

Hello CPPBuddies

Day 03

Welcome

To

C++ COMPLETE BOOTCAMP

Your Guide To A Solid Foundation in C++

Let us begin



LECTURE 03
DAY 03 WEEK 01



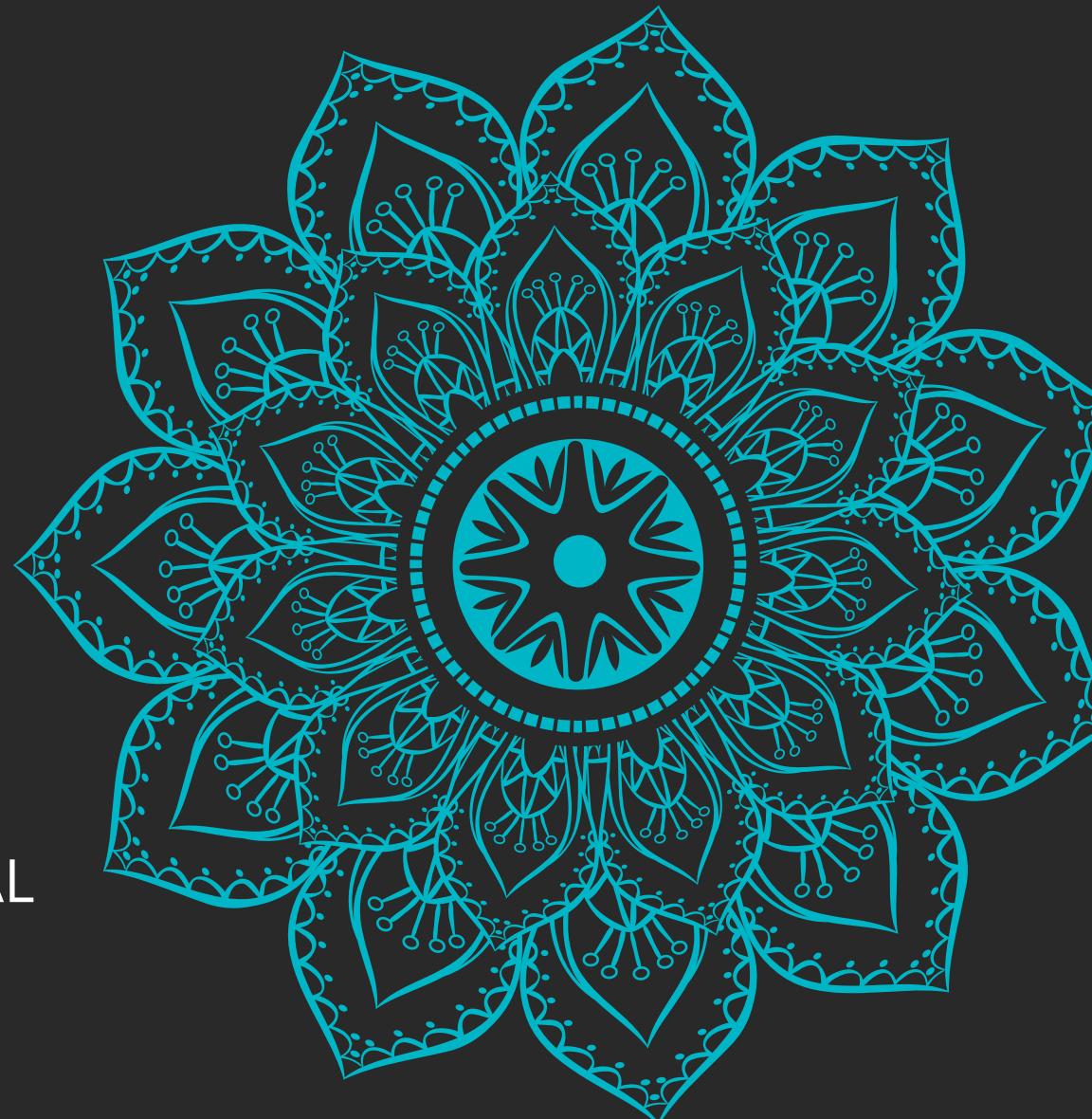
C++ PROGRAMMING GETTING STARTED WITH BASICS OF C++



WELCOME EVERYONE
C++
Complete
Bootcamp

YOUR GUIDE TO PROGRAMMING

In association with
Inspire Club, MANIT BHOPAL



Identifiers & Keywords

All C++ variables must be identified with unique names.
These unique names are called identifiers.

