

Third Year B. Tech (EL & CE)

Semester: V

Subject: Object-Oriented Programming Lab

Name: Shreerang Mhatre

Class: TY

Roll No: 52

Batch: A3

Experiment No: 08

Name of the Experiment: List and Arrays

Performed on: 01/11/2023

Submitted on: 01/11/2023

Problem Statement:

Write a program in C++ to manage a shopping list. Each shopping list item is represented by a string stored in a container. Your design requires a print function that prints out the contents of the shopping list.

- Create an empty list.
- Append the items, "eggs", "milk", "sugar", "chocolate" and "flour" to the list. Print the list.
- Remove the first element from the list. Print the list.
- Insert the item, "coffee" at the beginning of the list. Print the list.
- Find the item, "sugar" and replace it with "honey." Print the list.
- Insert the item, "baking powder" before "milk" in the list. Print the list.
- Sort and search the item in the list.

Output:

```
// C:\Users\SHREERANG\Desktop\sbsns>cd "c:\Users\SHREERANG\Desktop\sbsns\" && g++  
Shopping List:  
eggs  
milk  
sugar  
chocolate  
flour  
  
After removing the first item:  
milk  
sugar  
chocolate  
flour  
  
After inserting 'coffee' at the beginning:  
coffee  
milk  
sugar  
chocolate  
flour  
  
After replacing 'sugar' with 'honey':  
coffee  
milk  
honey  
chocolate  
flour  
  
After inserting 'baking powder' before 'milk':  
coffee  
baking powder  
milk  
honey  
chocolate  
flour  
  
Sorted Shopping List:  
baking powder  
chocolate  
coffee  
flour  
honey  
milk  
  
'chocolate' found in the list.
```

