Lecture 1 :-

C++ introduction , history and definition

C++ vs C

Set up environment in vs code

ANSCII and case sensitive (c++ is case sensitive)

Application of C++

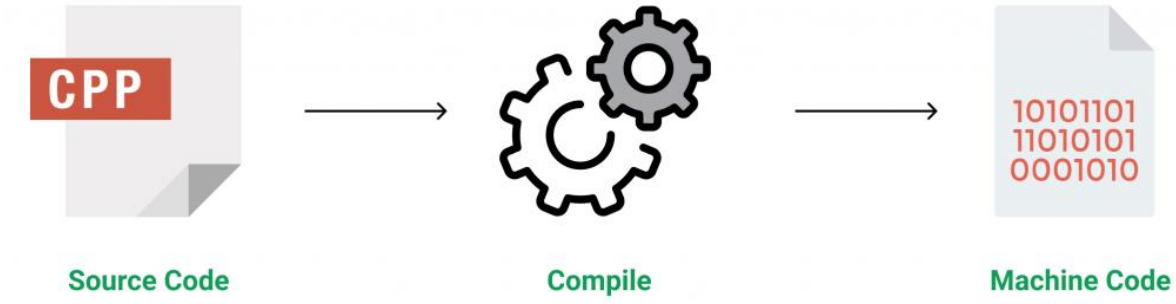
1.Operating system and system programming

2.Browser

3.graphic and game engine (unreal engine)

Compiler vs interpreter

Compiler (c,c++,c#,java)



Interpreter(python,ruby,matlab,java,javascript)

Basic structure of c++ program

```cpp
#include <iostream>
using namespace std;

int main()
{

    cout << "Hello World";
    return 0;
}
```

https://www.rapidtables.com/code/text/ascii-table.html

Stack overflow question : https://stackoverflow.com/questions/18914106/what-is-the-use-of-using-namespace-std?lq=1