Keyword is a predefined or reserved word in C++ library
with a fixed meaning and used to perform
an internal operation

Keyword vs Identifier

Keywords are pre-defined words.

Keyword is a pre-defined word.

The identifier is a user-defined word.

It must be written in a lowercase letter.

It can be written in both lowercase and uppercase letters.

Its meaning is pre-defined in the C++ compiler.

Its meaning is not defined in the C++ compiler.

A list of 32 Keywords in C++ Language which are also available in C language

auto	break	case	char	const	continue	default	do
double	else	enum	extern	float	for	goto	if
int	long	register	return	short	signed	sizeof	static
struct	switch	typedef	union	unsigned	void	volatile	while

Keywords can not be used as variable names



Constants

They are called **literals**.

They are fixed.

Their values can not change
once we have defined

use the keyword: **const**

Ways of writing main

(int main()

int32_t main()

signed main()

DEMO

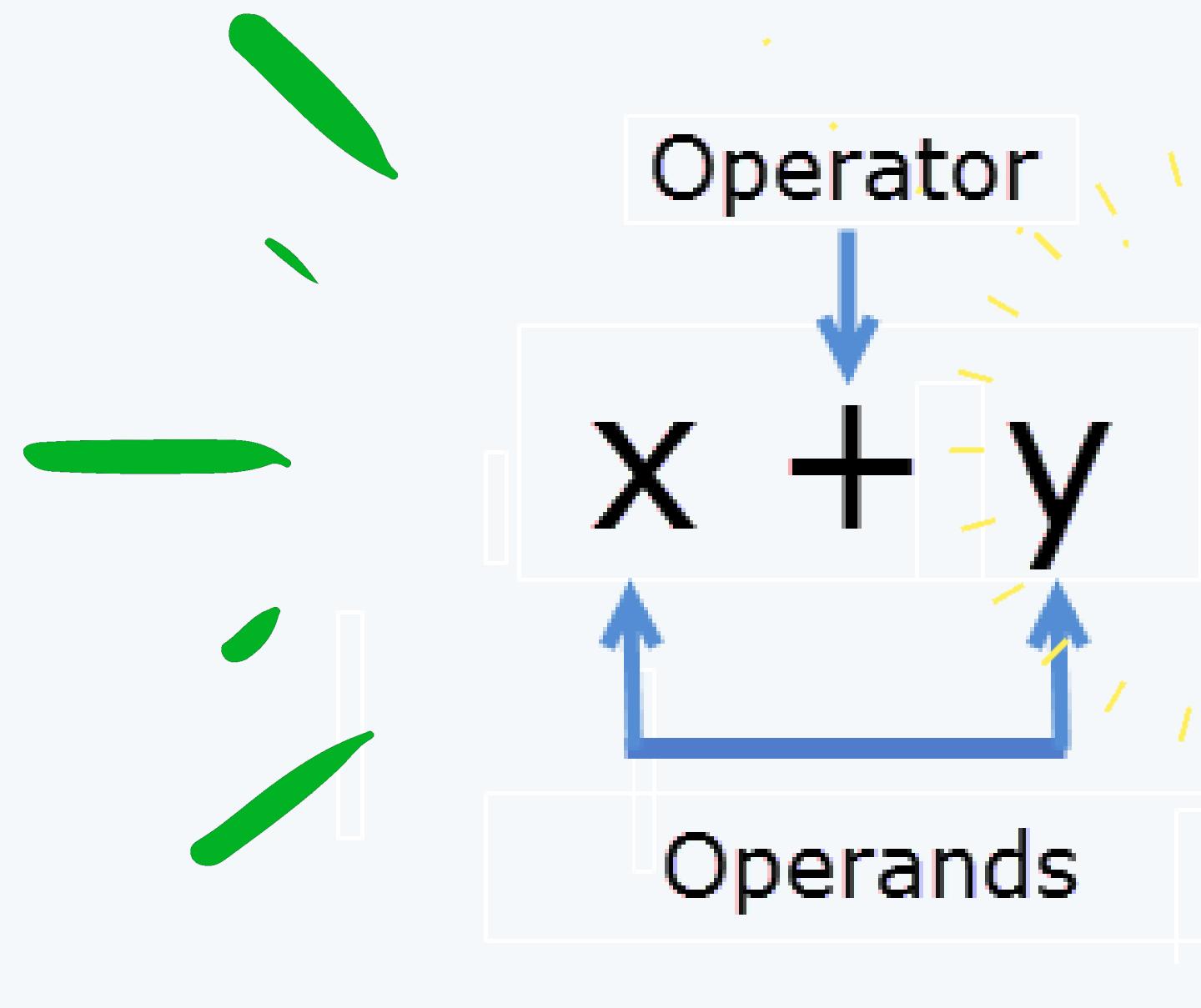
Basic I/O

Operators, Operands & Expressions

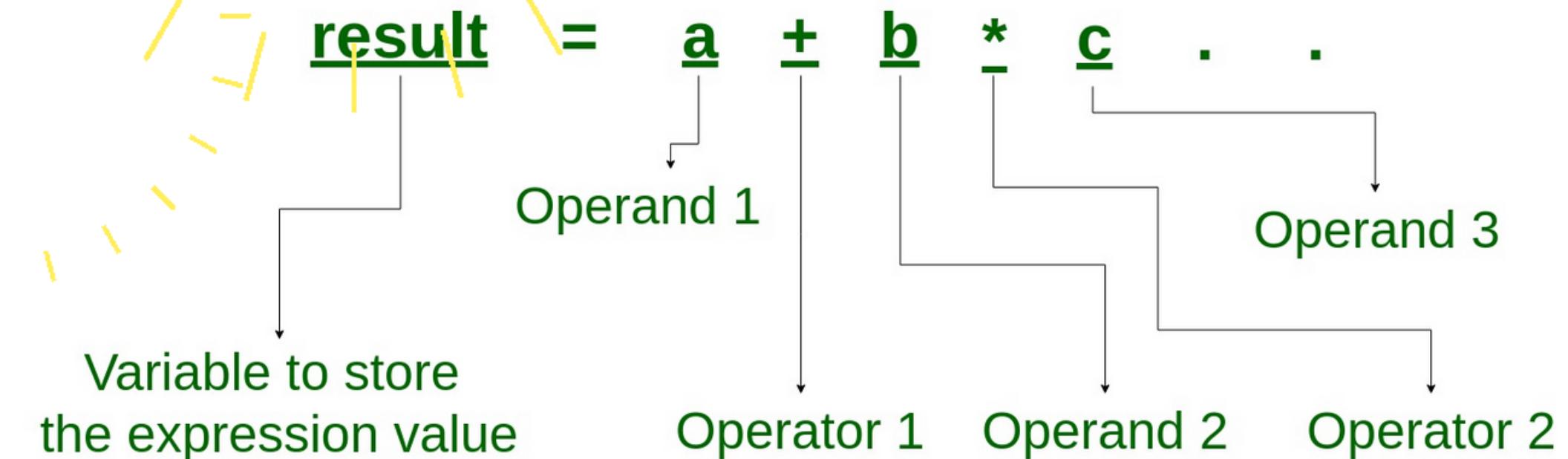
They are symbols
to perform
operation

They are variables or
values
on which operators work

The combination of operators,
operands, and
their precedence



What is an Expression?



