

# History

Let's take a look at how C++ has evolved through the years.

## WE'LL COVER THE FOLLOWING ^

- C++98
- C++11
- Timeline
- Further information

## C++98 #

Work on C++ began back in 1985. However, the language was officially standardized in 1998. Hence, the original version was known as C++98.

Although its functionality was primitive compared to what we have now, C++98 supported basic I/O streams and templates. The standard library (STL) contained Strings, algorithms, and containers (arrays, queues, stacks, etc.), among other things.

Whereas C is a structured and procedural language, C++ was initially more focused on object-oriented programming:

```
#include <iostream>

class HumanBeing{
public:
    HumanBeing(std::string n): name(n){}
    std::string getName() const{
        return name;
    }
    void chanName(const std::string& newName){
        name = newName;
    }
private:
    std::string name;
};
```



```

class Man: public HumanBeing{ using HumanBeing::HumanBeing;
public:
    std::string getSex() const{
        return "male";
    }
};

class Woman: public HumanBeing{ using HumanBeing::HumanBeing;
public:
    std::string getSex() const{
        return "female";
    }
};

int main(){
    Man man("Rainer");
    std::cout << "Name: " << man.getName() << std::endl;
    man.changeName("Rainer Grimm");
    std::cout << "New name: " << man.getName() << std::endl;
    std::cout << "Sex: " << man.getSex() << std::endl;
}

```



C++ also adopted a generic nature with the use of templates:

```

template <typename T>
void xchg(T& x, T& y){
    T t= x;
    x= y;
    y= t;
};

template <typename T, int N>
class Array{
public:
    int getSize() const{
        return N;
    }
private:
    T *elem[N];
};

int main(){
    // Using the first template
    int i = 10;
    int j = 20;
    std::cout << "i = " << i << ", j = " << j << std::endl;

    xchg(i, j);
    std::cout << "i = " << i << ", j = " << j << std::endl;

    Man huber("Huber"); // The Man class has already been created
    Man maier("Maier");
    std::cout << huber.getName() << ", " << maier.getName() << std::endl;
    xchg(huber, maier);
    std::cout << huber.getName() << ", " << maier.getName() << std::endl;
}

```



```
// Using the second template
Array<double, 10> doubleArray;

std::cout << doubleArray.getSize() << std::endl;

Array<Man, 5> manArray;
std::cout << manArray.getSize() << std::endl;
}
```



## C++11 #

With the introduction of C++11, the language shifted its focus to **functional programming**. There were a lot of new features that, in a sense, evolved the language. Some of them can be seen below:

- [Shared](#) and [unique](#) pointers
- [Null](#) pointers
- [Automatic type deduction](#)
- [Lambda expressions](#)

Here's an example of a lambda function and automatic type deduction:

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

int main(){
    std::vector<int> vec{1, 2, 3, 4, 5, 6, 7, 8, 9};
    std::vector<std::string> str{"Programming", "in", "a", "functional", "style."};

    std::accumulate(vec.begin(), vec.end(), [](int a, int b){return a*b;}); // 362880

    std::accumulate(str.begin(), str.end(),
        [](std::string a, std::string b){return a + ":" + b;});
        // "Programming:in:a:functional:style."

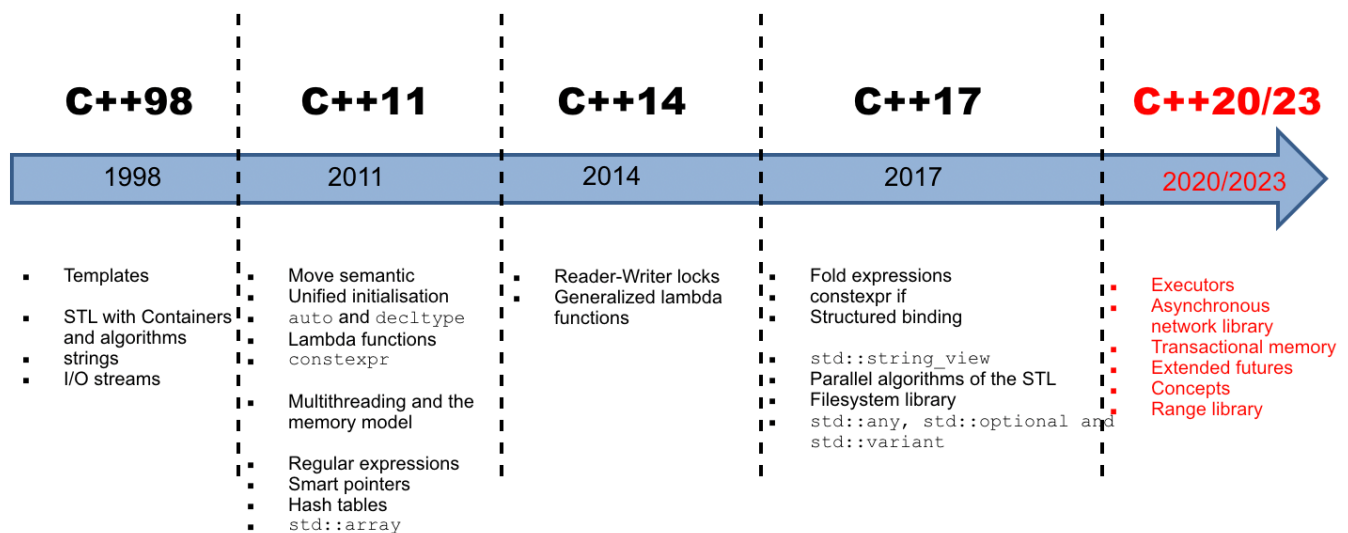
    std::transform(vec.begin(), vec.end(), vec.begin(),
        [](int i){ return i*i; }); // {1, 4, 9, 16, 25, 36, 49, 64, 81}

    auto it= std::remove_if(vec.begin(),vec.end(),
        [](int i){ return ((i < 3) || (i > 8)); }); // {3, 4, 5, 6, 7, 8}

    auto it2= std::remove_if(str.begin(), str.end(),
        [](std::string s){ return (std::tolower(s[0])); }); // "Programming"
}
```



# Timeline #



## Further information #

- [Shared pointers](#)
- [unique pointers](#)
- [Null pointers](#)
- [Automatic type deduction](#)
- [Lambda expressions](#)

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In the next chapter, we will learn how to work with **literals**.