OOP Assignment - 08

Array operations (with Template library)

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PROBLEM STATEMENT : Design a program with a template for sorting the accepted array and displaying it using integer or float type data. Implement any sorting type using Generic Programming..

CODE

```
#include <iostream>
using namespace std;
#define SIZE 10
int n;

// Template function for Selection Sort
template <class T>
void sel(T A[SIZE], string type) {
    int i, j, min;
    T temp;

    for (i = 0; i < n - 1; i++) {
        min = i;
        for (j = i + 1; j < n; j++) {
            if (A[j] < A[min]) {
                min = j;
            }
        }
        // Swap
        temp = A[i];
        A[i] = A[min];
        A[min] = temp;
    }

    cout << "Sorted " << type << " array is: ";
    for (int i = 0; i < n; i++) {
        cout << A[i] << " ";
    }
    cout << endl;
}
```

```
int main() {
    int A[SIZE];
    float B[SIZE];
    int i, choice;
    cout << "\n============= Array Element Sorter =============\n";

    do {
        cout << "\nMake a choice\n";
        cout << "------------------------------";
        cout << "\n1. Integer";
        cout << "\n2. Float";
        cout << "\n3. Exit";
        cout << "\n\nEnter Choice : ";
        cin >> choice;

        if (choice == 3) {
            cout << "\nProgram executed successfully.\n";
            exit(0);
        }

        cout << "Enter total no. of elements to sort : ";
        cin >> n;

        switch (choice) {
            case 1: {
                cout << "\nEnter " << n << " integer elements to be sorted: ";
                for (i = 0; i < n; i++) {
                    cin >> A[i];
                }
                sel(A, "integer");
                break;
            }
            case 2: {
                cout << "\nEnter " << n << " float elements to be sorted: ";
                for (i = 0; i < n; i++) {
                    cin >> B[i];
                }
                sel(B, "float");
                break;
            }
            default:
                cout << "\nInvalid choice. Please try again.\n";
        }
```

```
    } while (choice != 3);

    return 0;
}
```

OUTPUT

```
============= Array Element Sorter =============

Make a choice
------------------------------
1. Integer
2. Float
3. Exit

Enter Choice : 1
Enter total no. of elements to sort : 3

Enter 3 integer elements to be sorted: 99 45 23
Sorted integer array is: 23 45 99

Make a choice
------------------------------
1. Integer
2. Float
3. Exit

Enter Choice : 2
Enter total no. of elements to sort : 5

Enter 5 float elements to be sorted: 2.55 9.67 0.23 5.23 9.99
Sorted float array is: 0.23 2.55 5.23 9.67 9.99

Make a choice
------------------------------
1. Integer
2. Float
3. Exit

Enter Choice : 3

Program executed successfully.


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(program exited with code: 0)
Press return to continue
```