Practice Problems

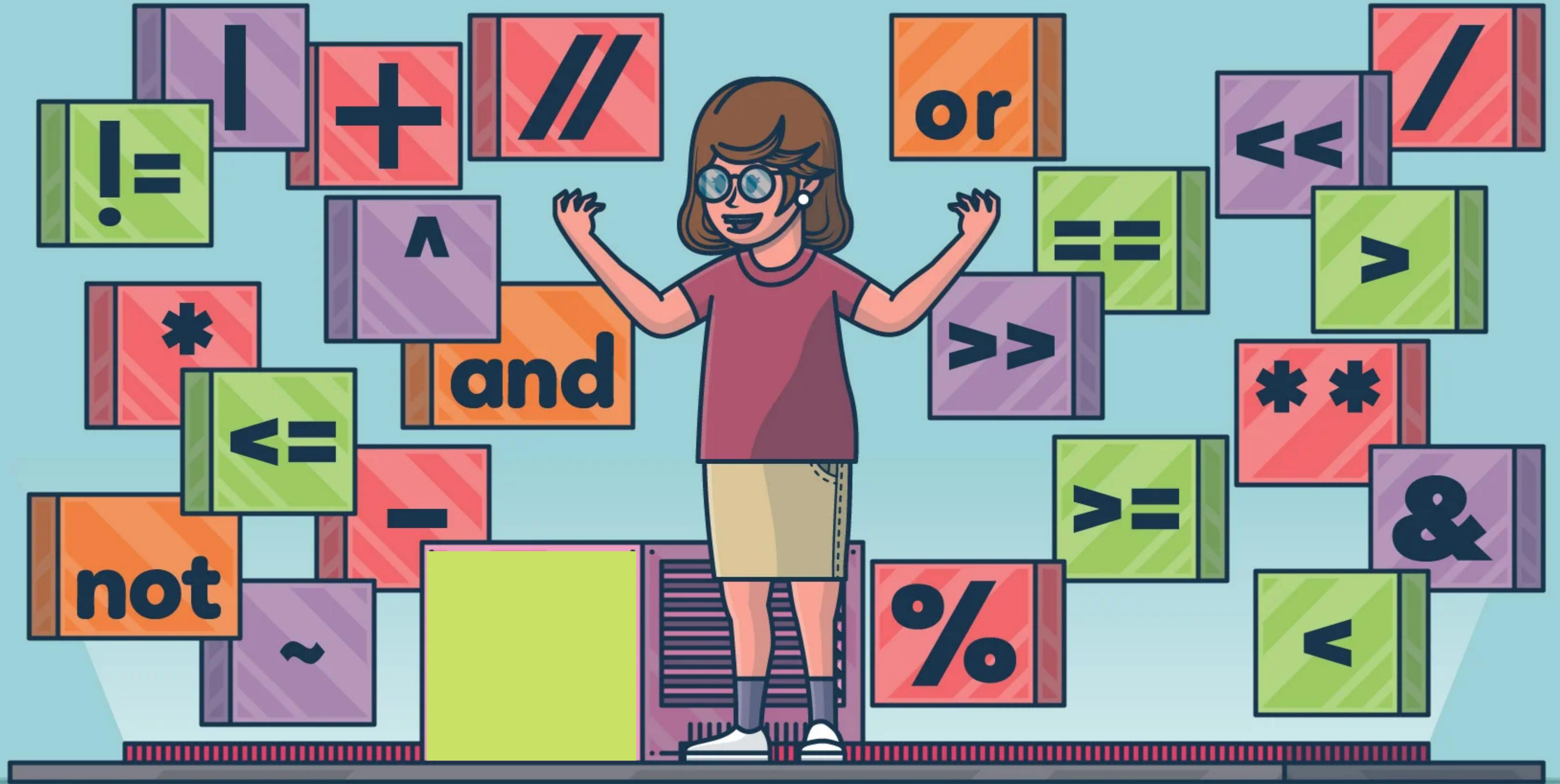
1. Find the perimeter of a rectangle given the width and height
2. Input the height and base of a triangle and find the area
3. Find the cost of covering a conical tent of radius R and slant height L with canvas at the rate of Rs. 100 per sq. unit

Sample Problems

Find the distance between two points
 $P(a, b)$ and $Q(c, d)$ in a 2D plane.

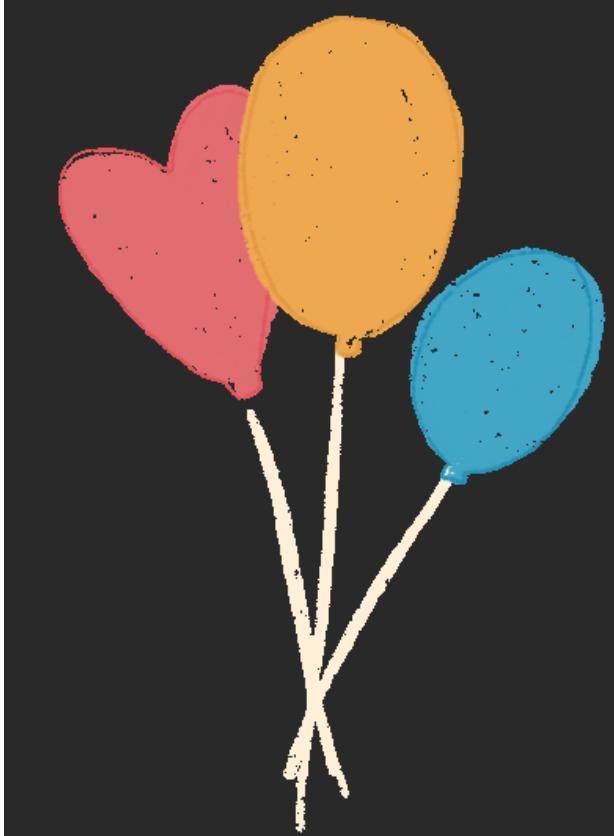
Find the cost to paint a spherical ball of
radius R at the rate of Rs. 10 per sq. unit

Find the total money you have to pay after T years if
you borrow money P from your friend at rate R per
annum. Input P, R, T accordingly.



