

```
1  #include <iostream>
2  #include <string>
3  #include <vector>
4  #include <algorithm> // to use sort
5
6  using namespace std;
7
8
9  // The most naive solution is to read the input into a string and then
10 // manually scraping data: read a letter (a or b) then read digits until
11 // the next space, then convert to number, save the number, and repeat...
12 // It can become a tedious task for a long sequence and it's not very elegant.
13
14 // In this version this naive solution is implemented.
15
16 // NOTE: passing vectors and strings to a function works by value unlike arrays
17 // So the address of them is passed.
18 // const is used when the function is not supposed to make changes on
19 // the string or vector passed.
20
21 bool createSet(const string& s, vector<int>& Va, vector<int>& Vb);
22 void display(const vector<int>& V);
23
24 // Va and Vb may be global since different functions work with them
25 // and need to change their values.
26
27 int main() {
28     string s;
29     vector<int> Va, Vb;
30
31     // Input a line from console into s.
32     getline(cin, s);
33
34     if (createSet(s, Va, Vb)) {
35         sort(Va.begin(), Va.end());
36         display(Va);
37         sort(Vb.begin(), Vb.end());
38         display(Vb);
39     }
40     else
41         cout << "Error" << endl;
42     return 0;
43 }
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```

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59
60 //////////////////////////////////////////////////
61 // Prints the vector elements separated by a white space.
62 // Uses range based for loop - Available since C++11
63 //////////////////////////////////////////////////
64
65 void display(const vector<int> & V) {
66     for (auto n : V)
67         cout << n << " ";
68 }
69
70
71
72
73
74
75
76 //////////////////////////////////////////////////
77 // Read from s and create 2 sets of int, Va and Vb.
78 // Returns true if that's done successfully.
79 //////////////////////////////////////////////////
80
81 bool createSet(const string & s, vector<int> & Va, vector<int> & Vb) {
82     int j;
83     char c;
84     string n;
85
86     for (int i = 0 ; i < s.size() ; ) {
87         if ((c = s[i]) == 'a' || s[i] == 'b') {
88             i += 2;
89             j = 0;
90             while (std::isdigit(s[i]))
91                 n[j++] = s[i++];
92             if (c == 'a')
93                 Va.push_back(stoi(n));
94             else
95                 Vb.push_back(stoi(n));
96             i++;
97         }
98         else
99             return false;
100     }
101     return true;
102 }
103
104
105 //////////////////////////////////////////////////
106 //                                INSIGHTS
107 // I don't like to do this manual scraping of the vector (typical of C
108 // programming). In C++, it's more elegant to use the string as a stream and
109 // extract formatted data from it.
110 //////////////////////////////////////////////////
```