {
        swapped = false;
        for (int j = 0; j < listOfNumbers.size() - 1 - i; ++j) {
            if (listOfNumbers[j] > listOfNumbers[j + 1]) {
                int temp = listOfNumbers[j];
                listOfNumbers[j] = listOfNumbers[j + 1];
                listOfNumbers[j + 1] = temp;
                swapped = true;
            }
        }
        if (!swapped) break;
    }

    for (int x : listOfNumbers) {
        std::cout << x << " ";
    }
    std::cout << std::endl;
}

int binarySearch(std::vector<int> listOfNumber, int target) {
    for(int i = 0; i < listOfNumber.size(); i++) {
        if(listOfNumber[i] == target) {
            return i;
        }
    }
    return -1;
}

double findAverage(std::vector<int> listOfNumber) {
    int total = 0;
    for(int i = 0; i < listOfNumber.size(); i++) {
        total += listOfNumber[i];
    }
}

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    return (1.0 * total) / listOfNumber.size();  
}
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aaronnguyen@aaa Assignment 4 % cd "/Users/aaronnguyen/Desktop/Projects/Assignment 4/" && g++ part1.cpp -o part1 && "/Users/aaronnguyen/Desktop/Projects/Assignment 4/"part1  
Enter the amount of the values you'd like to enter.  
5  
Enter your number:  
2  
Enter your number:  
3  
Enter your number:  
9  
Enter your number:  
5  
Enter your number:  
1  
1 2 3 5 9  
Enter the numebr you are looking for  
5  
The number is at the position: 3  
The average number in the list is: 4  
aaronnguyen@aaa Assignment 4 %
```