Operators

S.no	Types of Operators	Description
1	Arithmetic operators	These are used to perform mathematical calculations like addition, subtraction, multiplication, division and modulus
2	Assignment operators	These are used to assign the values for the variables in C programs.
3	Relational operators	These operators are used to compare the value of two variables.
4	Logical operators	These operators are used to perform logical operations on the given two variables.
5	Bit wise operators	These operators are used to perform bit operations on given two variables.
6	Conditional (ternary) operators	Conditional operators return one value if condition is true and returns another value if condition is false.
7	Increment/decrement operators	These operators are used to either increase or decrease the value of the variable by one.
8	Special operators	&, *, sizeof() and ternary operators.



Increment Operators

1. pre-increment
2. post-increment

Operator	Description	Example
++	increment	a++ (post increment) ++a (pre increment)
--	decrement	a-- (post decrement) --a (pre decrement)

`++` : Increment Operator

```
int i = 2;
```

```
i = i + 1;
```

`i++; or ++i;`

Increment Operators

`--` : Decrement Operator

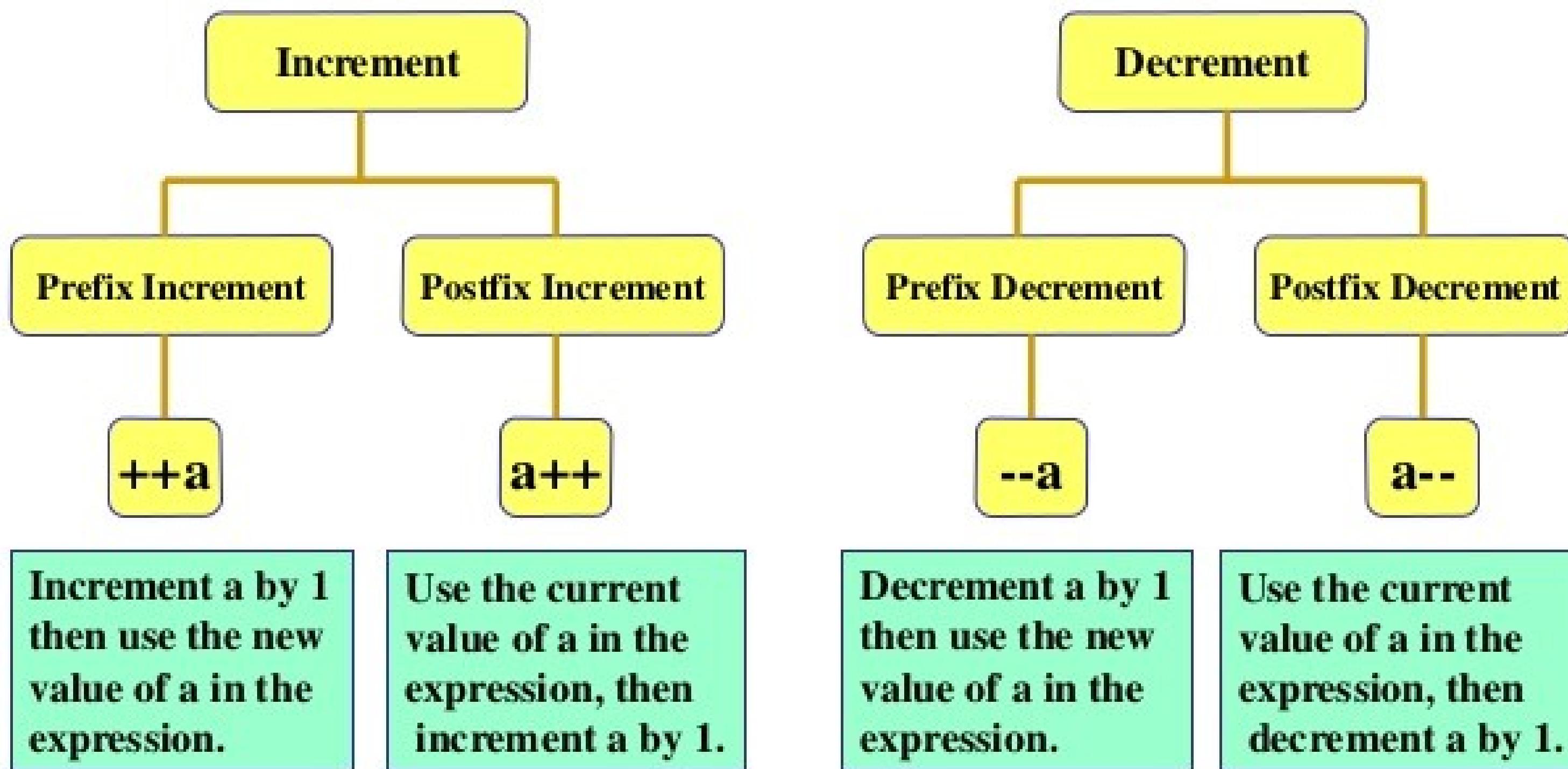
```
int i = 2;
```

```
i = i - 1;
```

`i--; or --i;`

Decrement Operators

Increment and Decrement Operator



Arithmetic Operators

Arithmetic Operators

Operators	Meaning	Example	Result
+	Addition	4+2	6
-	Subtraction	4-2	2
*	Multiplication	4*2	8
/	Division	4/2	2
%	Modulus operator to get remainder in integer division	5%2	1

Relational Operators

S.no	Operators	Example	Description
1	<code>></code>	<code>x > y</code>	<code>x</code> is greater than <code>y</code>
2	<code><</code>	<code>x < y</code>	<code>x</code> is less than <code>y</code>
3	<code>>=</code>	<code>x >= y</code>	<code>x</code> is greater than or equal to <code>y</code>
4	<code><=</code>	<code>x <= y</code>	<code>x</code> is less than or equal to <code>y</code>
5	<code>==</code>	<code>x == y</code>	<code>x</code> is equal to <code>y</code>
6	<code>!=</code>	<code>x != y</code>	<code>x</code> is not equal to <code>y</code>

Logical Operators

Operator	Meaning	Example	Result
<code>&&</code>	Logical and	<code>(5<2)&&(5>3)</code>	False
<code> </code>	Logical or	<code>(5<2) ((5>3))</code>	True
<code>!</code>	Logical not	<code>!(5<2)</code>	True