Code:

```
#include <iostream>
#include <vector>
#include <algorithm>

int main() {
    std::vector<std::string> shoppingList;

    // Append items to the list
    shoppingList.push_back("eggs");
    shoppingList.push_back("milk");
    shoppingList.push_back("sugar");
    shoppingList.push_back("chocolate");
    shoppingList.push_back("flour");

    // Print the list
    std::cout << "Shopping List:" << std::endl;
    for (const std::string& item : shoppingList) {
        std::cout << item << std::endl;
    }

    // Remove the first element
    shoppingList.erase(shoppingList.begin());

    // Print the modified list
    std::cout << "\nAfter removing the first item:" << std::endl;
    for (const std::string& item : shoppingList) {
        std::cout << item << std::endl;
    }

    // Insert "coffee" at the beginning
    shoppingList.insert(shoppingList.begin(), "coffee");

    // Print the modified list
    std::cout << "\nAfter inserting 'coffee' at the beginning:" << std::endl;
    for (const std::string& item : shoppingList) {
        std::cout << item << std::endl;
    }

    // Find and replace "sugar" with "honey"
    for (std::string& item : shoppingList) {
```

```
    if (item == "sugar") {
        item = "honey";
    }
}

// Print the modified list
std::cout << "\nAfter replacing 'sugar' with 'honey':" << std::endl;
for (const std::string& item : shoppingList) {
    std::cout << item << std::endl;
}

// Insert "baking powder" before "milk"
auto it = std::find(shoppingList.begin(), shoppingList.end(), "milk");
if (it != shoppingList.end()) {
    shoppingList.insert(it, "baking powder");
}

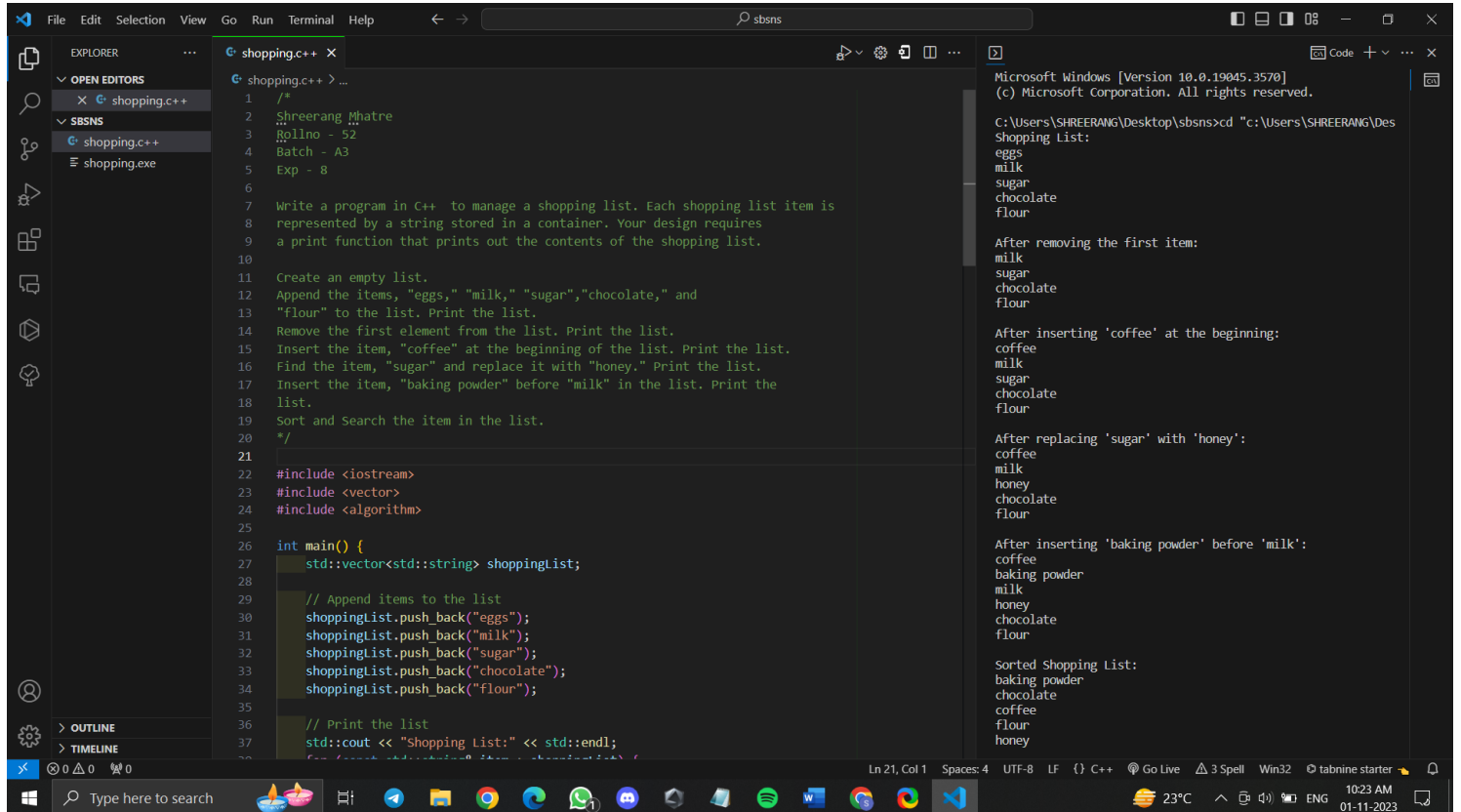
// Print the modified list
std::cout << "\nAfter inserting 'baking powder' before 'milk':" << std::endl;
for (const std::string& item : shoppingList) {
    std::cout << item << std::endl;
}

// Sort the list
std::sort(shoppingList.begin(), shoppingList.end());

// Print the sorted list
std::cout << "\nSorted Shopping List:" << std::endl;
for (const std::string& item : shoppingList) {
    std::cout << item << std::endl;
}

// Search for an item in the list
std::string searchItem = "chocolate";
auto searchResult = std::find(shoppingList.begin(), shoppingList.end(), searchItem);
if (searchResult != shoppingList.end()) {
    std::cout << "\n" << searchItem << " found in the list." << std::endl;
} else {
    std::cout << "\n" << searchItem << " not found in the list." << std::endl;
}

return 0;
}
```



```

1  /*
2  Shreerang Mhatre
3  Rollno - 52
4  Batch - A3
5  Exp - 8
6
7  Write a program in C++ to manage a shopping list. Each shopping list item is
8  represented by a string stored in a container. Your design requires
9  a print function that prints out the contents of the shopping list.
10
11 Create an empty list.
12 Append the items, "eggs," "milk," "sugar","chocolate," and
13 "flour" to the list. Print the list.
14 Remove the first element from the list. Print the list.
15 Insert the item, "coffee" at the beginning of the list. Print the list.
16 Find the item, "sugar" and replace it with "honey." Print the list.
17 Insert the item, "baking powder" before "milk" in the list. Print the
18 list.
19 Sort and Search the item in the list.
20 */
21
22 #include <iostream>
23 #include <vector>
24 #include <algorithm>
25
26 int main() {
27     std::vector<std::string> shoppingList;
28
29     // Append items to the list
30     shoppingList.push_back("eggs");
31     shoppingList.push_back("milk");
32     shoppingList.push_back("sugar");
33     shoppingList.push_back("chocolate");
34     shoppingList.push_back("flour");
35
36     // Print the list
37     std::cout << "Shopping List:" << std::endl;

