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4  //                                     Name
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5  //                                     Course
    CPSC 131 Data Structures, Fall, 2022
6  //                                     Assignment
    No.1 problem 2
7  //                                     Due date
    08/28/2022
8  // Purpose:
9  // This program uses the concept of template function to display arrays of
    different datatypes before sorting and after sorting
10 //-----
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11 // list of libraries
12 //importing the required libraries
13 #include <iostream>
14 #include<algorithm>
15 #include<string>
16
17 //creating a template class
18 template <class T>
19
20 //Function that displays the array
21 void displayArray(T A[], int n)
22 {
23     for (int i = 0; i < n; i++)
24     {
25         std::cout << A[i]<<" " ;
26     }
27     std::cout << std::endl;
28 }
29
30 //function that sorts the array
31 template <class U>
32 void sortArray(U B[], int m)
33 {
34     std::sort(B, B + m);
35 }
36
37 //main function
38 int main()
39 {
40     //declarations
41     int a[6] = { 44,55,22,88,33, 11 };

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42     std::string months[12] = { "Jan", "Feb", "Mar", "Apr", "May", "Jun",  
        "Jul", "Aug", "Sep", "Oct", "Nov", "Dec" };  
43     char vowels[5] = { 'E', 'U', 'A', 'I', 'O' };  
44  
45     std::cout << "\t" << "Original array a: ";  
46     //calling diaplay function on a  
47     displayArray(a, 6);  
48     //calling the sort function on a  
49     sortArray(a, 6);  
50     std::cout << "\t" << "Sorted array a: ";  
51     displayArray(a, 6); //calling display on sorted a array  
52     std::cout << std::endl;  
53     //calling diaplay function on months  
54     std::cout << "\t" << "Original array months: ";  
55     displayArray(months, 12);  
56     //calling the sort function on months  
57     sortArray(months, 12);  
58     std::cout << "\t" << "Sorted array months: ";  
59     displayArray(months, 12); //calling display on sorted months array  
60     std::cout << std::endl;  
61     //calling diaplay function on vowels  
62     std::cout << "\t" << "Original array vowels: ";  
63     displayArray(vowels, 5);  
64     //calling the sort function on vowels  
65     sortArray(vowels, 5);  
66     std::cout << "\t" << "Sorted array vowels: ";  
67     displayArray(vowels, 5); //calling display on sorted vowels array  
68     return 0;  
69 }
```