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Dashboard › **C++** › **Strings** › **StringStream**   Points: 150.00 Rank: 22805

StringStream
by abhiranjan

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iamprakashom 🕐 2 years ago

I am new to stringstream. I just copied this code from submission.

Can anyone please explain me, what is happening here? Thanks in advance :)

```
vector<int> parseInts(string str) {
stringstream ss(str);    //??
vector<int> result;
char ch;
int tmp;
while(ss >> tmp) {       //??
    result.push_back(tmp);
    ss >> ch;            //??
}
return result;
```

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pygospa 🕐 2 years ago

Let me start with streams as such: streams are potentially endless sources of data input or data output. Take the STDIN, where potentially endless data can come in. Streams provide an interface to such an device, they capsulate it and provide means to get the information of such streams, or to put them into those devices.

In the first line with question mark (`stringstream ss(str)`) you create a new stream. However this is a stringstream, so as source you do not provide a streaming device, but a string. As the text for the problem says, in C++ these streams are used for extraction of different data types in a string. So, what we get in line in question is a stringstream object called ss, that encapsulates a string, and allows as to access the string as we could access any other stream (remember that cin and cout are streams as well).

Now to the second line. `ss >> tmp` is a simple extraction. Remember `cin >> a` from previous exercises. It does the same thing here: Get me the next thing on the stream (which actually is a string) and put it in the variable `tmp`. Now the trick is,

that `tmp` is of type `int`, so only if the next thing in the stream is an integer value will this work. The `while(ss >> tmp)` checks, if it actually did work. If the string is empty (I'm not sure with C++ but in C, strings terminate with an invisible character `\0`), or if the next thing is not a number, then the test fails, and while skips the rest.

For the last line we are now in the body of the while loop, so the last character was a number and it got saved into `tmp`. As en example, let's say we had `"1,2"`, then now the `1` is extracted as integer and saved into `tmp`, and the remaining string in the stream is `",2"`. We can add that number to the vector (`result.push_back(tmp);`), and due to the structure of the string, which we know, we now expect the next element to be of type character, as it is the `,`. We need to extract that from the string, because otherwise in the next loop of the while case will try to extracht a number as the next thing of the string, but gets the comma, which cannot be extracted as integer, and therefore the loop condition will fail and we jump out after only the first extracted number.

We actually never use `ch`, it's just to get rid of all the commas and make the loop work.

I hope this helps?

231   ∧   ∨   **Add Comment**   **Parent**   **Permalink**
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pygospa 🕑 2 years ago

… and of course, once the string is empty, extracting a number will fail aswell, so this is how we get all numbers, then exit the loop and return the vector to the calling function (in this case `main()`).

31   ∧   ∨   **Add Comment**   **Parent**   **Permalink**
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iamprakashom 🕑 2 years ago

thanks a lot mate :) well explained. It cleared all of my doubt.

1   ∧   ∨ | **Add Comment**   **Parent**   **Permalink**

Muthaiah 🕑 about a year ago

Well Explained. Thanks :-)

1   ∧   ∨ | **Add Comment**   **Parent**   **Permalink**

mohitgogri04 🕑 about a year ago

The best explanation of stringstream till now. thanks a lot!

0   ∧   ∨ | **Add Comment**   **Parent**   **Permalink**

rohillakriti21 🕑 about a year ago

Very well explained. Thanks a lot.

0   ∧   ∨ | **Add Comment**   **Parent**   **Permalink**

meher_amey23 🕑 about a year ago

Thanks a lot, and very nice sexplanation indeed :)

1   ∧   ∨ | **Add Comment**   **Parent**   **Permalink**

jooookerwang 🕑 about a year ago