```

Microsoft Windows [Version 10.0.19045.3570]
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C:\Users\SHREERANG\Desktop\sbsns>cd "c:\Users\SHREERANG\Des
Shopping List:
eggs
milk
sugar
chocolate
flour

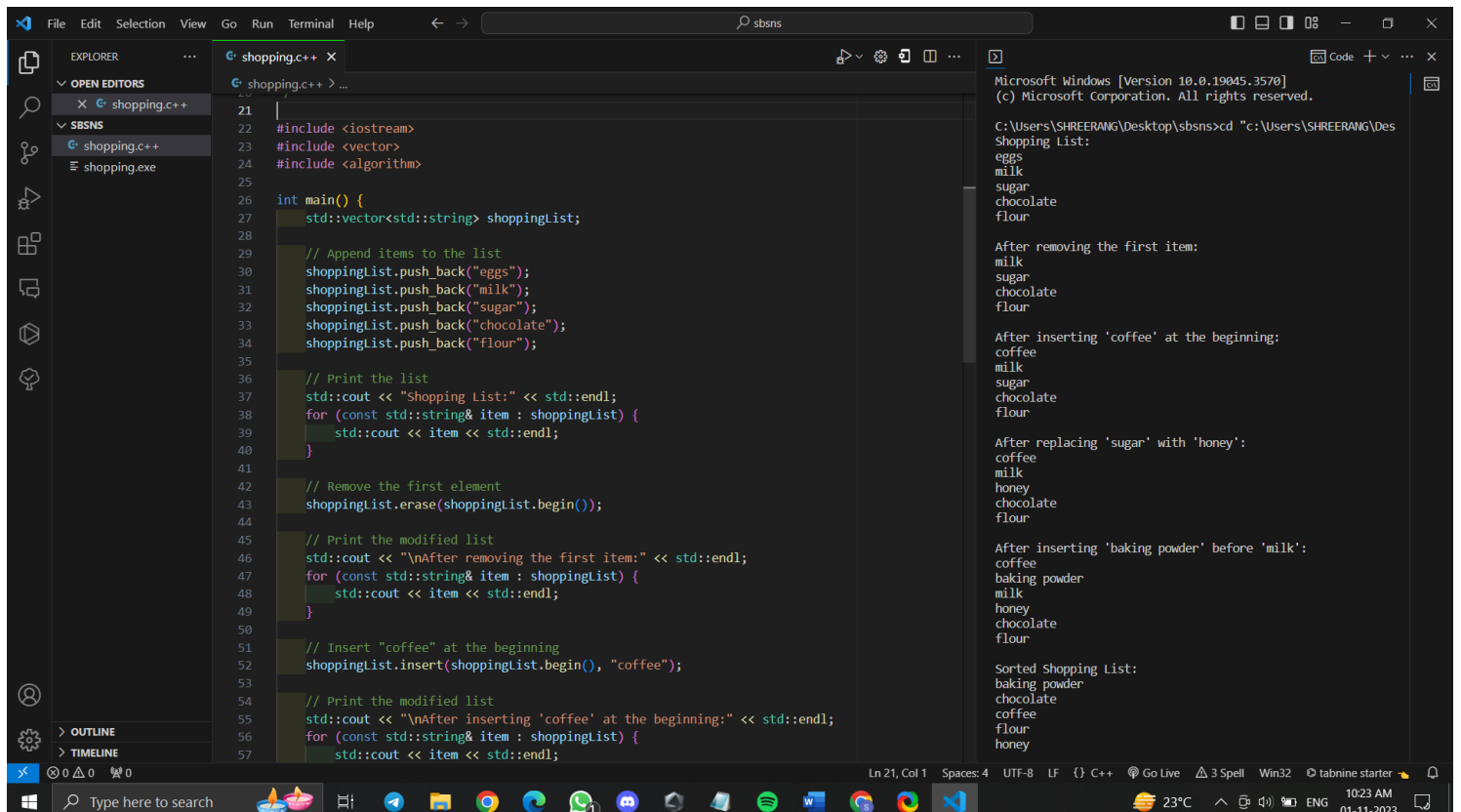
After removing the first item:
milk
sugar
chocolate
flour

