Introduction to C++ programming

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Structure of C++ Program

Start here

```
1  //This is good paractice to state the program function in brief.
2  //This is a simple printing program.
3
4  #include <iostream>
5
6  using namespace std;
7
8  int main()
9  {
10     cout << "Wellcome to C++";
11
12     return 0;
13 }
14
```

Variables

❖A variable provides us with named storage that our programs can manipulate.
❖A variable is a data name that may be used to store data value.

- In C we had to declare all variables at the top of the block.
- But in C++ we can declare any variable any where in the program.

Variable Definition in C++:

```
type variable_list;
```

Data Types

C++ offer the programmer a rich set of built-in as well as user defined data types. Following table lists down seven basic C++ data types:

Type	Keyword
Boolean	bool
Character	char
Integer	int
Floating point	float
Double floating point	double
Valueless	void
Wide character	wchar_t

Write a program that will print the summation of two integer numbers

Constants

Constants refer to fixed values that the program may not alter and they are called **literals**.

Constants can be of any of the basic data types and can be divided into Integer Numerals, Floating-Point Numerals, Characters, Strings and Boolean Values.

Constant Declaration:

The const Keyword:

```
const type variable = value;
const int a=10;
```

The #define Preprocessor:

```
#define identifier value
#define a 10
```

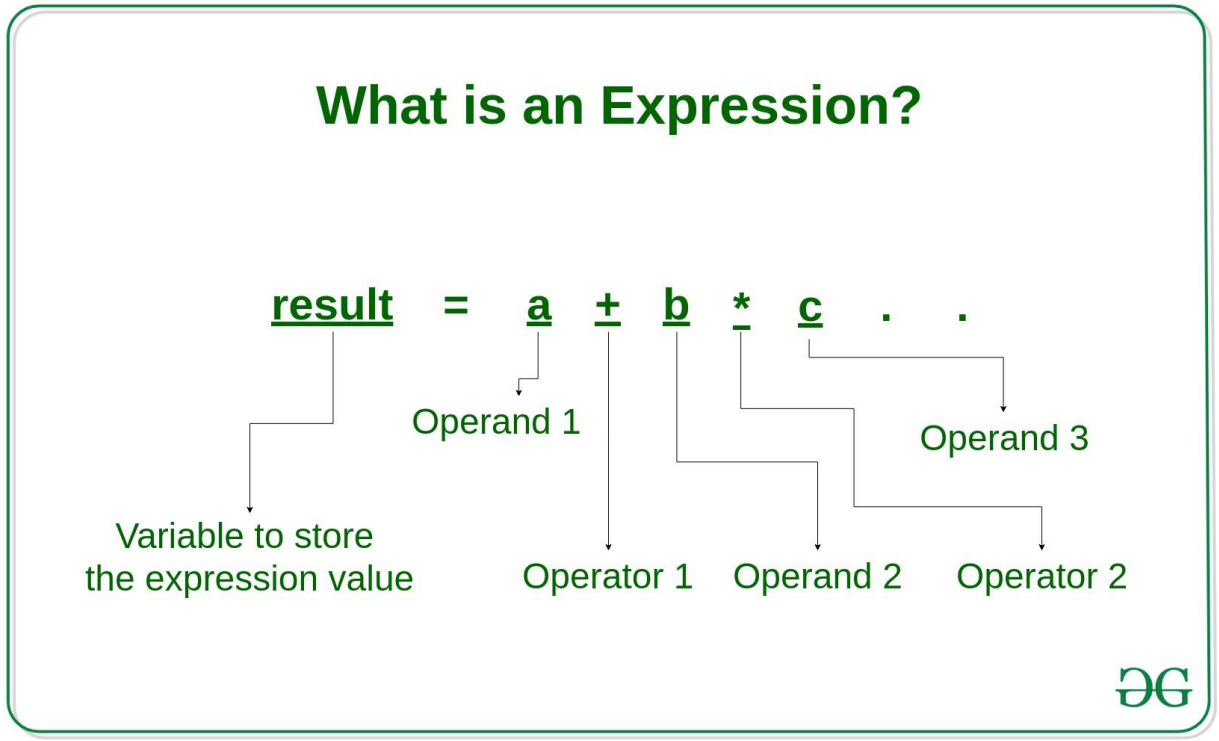
Self Test!