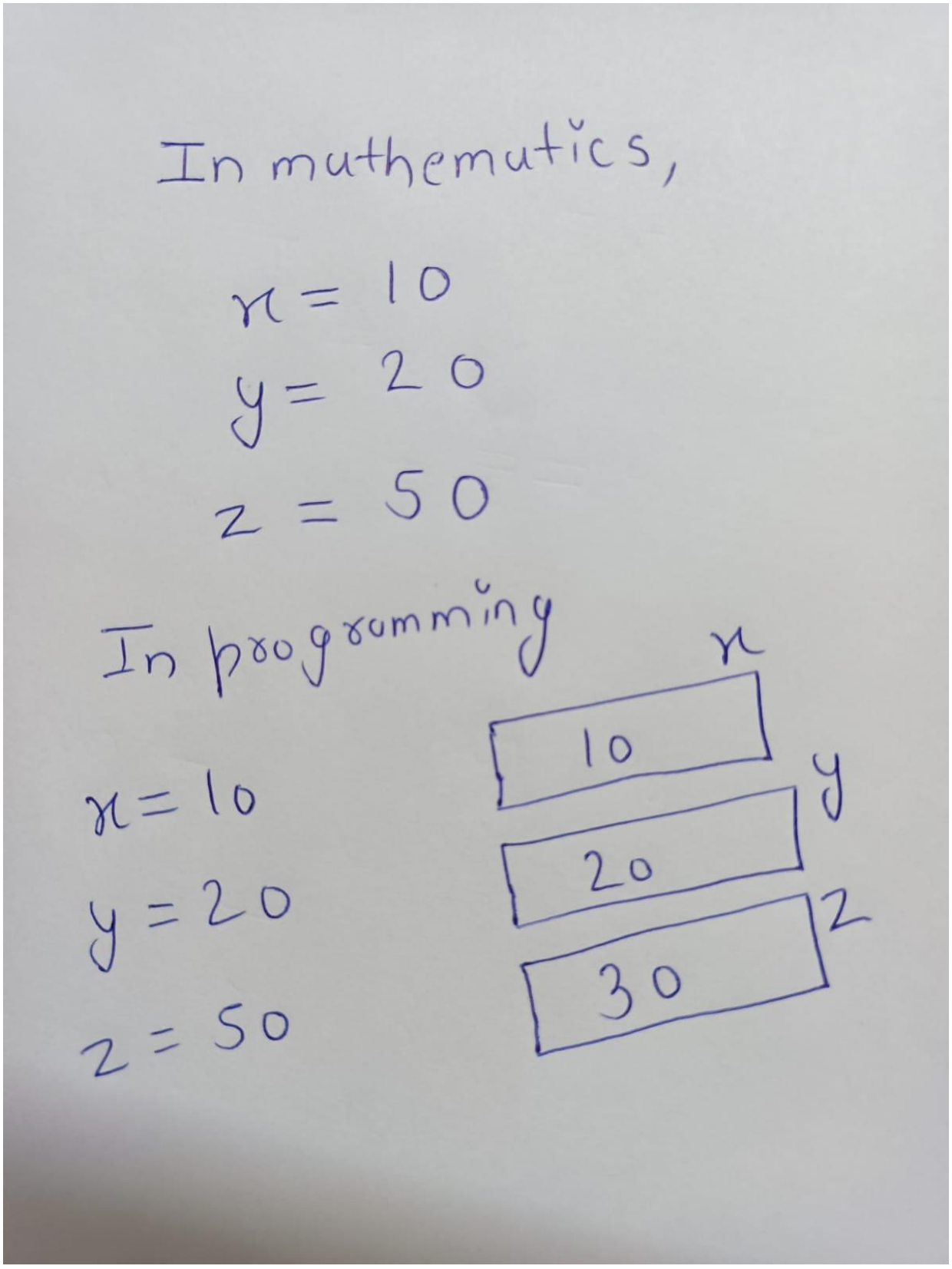
Print : cout

User input : cin

Comment : //single line comment

/* multi line comment */

Variable : Variables are