After inserting 'coffee' at the beginning:
coffee
milk
sugar
chocolate
flour

After replacing 'sugar' with 'honey':
coffee
milk
honey
chocolate
flour

After inserting 'baking powder' before 'milk':
coffee
baking powder
milk
honey
chocolate
flour

Sorted Shopping List:
baking powder
chocolate
coffee
flour
honey



```

21 |
22 #include <iostream>
23 #include <vector>
24 #include <algorithm>
25
26 int main() {
27     std::vector<std::string> shoppingList;
28
29     // Append items to the list
30     shoppingList.push_back("eggs");
31     shoppingList.push_back("milk");
32     shoppingList.push_back("sugar");
33     shoppingList.push_back("chocolate");
34     shoppingList.push_back("flour");
35
36     // Print the list
37     std::cout << "Shopping List:" << std::endl;
38     for (const std::string& item : shoppingList) {
39         std::cout << item << std::endl;
40     }
41
42     // Remove the first element
43     shoppingList.erase(shoppingList.begin());
44
45     // Print the modified list
46     std::cout << "\nAfter removing the first item:" << std::endl;
47     for (const std::string& item : shoppingList) {
48         std::cout << item << std::endl;
49     }
50
51     // Insert "coffee" at the beginning
52     shoppingList.insert(shoppingList.begin(), "coffee");
53
54     // Print the modified list
55     std::cout << "\nAfter inserting 'coffee' at the beginning:" << std::endl;
56     for (const std::string& item : shoppingList) {
57         std::cout << item << std::endl;

```

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C:\Users\SHREERANG\Desktop\sbsns>cd "c:\Users\SHREERANG\Des
Shopping List:
eggs
milk
sugar
chocolate
flour

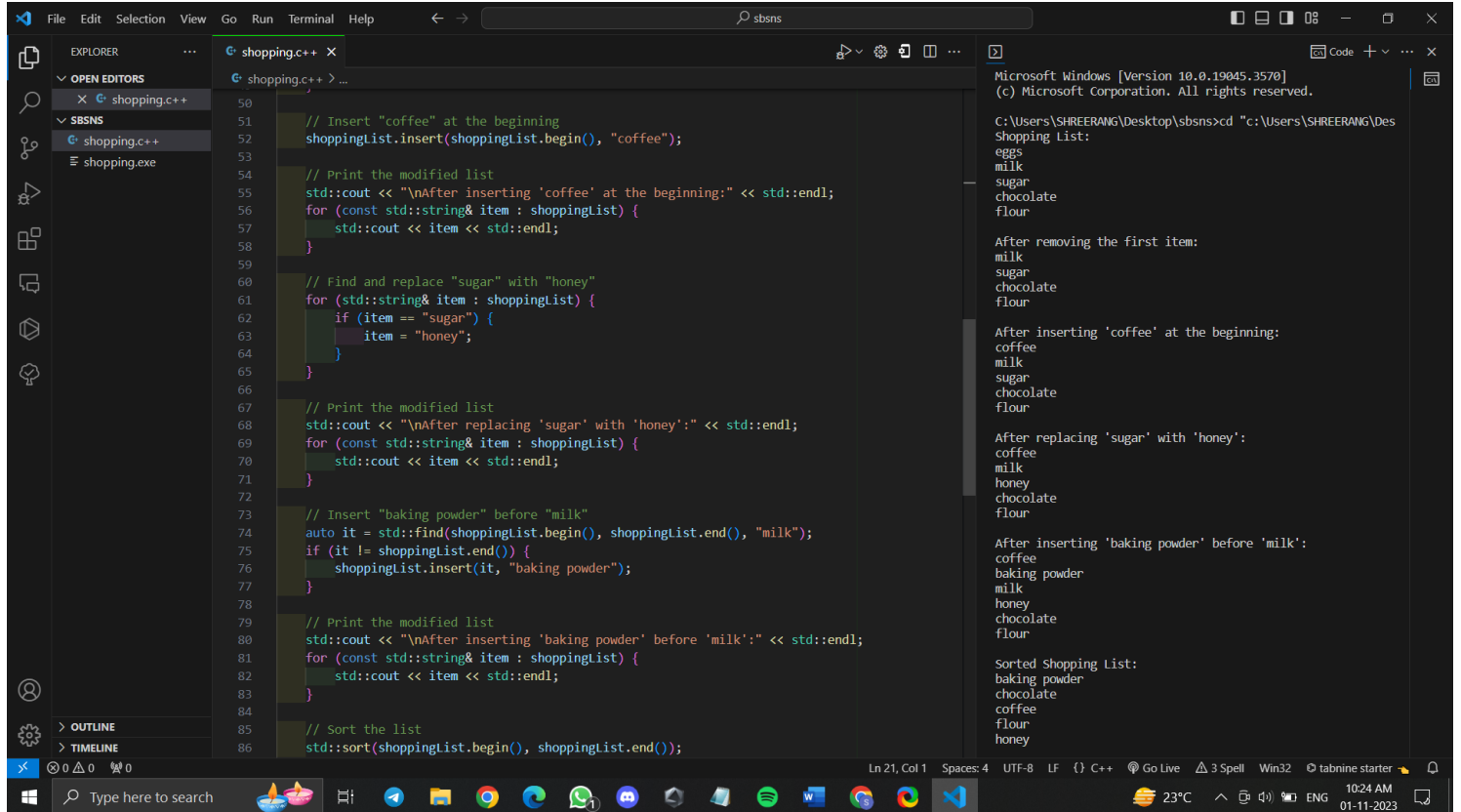
After removing the first item:
milk
sugar
chocolate
flour

