

# What does `::\*` (colon colon star) means in C++? [duplicate]

Asked 3 years, 10 months ago   Modified 3 years, 10 months ago   Viewed 609 times

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[Pointer to class data member "::\\*" \(18 answers\)](#)

Closed 3 years ago.

There is a segment of code incomprehensible when my friend was reading [this hpp file](#). Specifically,

- what does certain formation such as `A(B, C)`, `int(int, int)`, or in this case `T(Type::*)` means? I've already seen usages such as `std::function<int(int, int)>`, but still have no idea what `int(int, int)`, alone, means.
- what does `Type::*` mean? How can a asterisk mark follows `::` directly?

C++

```
9
10 // Member variables
11 template <typename Type, typename T>
12 class Lens<T(Type::*)> {
13 public:
14     typedef T(Type::*MemberPtr);
15     typedef Type Target;
16     typedef T ValueType;
17
18     Lens(MemberPtr ptr)
19         : m_ptr(ptr) {}
20
21     template <typename Arg>
22     void set(Target &obj, Arg &&arg) const {
23         obj.*m_ptr = std::move(std::forward<Arg>(arg));
24     }
25
26 private:
27     MemberPtr m_ptr;
28 };
```

asked Jun 12, 2018 at 13:10



CXuesong

492 ● 4 ● 12

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Is `Type` a namespace? – Dominique Jun 12, 2018 at 13:13

"but still have no idea what `int(int, int)`, alone, means" -- `int(int, int)` is the type of `int f(int, int)`. You should figure out what this declaration means ( `f` is a function that takes two `int` arguments and returns an `int` ). – axiac Jun 12, 2018 at 13:14

related: [stackoverflow.com/questions/670734/...](https://stackoverflow.com/questions/670734/...) – NathanOliver Jun 12, 2018 at 13:16

@Dominique It is more likely to be a type name, I suppose. – CXuesong Jun 12, 2018 at 13:19

@axiac So you mean `int(int, int)` is actually a type of function? I've never thought of that, because I've seen something like `int (*func)(int, int)`, i.e. function pointer types pretty much, but not the function types themselves. – CXuesong Jun 12, 2018 at 13:24

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`::*` is used to declare a pointer to a member of class. So in this case, it's pointing to a member of the template type called `Type`.

`std::function<int(int, int)>` is an `std::function` for holding a method that takes paramters of `(int, int)`, and returns an integer result. (This is an example of the famously complicated C/C++ type declaration syntax).

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answered Jun 12, 2018 at 13:14