Problem

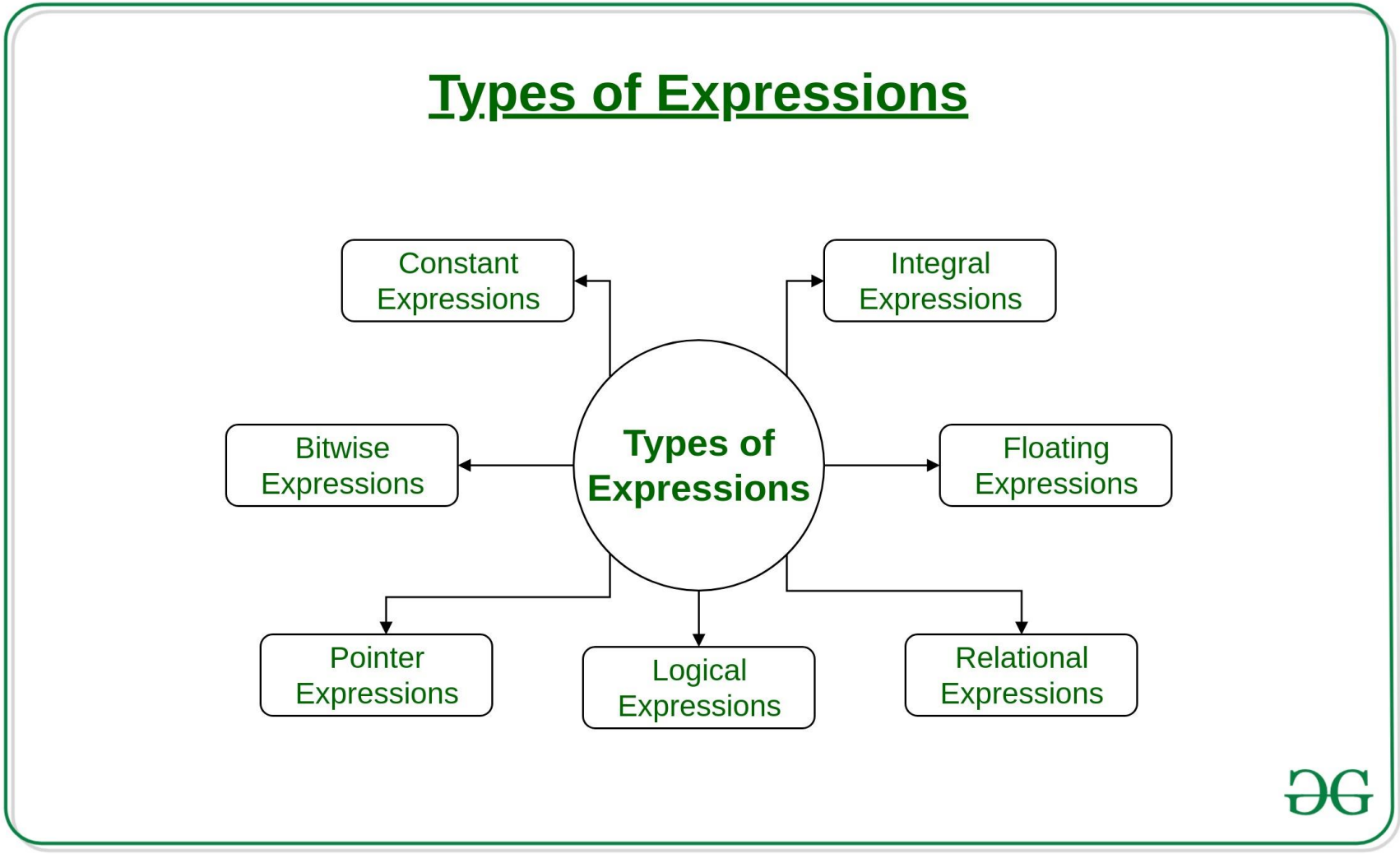
Write a complete program that calculates and displays the product of three integers. Add comments to the code where appropriate.

Expression

- An expression is a combination of operators, constants and variables. An expression may consist of one or more operands, and zero or more operators to produce a value.



Types of Expression



Statement

A *statement* causes the computer to carry out some definite action.

