Basic Enums  
Enums in C++ are a data type that allows you to define a group of named integral constants that help make your code more readable and maintainable. By using enums, you can replace numbers or strings in your code that might be hard to remember and understand with more readable identifiers. This not only improves the clarity of your code but also reduces the chance of errors.

A simple enum in C++ can be defined as follows:

enum CoffeeSize { SMALL, MEDIUM, LARGE };

Here, CoffeeSize is an enum type that can hold three possible values: SMALL, MEDIUM, or LARGE. By default, C++ automatically assigns integer values starting from 0 to the identifiers, so SMALL would be 0, MEDIUM would be 1, and LARGE would be 2. You can use it like this:

CoffeeSize myCoffee = MEDIUM;

if (myCoffee == MEDIUM) {

// Do something if the coffee size is medium

}

### Specifying Values You can also explicitly specify the integer value for each member of the enum:

enum CoffeeSize { SMALL = 1, MEDIUM = 2, LARGE = 3 };

This is useful when the default sequential numbering does not fit your requirements.

### Scoped Enums (enum class) C++ introduced a new enum type in C++11 known as "scoped enums" or enum class. Scoped enums improve type safety and prevent name conflicts because their enumerators are scoped within the enum and must be accessed using the scope resolution operator (::).

enum class CoffeeSize { SMALL, MEDIUM, LARGE };

CoffeeSize myCoffee = CoffeeSize::MEDIUM;

if (myCoffee == CoffeeSize::MEDIUM) {

// Do something if the coffee size is medium

}

Scoped enums do not implicitly convert to integers, making them safer to use, especially in complex applications. However, you can still perform a static cast if you need to convert them to integers:

int size = static\_cast<int>(CoffeeSize::MEDIUM); // This will set size to 1

### Why Use Enums? Enums are particularly useful when you have a variable that can only take a few predefined values. They make your code more readable and maintainable by replacing magic numbers or strings with clearly named identifiers. Enums also help with type safety, ensuring that your variables can only take on values from a specific set defined by the enum. In summary, enums in C++ are a powerful feature that can help make your code more robust, readable, and easier to maintain.