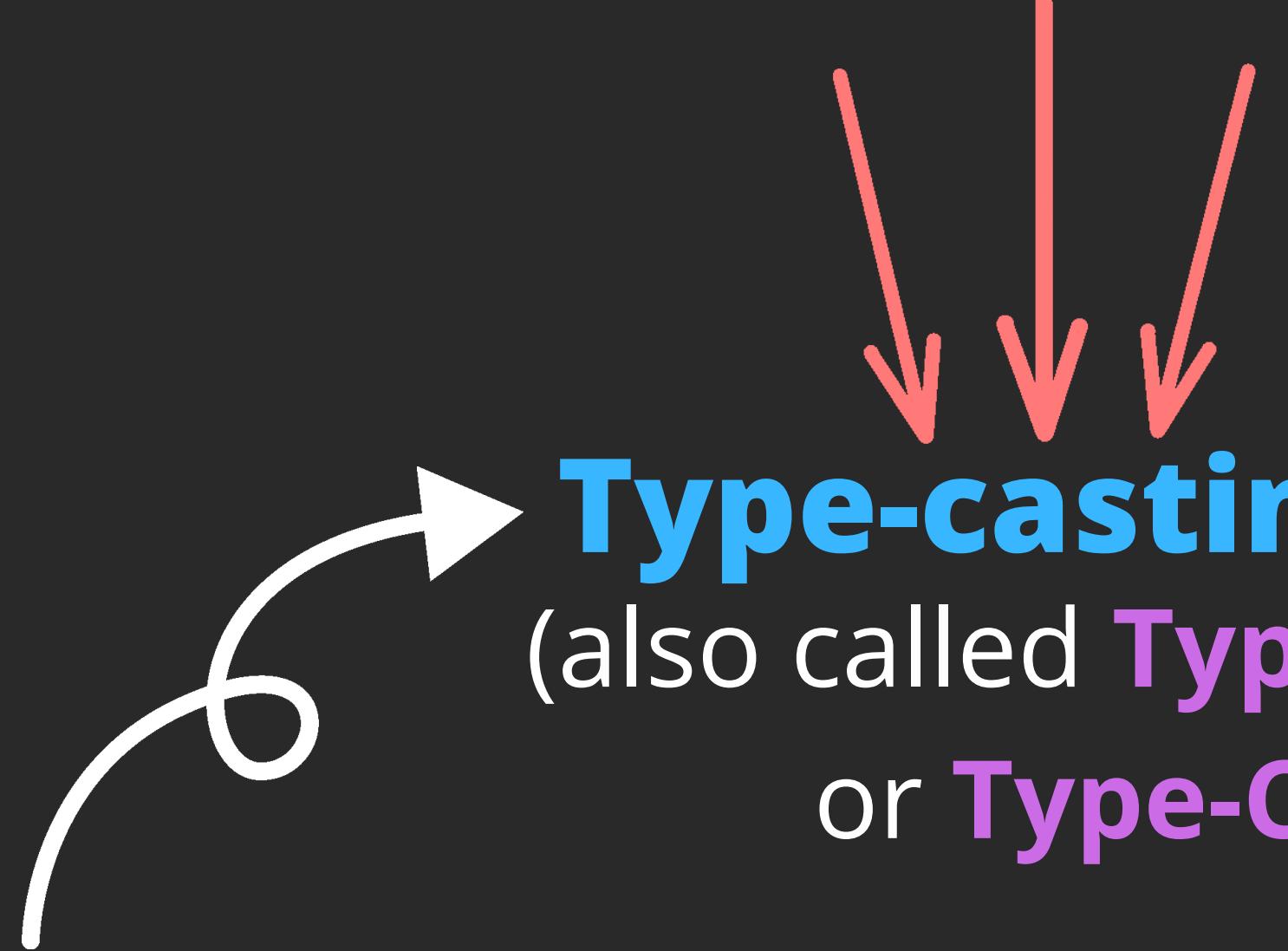
Bitwise Operators

Operator	Meaning
<code>~</code>	One's complement
<code>>></code>	Right shift
<code><<</code>	Left shift
<code>&</code>	Bitwise AND
<code> </code>	Bitwise OR
<code>^</code>	Bitwise XOR(Exclusive OR)

Assignment Operators

1. simple
2. compound

Operator	Meaning
=	Simple assignment
+=	Add assignment
- =	Subtract assignment
* =	Multiply assignment
/ =	Divide assignment
% =	Modulus assignment
<<=	Left shift assignment
>>=	Right shift assignment
&=	Bitwise AND assignment
^ =	Bitwise exclusive OR
=	Bitwise inclusive OR



Type-casting in C++

(also called Type-Conversion
or Type-Coercion)

Type Casting in C++ is used to convert a variable from one data type to another data type, and after type casting compiler treats the variable as of the new data type.

