Converting string to number and vice-versa in C++

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In general or more specifically in competitive programming there are many instances where we need to convert a number to a string or string to a number. But lack of knowledge of certain essential tools bind us to do so. Some methods to achieve this task are mentioned in this article.

Converting string to number

Method 1 : Using stringstream class or sscanf()

Method 2 : String conversion using stoi() or atoi()

Both these methods have been discussed in detail in the this article.

Method 3 : Using boost lexical cast

Boost library offers an inbuild function "lexical_cast("string")", which directly converts a string to number. It returns an exception "bad_lexical_cast" in case of invalid input.

```
//C++ code to demonstrate working of lexical_cast()
#include<iostream>
#include <boost/lexical_cast.hpp>// for lexical_cast()
#include <string> // for string
using namespace std;
int main()
{
    string str = "5";
    string str1 = "6.5";

    // Initializing f_value with casted float
    // f_value is 6.5
    float f_value = boost::lexical_cast<float>(str1);

    // Initializing i_value with casted int
    // i_value is 5
    int i_value = boost::lexical_cast<int>(str);

    //Displaying casted values
    cout << "The float value after casting is : ";
    cout << f_value <<endl;
    cout << "The int value after casting is : ";
    cout << i_value <<endl;

    return 0;
```

```
}
```

Output:

```
The float value after casting is : 6.5
The int value after casting is : 5
```

Converting number to string

Method 1 : Using string streams

In this method, string stream declares a stream object which first inserts a number, as a stream into object and then uses “str()” to follow internal conversion of number to string.

```
// C++ code to demonstrate string stream method
// to convert number to string.
#include<iostream>
#include <sstream>  // for string streams
#include <string>  // for string
using namespace std;
int main()
{
    int num = 2016;

    // declaring output string stream
    ostringstream str1;

    // Sending a number as a stream into output
```

```
    // string
    str1 << num;

    // the str() coverts number into string
    string geek = str1.str();

    // Displaying the string
    cout << "The newly formed string from number is : ";
    cout << geek << endl;

    return 0;
}
```

Output:

```
The newly formed string from number is : 2016
```

Method 2 : Using to_string()

This function accepts a number(can be any data type) and returns the number in the desired string.

Implementation:

```
// C++ code to demonstrate "to_string()" method
// to convert number to string.
#include<iostream>
#include<string> // for string and to_string()
using namespace std;
int main()
{
    // Declaring integer
    int i_val = 20;

    // Declaring float
    float f_val = 30.50;

    // Conversion of int into string using
    // to_string()
    string stri = to_string(i_val);

    // Conversion of float into string using
    // to_string()
    string strf = to_string(f_val);

    // Displaying the converted strings
    cout << "The integer in string is : ";
    cout << stri << endl;
    cout << "The float in string is : ";
    cout << strf << endl;
```

```
    return 0;
}
```

Output:

```
The integer in string is : 20
The float in string is : 30.500000
```

Method 3 : Using boost lexical cast

Similar to string conversion, the " lexical_cast() " function remains the same, but this time argument list modifies to "lexical_cast(numeric_var).

```
// C++ code to demonstrate "lexical_cast()" method
// to convert number to string.
#include <boost/lexical_cast.hpp> // for lexical_cast()
#include <string> // for string
using namespace std;
int main()
{
    // Declaring float
    float f_val = 10.5;

    // Declaring int
    int i_val = 17;

    // lexical_cast() converts a float into string
    string strf = boost::lexical_cast<string>(f_val);

    // lexical_cast() converts a int into string
    string stri = boost::lexical_cast<string>(i_val);

    // Displaying string converted numbers
    cout << "The float value in string is : ";
    cout << strf << endl;
    cout << "The int value in string is : ";
    cout << stri << endl;

    return 0;
}
```

Output:

```
The float value in string is : 10.5
The int value in string is : 17
```

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