

1- Write a program to sort the elements of an array in ascending order using the sort function from the algorithm library. The array x is initially {9, 8, 7, 6, 5}.

اكتب برنامجًا sort عناصر array بترتيب تصاعدي باستخدام دالة sort من مكتبة الخوارزمية. array x هي في البداية {9، 8، 7، 6، 5}.

Output

```
Sorted Array:  
5 6 7 8 9
```

Solution

```

// www.gammal.tech

#include<iostream>
#include<algorithm>
using namespace std;

int main() {
    int x[5] = {9, 8, 7, 6, 5};

    // Sorting the array in ascending order
    sort(x, x + 5);

    // Printing the sorted array
    cout << "Sorted Array:\n";
    for(int i = 0; i < 5; i++)
        cout << x[i] << " ";

    return 0;
}
```

2- Develop a program to sort the elements of a vector in ascending order using the sort function. The vector y is initially {9, 8, 7, 6, 5}.

تطوير برنامج لـ sort عناصر vector ترتيبا تصاعديا باستخدام دالة sort.
vector y هو في البداية {5, 6, 7, 8, 9}.

Output

```
Sorted Vector:  
5 6 7 8 9
```

Solution

```
// www.gammal.tech  
  
#include<iostream>  
#include<vector>  
#include<algorithm>  
using namespace std;  
  
int main() {  
    vector<int> y;  
    y.push_back(9);  
    y.push_back(8);  
    y.push_back(7);  
    y.push_back(6);  
    y.push_back(5);  
  
    // Sorting the vector in ascending order  
    sort(y.begin(), y.end());  
  
    // Printing the sorted vector  
    cout << "Sorted Vector:\n";  
    for(int i = 0; i < y.size(); i++)  
        cout << y[i] << " ";  
  
    return 0;  
}
```

3- Develop a program to sort the last 3 elements of a vector in ascending order. The vector y is initially {9, 8, 7, 6, 5}.

تطوير برنامج لـ sort العناصر الثلاثة الأخيرة لـ vector بترتيب تصاعدي.
vector y هو في البداية {5, 6, 7, 8, 9}.

Output

```
Sorted Vector (Last 3 Elements):  
9 8 5 6 7
```

Solution

```
// www.gammal.tech  
  
#include<iostream>  
#include<vector>  
#include<algorithm>  
using namespace std;  
  
int main() {  
    vector<int> y;  
    y.push_back(9);  
    y.push_back(8);  
    y.push_back(7);  
    y.push_back(6);  
    y.push_back(5);  
  
    // Sorting the last 3 elements of the vector in ascending order  
    sort(y.end() - 3, y.end());  
  
    // Printing the sorted vector  
    cout << "Sorted Vector (Last 3 Elements):\n";  
    for(int i = 0; i < y.size(); i++)  
        cout << y[i] << " ";  
  
    return 0;  
}
```

4- Create a program that sorts a mixed array of integers and floats in ascending order. The array mixedArray is initially {9, 8.5, 7, 6.3, 5}.

قم بإنشاء برنامج يقوم بفرز مجموعة مختلطة من الأعداد الصحيحة و floats بترتيب تصاعدي. mixedArray هي في البداية {9, 8.5, 7, 6.3, 5}.

Output

```
Sorted Mixed Array:  
5 6.3 7 8.5 9
```

Solution

```
// www.gammal.tech

#include<iostream>
#include<algorithm>
using namespace std;

int main() {
    // Mixed array of integers and floats
    double mixedArray[5] = {9, 8.5, 7, 6.3, 5};

    // Sorting the mixed array in ascending order
    sort(mixedArray, mixedArray + 5);

    // Printing the sorted mixed array
    cout << "Sorted Mixed Array:\n";
    for(int i = 0; i < 5; i++)
        cout << mixedArray[i] << " ";

    return 0;
}
```

5- Develop a program that sorts a vector of characters in ascending order. The vector charVector is initially {'c', 'a', 'b', 'z'}.

تطوير برنامج يقوم بفرز vector of characters بترتيب تصاعدي. يكون charVector vector في البداية {'c', 'a', 'b', 'z'}.

Output

```
Sorted Vector of Characters:
a b c z
```

Solution

```
// www.gammal.tech

#include<iostream>
#include<vector>
#include<algorithm>
using namespace std;

int main() {
    // Vector of characters
    vector<char> charVector = {'c', 'a', 'b', 'z'};

    // Sorting the vector of characters in ascending order
    sort(charVector.begin(), charVector.end());

    // Printing the sorted vector of characters
    cout << "Sorted Vector of Characters:\n";
    for(int i = 0; i < charVector.size(); i++)
        cout << charVector[i] << " ";

    return 0;
}
```

6- Write a program to sort the first 6 elements of an array of characters in ascending order. The array charArray is initially {'f', 'b', 'z', 'a', 'c', 'x', 'y', 'm'}.