containers for storing data values.



Rules for defining variable name

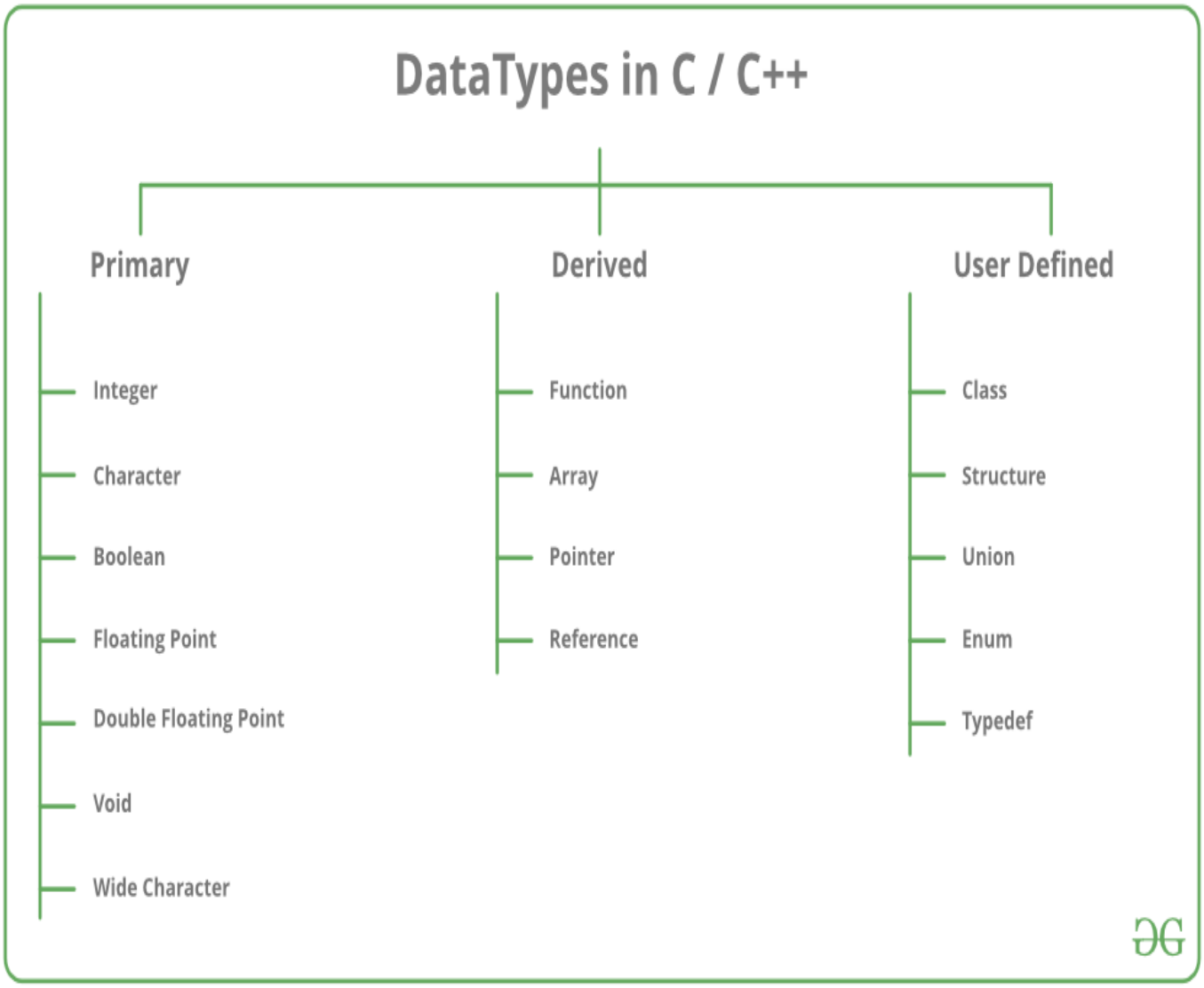
1.Reserved keywords can't be used as variable name