After inserting 'coffee' at the beginning:
coffee
milk
sugar
chocolate
flour

After replacing 'sugar' with 'honey':
coffee
milk
honey
chocolate
flour

After inserting 'baking powder' before 'milk':
coffee
baking powder
milk
honey
chocolate
flour

Sorted Shopping List:
baking powder
chocolate
coffee
flour
honey



```

50 // Insert "coffee" at the beginning
51 shoppingList.insert(shoppingList.begin(), "coffee");
52
53 // Print the modified list
54 std::cout << "\nAfter inserting 'coffee' at the beginning:" << std::endl;
55 for (const std::string& item : shoppingList) {
56     std::cout << item << std::endl;
57 }
58
59 // Find and replace "sugar" with "honey"
60 for (std::string& item : shoppingList) {
61     if (item == "sugar") {
62         item = "honey";
63     }
64 }
65
66 // Print the modified list
67 std::cout << "\nAfter replacing 'sugar' with 'honey':" << std::endl;
68 for (const std::string& item : shoppingList) {
69     std::cout << item << std::endl;
70 }
71
72 // Insert "baking powder" before "milk"
73 auto it = std::find(shoppingList.begin(), shoppingList.end(), "milk");
74 if (it != shoppingList.end()) {
75     shoppingList.insert(it, "baking powder");
76 }
77
78 // Print the modified list
79 std::cout << "\nAfter inserting 'baking powder' before 'milk':" << std::endl;
80 for (const std::string& item : shoppingList) {
81     std::cout << item << std::endl;
82 }
83
84 // Sort the list
85 std::sort(shoppingList.begin(), shoppingList.end());

```

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C:\Users\SHREERANG\Desktop\sbsns>cd "c:\Users\SHREERANG\Des
Shopping List:
eggs
milk
sugar
chocolate
flour

