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Hello, this is Bing. I see that you have searched for “when the lifetime of an object ends” and asked a question about it. I will try to help you understand this topic.

The lifetime of an object is the time between its creation and its destruction. The lifetime of an object depends on how it is stored and used in the program. Different types of objects have different rules for their lifetime. Here are some common cases:

- If the object is a local variable, its lifetime ends when it goes out of scope. This means that the object is destroyed when the block or function where it is declared ends.
- If the object is a global or static variable, its lifetime ends when the program terminates normally. This means that the object is destroyed when the main function returns or when std::exit is called.
- If the object is dynamically allocated using new, its lifetime ends when it is deleted using delete. This means that the object is destroyed when the programmer explicitly frees the memory that it occupies.
- If the object is a member of another class, its lifetime ends when the containing object is destroyed. This means that the object is destroyed when the destructor of the containing class is called.
- If the object is an element of an array, its lifetime ends when the array is destroyed. This means that the object is destroyed when the array goes out of scope, or when it is deleted if it was dynamically allocated.

The end of an object’s lifetime may involve different actions, depending on its type and how it was created. For example:

- If the object is of a non-class type, such as int or char, it may not require any action to be destroyed, as it does not have any resources to release.
- If the object is of a class type, such as std::string or std::vector, it may have a destructor that performs some actions to release any resources that it owns, such as memory or file handles.
- If the object is a reference, it does not have a lifetime of its own, but rather shares the lifetime of the object that it refers to. When the referred object’s lifetime ends, so does the reference’s.

I hope this helps you understand when and how the lifetime of an object ends in C++. If you want to learn more about this topic, you can check out these web pages:

- Object lifetime - Wikipedia
- Lifetime - cppreference.com
- C++ Object Lifetimes - Simplify C++!

Thank you for using Bing. Have a nice day! 😊