2.variable name can't be start with number

3.underscore(_) and dollarsign($) can be used in starting of variable name

4.variable name can't contain spaces

Data types :-



Data type in c++

```
int mynumber=10;          //integer number
long int mynumber=10;  //long integer with larger range
float mydecimal=10.10;          //decimal number
double mydecimal2=10.10; // decimal number with more range
char myletter='A';          //single letter
bool mybool=true;          //Boolean value
string mytext="hello this is a string";          //text value

// discus about unsigned int
// unsigned int can only store +ve value
//and signed can contain both +ve and -ve values
// by default everything in c++ is signed
```

If else condition in c++

```
if (condition) {

  // block of code to be executed if the
condition is true

} else {

   // this block of code will be executed if
condition is true

}
```

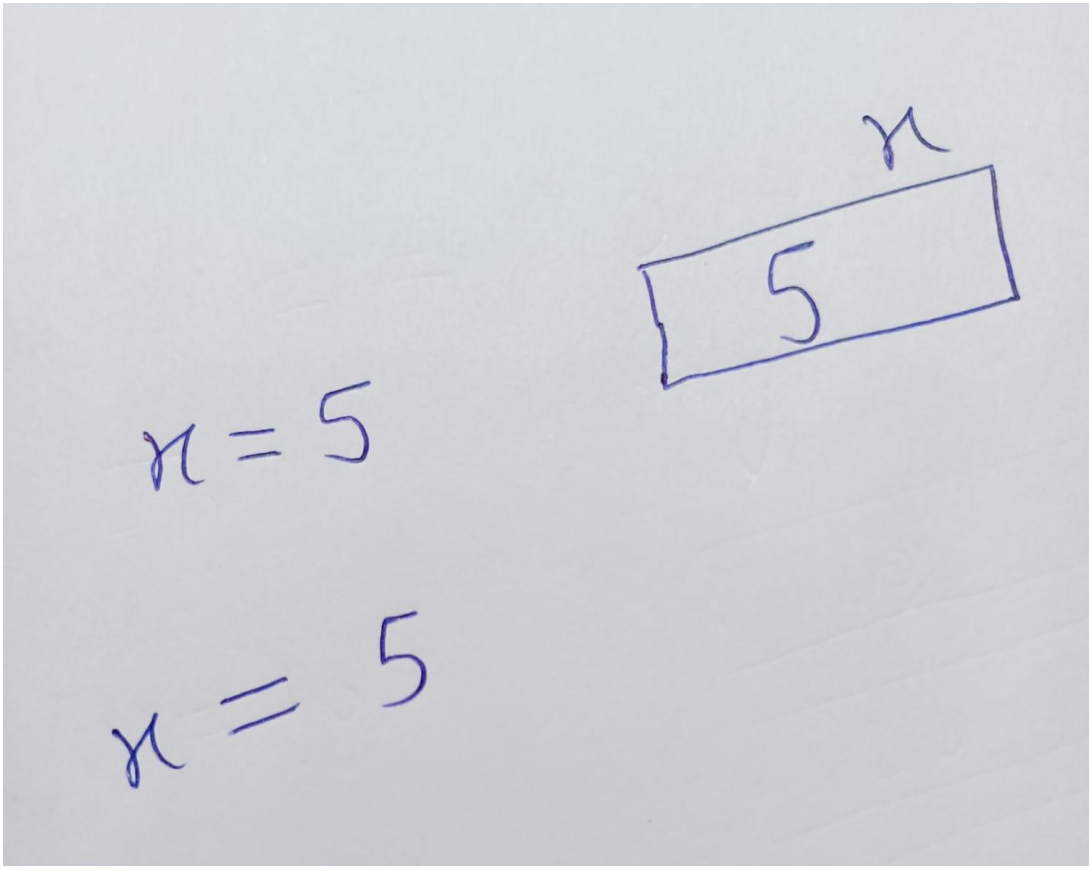
Range of data types :-

Type	Typical Bit Width	Typical Range
char	1byte	-127 to 127 or 0 to 255
unsigned char	1byte	0 to 255
signed char	1byte	-127 to 127
int	4bytes	-2147483648 to 2147483647
unsigned int	4bytes	0 to 4294967295
signed int	4bytes	-2147483648 to 2147483647
short int	2bytes	-32768 to 32767
unsigned short int	2bytes	0 to 65,535
signed short int	2bytes	-32768 to 32767
long int	8bytes	-2,147,483,648 to 2,147,483,647
signed long int	8bytes	same as long int
unsigned long int	8bytes	0 to 4,294,967,295
long long int	8bytes	-(2^63) to (2^63)-1
unsigned long long int	8bytes	0 to 18,446,744,073,709,551,615
float	4bytes	

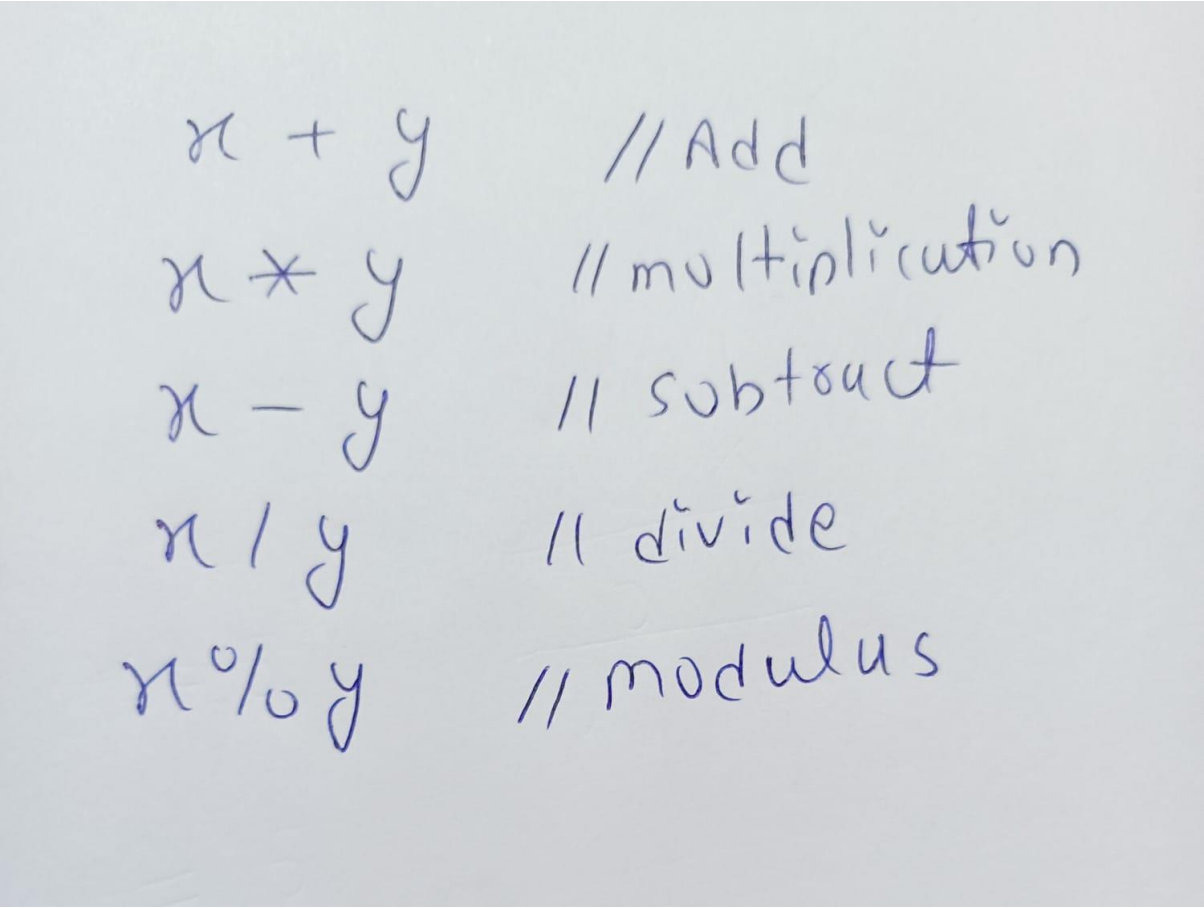
C++ divides the operators into the following groups:

- Assignment operators

  X=5;



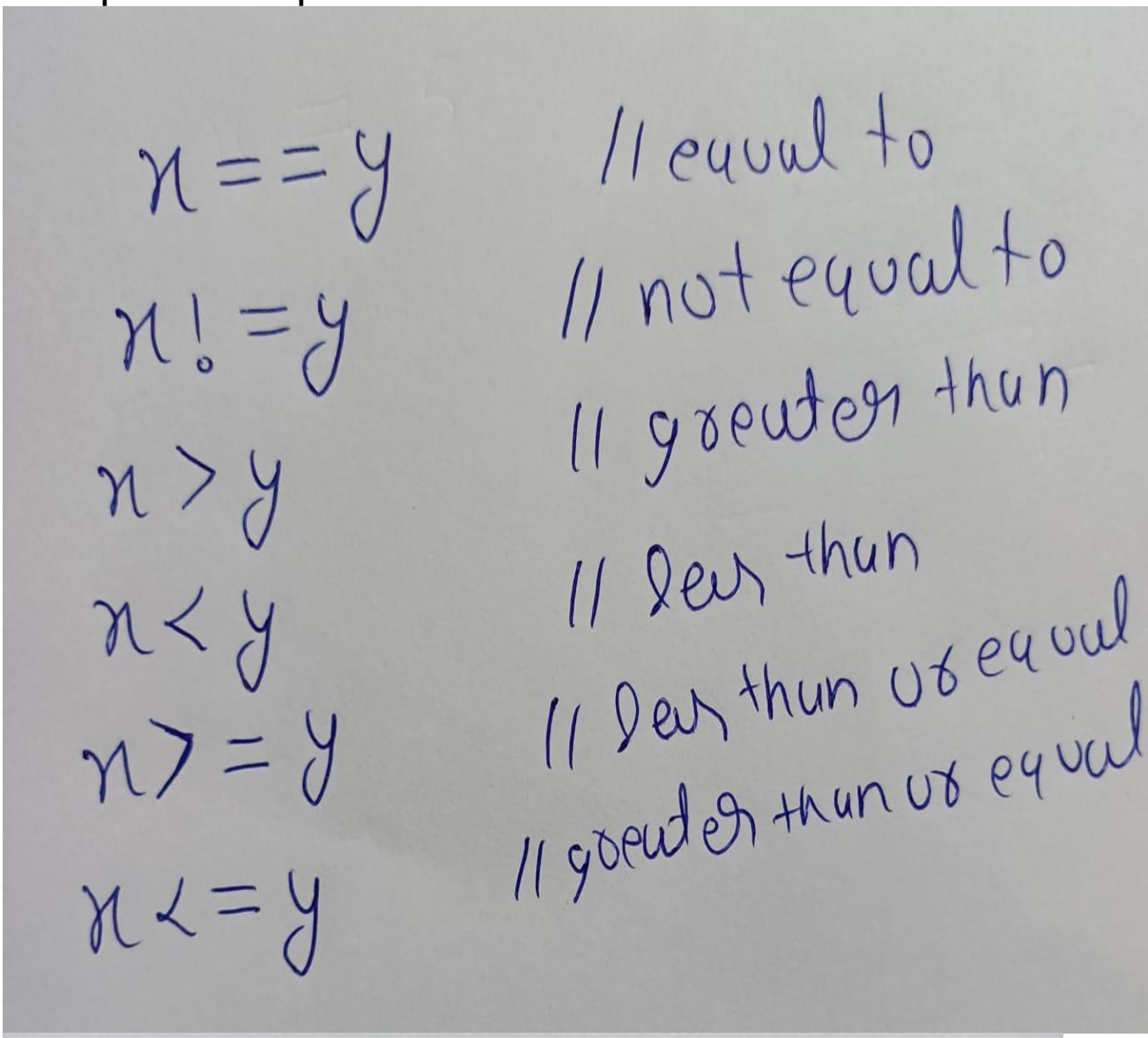
- Arithmetic operators

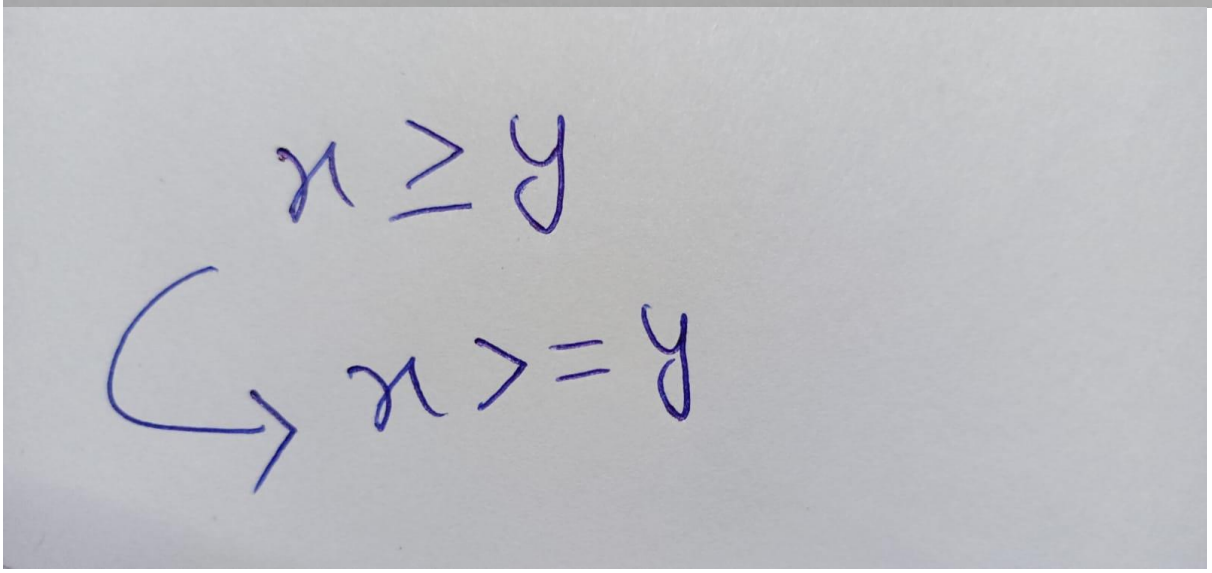


Post and pre increment and decrement are also in arithmetic operators

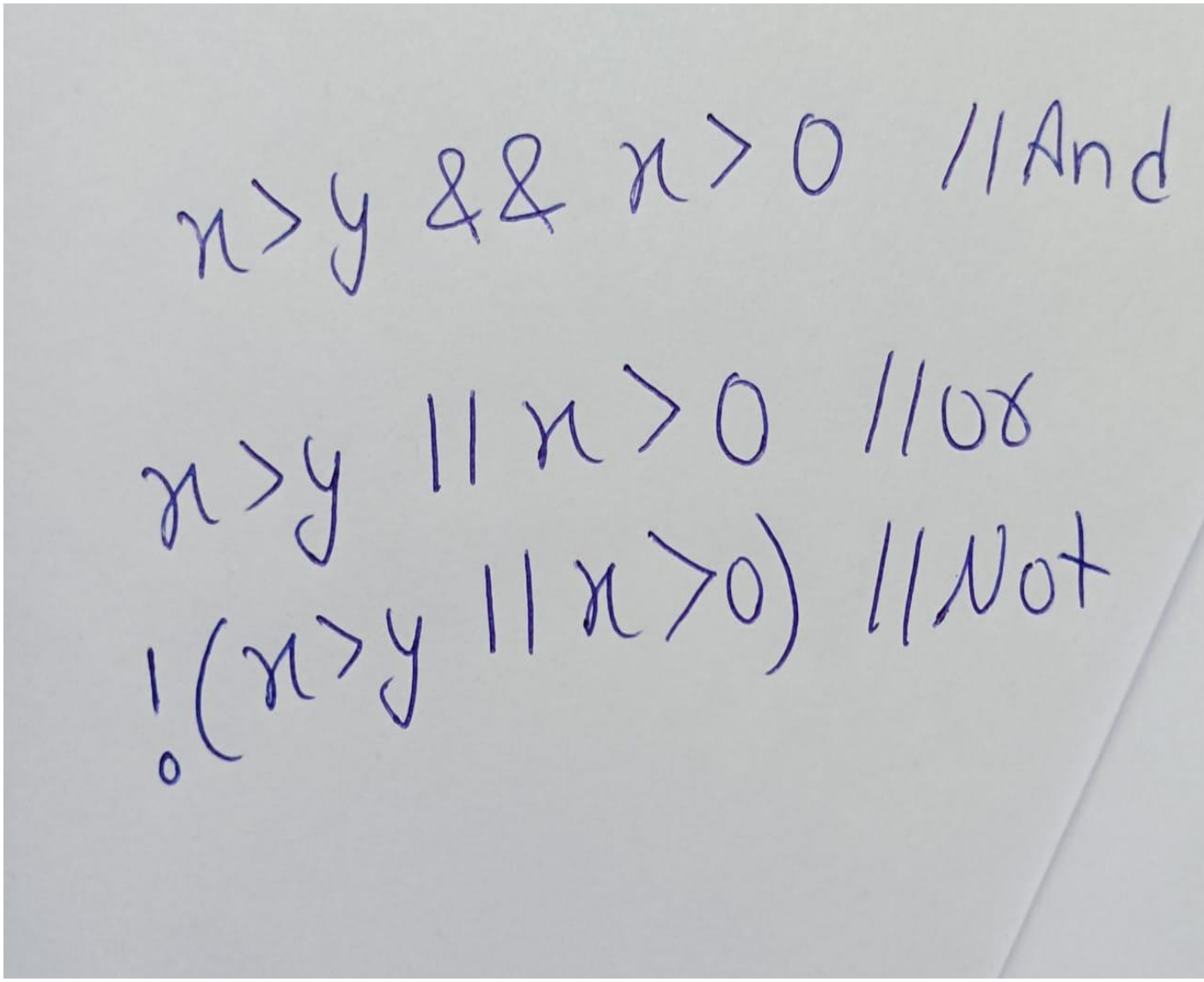
```
x++;        //post increment
x--;        //post decrement
++x;        //pre increment
--x;        //pre decrement
```

- Comparison operators





- Logical operators



- Bitwise operators

Create new line in c++

Endl vs \n

Both endl and \n serve the same purpose in the c++ that is they insert a new line

The key difference is that endl keep flushing the output every time while \n doesn’t

Endl is a keyword while \n is a character

Endl doesn’t occupy memory while \n takes 1 btye of memeory in the program