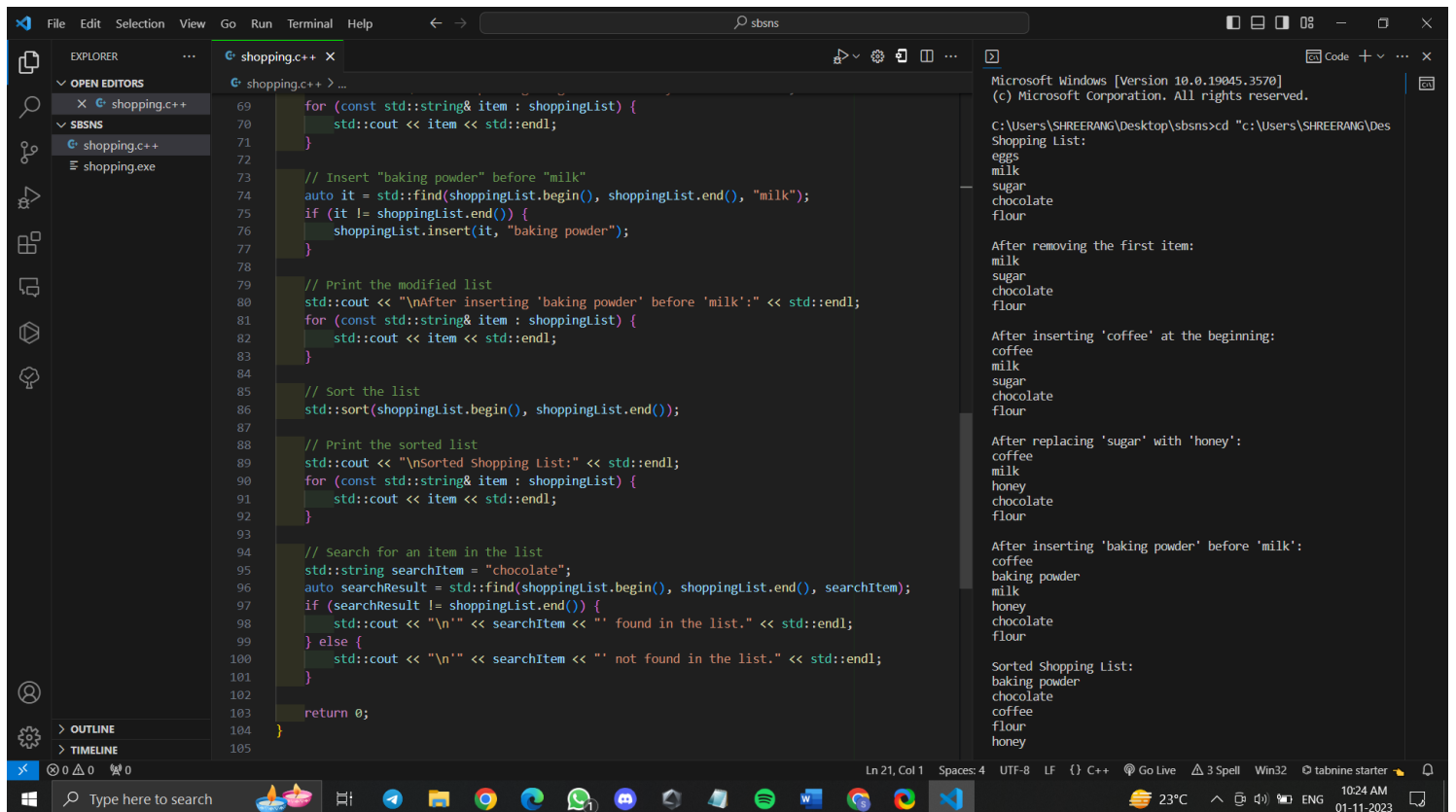
After removing the first item:
milk
sugar
chocolate
flour

After inserting 'coffee' at the beginning:
coffee
milk
sugar
chocolate
flour

After replacing 'sugar' with 'honey':
coffee
milk
honey
chocolate
flour

After inserting 'baking powder' before 'milk':
coffee
baking powder
milk
honey
chocolate
flour

Sorted Shopping List:
baking powder
chocolate
coffee
flour
honey



```

69 for (const std::string& item : shoppingList) {
70     std::cout << item << std::endl;
71 }
72
73 // Insert "baking powder" before "milk"
74 auto it = std::find(shoppingList.begin(), shoppingList.end(), "milk");
75 if (it != shoppingList.end()) {
76     shoppingList.insert(it, "baking powder");
77 }
78
79 // Print the modified list
80 std::cout << "\nAfter inserting 'baking powder' before 'milk':" << std::endl;
81 for (const std::string& item : shoppingList) {
82     std::cout << item << std::endl;
83 }
84
85 // Sort the list
86 std::sort(shoppingList.begin(), shoppingList.end());
87
88 // Print the sorted list
89 std::cout << "\nSorted Shopping List:" << std::endl;
90 for (const std::string& item : shoppingList) {
91     std::cout << item << std::endl;
92 }
93
94 // Search for an item in the list
95 std::string searchItem = "chocolate";
96 auto searchResult = std::find(shoppingList.begin(), shoppingList.end(), searchItem);
97 if (searchResult != shoppingList.end()) {
98     std::cout << "\n" << searchItem << " found in the list." << std::endl;
99 } else {
100     std::cout << "\n" << searchItem << " not found in the list." << std::endl;
101 }
102
103 return 0;

```

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C:\Users\SHREERANG\Desktop\sbsns>cd "c:\Users\SHREERANG\Des
Shopping List:
eggs
milk
sugar
chocolate
flour

After removing the first item:
milk
sugar
chocolate
flour

After inserting 'coffee' at the beginning:
coffee
milk
sugar
chocolate
flour

After replacing 'sugar' with 'honey':
coffee
milk
honey
chocolate
flour

After inserting 'baking powder' before 'milk':
coffee
baking powder
milk
honey
chocolate
flour

Sorted Shopping List:
baking powder
chocolate
coffee
flour
honey