TYPES OF COERCION

Implicit Type Conversion => Also known as 'automatic type conversion'.

Done by the compiler on its own, without any external trigger from the user.

Explicit Type Conversion => Also called as forced type casting

Here the user can typecast the result to make it of a particular data type.

C++ supports C type casting

ex. double d = (int)a;

C++ supports following **4 types** of casting operators:

1. `const_cast`
2. `static_cast`
3. `dynamic_cast`
4. `reinterpret_cast`

Demo

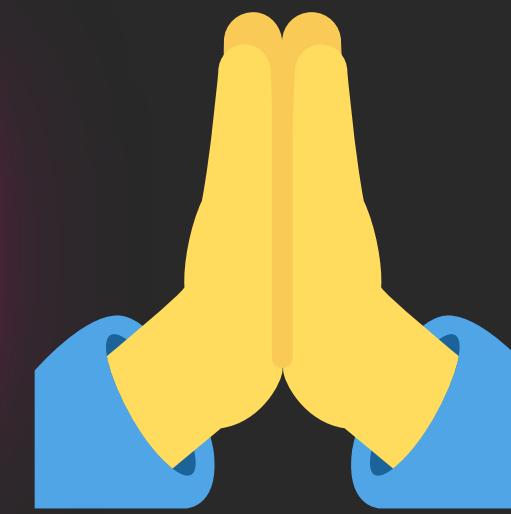
Type-Conversion

SYNTAX

(type)variable
static_cast<type>(variable)



THANK YOU



keep calm,
wear mask,
and
study hard



whoami
AKASH MAJI
Your Mentor