اكتب برنامجًا لفرز العناصر الستة الأولى من مجموعة من الأحرف ترتيبًا تصاعديًا. array charArray هي البداية {'f', 'b', 'z', 'a', 'c', 'x', 'y', 'm'}.

Output

```
Sorted Array of Characters (First 6 Elements):
a b c f x z y m
```

Solution

```

// www.gammal.tech

#include<iostream>
#include<algorithm>
using namespace std;

int main() {
    char charArray[8] = {'f', 'b', 'z', 'a', 'c', 'x', 'y', 'm'};

    // Sorting the first 6 elements of the array of characters in ascending order
    sort(charArray, charArray + 6);

    // Printing the sorted array of characters
    cout << "Sorted Array of Characters (First 6 Elements):\n";
    for(int i = 0; i < 6; i++)
        cout << charArray[i] << " ";

    return 0;
}
```

7- Develop a program that sorts a vector of integers in ascending order and then calculates the sum of the sorted elements. The vector `intVector` is initially {5, 2, 8, 1, 7}.

تطوير برنامج يقوم `sorts a vector` الأعداد الصحيحة بترتيب تصاعدي ثم يحسب مجموع العناصر التي تم فرزها. `vector intVector` هو في البداية {5, 2, 8, 1, 7}.

Output

```
Sorted Vector of Integers:
1 2 5 7 8
Sum of Sorted Elements: 23
```

Solution

```
// www.gammal.tech

#include<iostream>
#include<vector>
#include<algorithm>
using namespace std;

int main() {
    vector<int> intVector = {5, 2, 8, 1, 7};

    // Sorting the vector of integers in ascending order
    sort(intVector.begin(), intVector.end());

    // Printing the sorted vector of integers
    cout << "Sorted Vector of Integers:\n";
    for(int i = 0; i < intVector.size(); i++)
        cout << intVector[i] << " ";

    // Calculating the sum of the sorted elements
    int sum = 0;
    for(int i = 0; i < intVector.size(); i++)
        sum += intVector[i];

    cout << "\nSum of Sorted Elements: " << sum << endl;

    return 0;
}
```

8- Write a program to sort the first 4 elements of an array in descending order. The array x is initially {9, 8, 7, 6, 5}.

اكتب برنامجاً لفرز العناصر الأربعة الأولى في array ترتيباً تنازلياً. array x هي في البداية {9، 8، 7، 6، 5}.

Output

```
Sorted Array in Descending Order:
9 8 7 6 5
```

Solution

```
// www.gammal.tech

#include<iostream>
#include<algorithm>
using namespace std;

int main() {
    int x[5] = {9, 8, 7, 6, 5};

    // Sorting the first 4 elements of the array in descending order
    sort(x, x + 4, greater<int>());

    // Printing the sorted array
    cout << "Sorted Array in Descending Order:\n";
    for(int i = 0; i < 5; i++)
        cout << x[i] << " ";

    return 0;
}
```

9- Create a program that sorts a vector of floating-point numbers in descending order. The vector floatVector is initially {3.14, 2.71, 1.618, 2.718}.

قم بإنشاء برنامج يقوم بفرز متجه أرقام floating-point بترتيب تنازلي.
vector floatVector هو في البداية {3.14, 2.71, 1.618, 2.718}.

Output

```
Sorted Vector of Floating-Point Numbers in Descending Order:
3.14 2.718 2.71 1.618
```


Solution

```
// www.gammal.tech

#include<iostream>
#include<vector>
#include<algorithm>
using namespace std;

int main() {
    // Vector of floating-point numbers
    vector<float> floatVector = {3.14, 2.71, 1.618, 2.718};

    // Sorting the vector of floating-point numbers in descending order
    sort(floatVector.begin(), floatVector.end(), greater<float>());

    // Printing the sorted vector of floating-point numbers
    cout << "Sorted Vector of Floating-Point Numbers in Descending Order:\n";
    for(int i = 0; i < floatVector.size(); i++)
        cout << floatVector[i] << " ";

    return 0;
}
```

10- Develop a program that asks the user to input 7 integers, stores them in a vector and sorts the vector

تطوير برنامج يطلب من المستخدم إدخال 7 أعداد صحيحة، وتخزينها and
sorts the vector

Input

```
Enter 7 integers:
5 6 3 1 5 8 9
```

Output

```
Sorted Vector:
1 3 5 5 6 8 9
```

Solution

```

// www.gammal.tech

#include<iostream>
#include<vector>
#include<algorithm>
using namespace std;

int main() {
    vector<int> userVector;

    // Taking 7 integers from the user and storing in vector
    cout << "Enter 7 integers:\n";
    for(int i = 0; i < 7; i++) {
        int userInput;
        cin >> userInput;
        userVector.push_back(userInput);
    }

    // Sorting the vector in ascending order
    sort(userVector.begin(), userVector.end());

    // Printing the sorted vector
    cout << "Sorted Vector:\n";
    for(int i = 0; i < 7; i++)
        cout << userVector[i] << " ";

    return 0;
}
```