Example:

```
a = 6;
c = a + b;
 ++j;
```

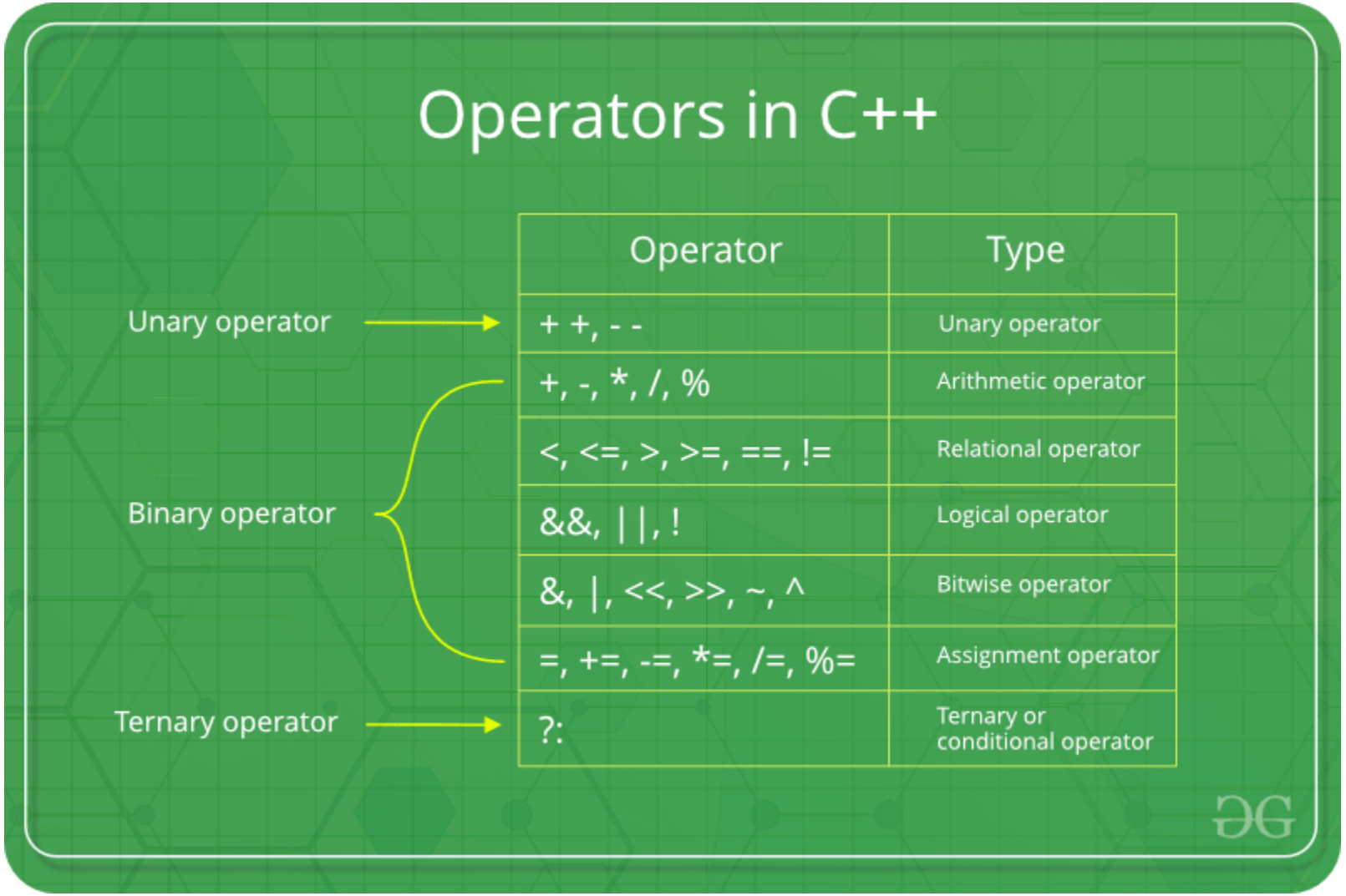
Operator

An operator is a symbol that tells the compiler to perform specific mathematical or logical manipulations.

- C++ is rich in built-in operators and provides the following types of operators:

1. Arithmetic Operators
2. Relational Operators
3. Logical Operators
4. Bitwise Operators
5. Assignment Operators
6. Misc Operators

Operator


Operators in C++
Unary operator
Binary operator
Ternary operator
Operator
Type
+ +, - -
Unary operator
+, -, *, /, %
Arithmetic operator
<, <=, >, >=, ==, !=
Relational operator
&&, ||, !
Logical operator
&, |, <<, >>, ~, ^
Bitwise operator
=, +=, -=, *=, /=, %=
Assignment operator
?:
Ternary or conditional operator