

# Request and Suppress Methods

This lesson highlights the special methods supported by the compiler.

## WE'LL COVER THE FOLLOWING ^

- Special methods
- Request methods: `default`
- Suppress methods: `delete`

## Special methods #

Since C++11, there has been a list of special methods that the compiler can generate implicitly if we have not defined them:

- **Default constructors** and **destructors**.
- **Copy/move** constructors and copy/move assignment operators.
- `new` and `delete` operators for objects and C arrays of objects.
- The `default` and `delete` keywords can be used to guide the creation or suppression of these special methods.
- `default` can only be assigned to special methods that do not have any default arguments. Hence, it wouldn't work with something like an ordinary class method or a parameterized constructor.

Let's suppose we have a parameterized constructor for our `Account` class but no default constructor. The compiler can easily generate it for us. All we need to do is assign `default` to the default constructor.

```
...  
Account() = default;  
Account(double balance){this->balance = balance;}  
...
```

The behavior of the compiler varies based on what special members the user has defined. We can find details in the diagram by [Howard Hinnant](#) below:

compiler implicitly declares

user declares		default constructor	destructor	copy constructor	copy assignment	move constructor	move assignment
	Nothing	defaulted	defaulted	defaulted	defaulted	defaulted	defaulted
	Any constructor	not declared	defaulted	defaulted	defaulted	defaulted	defaulted
	default constructor	user declared	defaulted	defaulted	defaulted	defaulted	defaulted
	destructor	defaulted	user declared	defaulted	defaulted	not declared	not declared
	copy constructor	not declared	defaulted	user declared	defaulted	not declared	not declared
	copy assignment	defaulted	defaulted	defaulted	user declared	not declared	not declared
	move constructor	not declared	defaulted	deleted	deleted	user declared	not declared
	move assignment	defaulted	defaulted	deleted	deleted	not declared	user declared

## Request methods: **default** #

The compiler generates the request methods when it has the following characteristics:

- **public** access rights and are not virtual.
- The copy constructor and copy assignment operator get constant lvalue references.
- The move constructor and move assignment operator get nonconstant rvalue references.
- The methods are not declared explicit and possess no exception specifications.

## Suppress methods: **delete** #

- By using **delete**, we can define purely *declaratively* that an automatically generated method from the compiler is not available.

- We can simply tell the compiler **what** to do without explaining **how** to do it.
  - By using `delete` in combination with `default`, we can define whether or not a class's objects:
    - can be copied.
    - can only be created on the stack.
    - can only be created on the heap.
  - Apart from objects and pointers, `delete` is also applicable to functions.
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We will look at concrete examples of `default` and `delete` in the next lesson.