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\* C++ Programming Notes

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**Preset:**

* Invented by Bjarne Stroustrup in 1979
* Middle Level Language
* Versions: C++ 14, C++11, C++99

**Hello World:**

#include <iostream>

using namespace std;

int imGlobal = 0;

const double PI = 3.141;

int main(int argc, char\*\*argv) {

cout << "Hello World\n";

return 0;

}

* Namespaces
* main: Start executing from here
* Cout allows us to output information to console
* “<<” Stream insertion operator: Takes string on the right to cout stream
* “endl” Issue newline and force write to console
* argc: No of arguments passed to main
* argv: Array of pointers to strings in the arg vector
* int: Return an integer when done executing
* imGlobal: Global variable and accessible everywhere else.
* const double PI: Global variable whose value cannot be changed anywhere else

**Comments:**

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Multi

Line

Comment

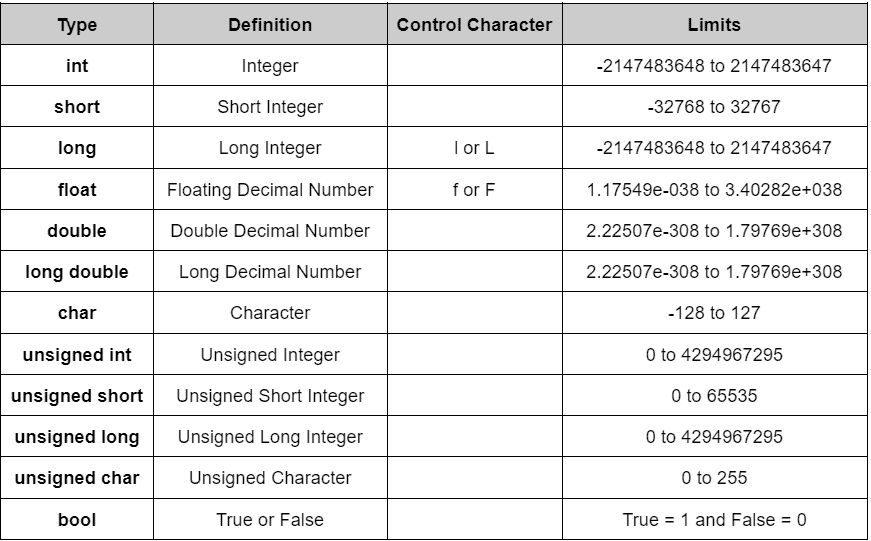
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// Single Line Comment

**Common Header files:**

* #include <cstdlib> // Sorting, Searching, import c libraries, rand, memmgmt, and other general-purpose functions
* #include <iostream> // Read and Write data
* #include <string> // Work with strings
* #include <limits> // Min and max values
* #include <vector> // Work with vectors
* #include <sstream> // Work with string streams
* #include <numeric> // Work with sequences of values
* #include <ctime> // Work with time
* #include <cmath> //Common math functions

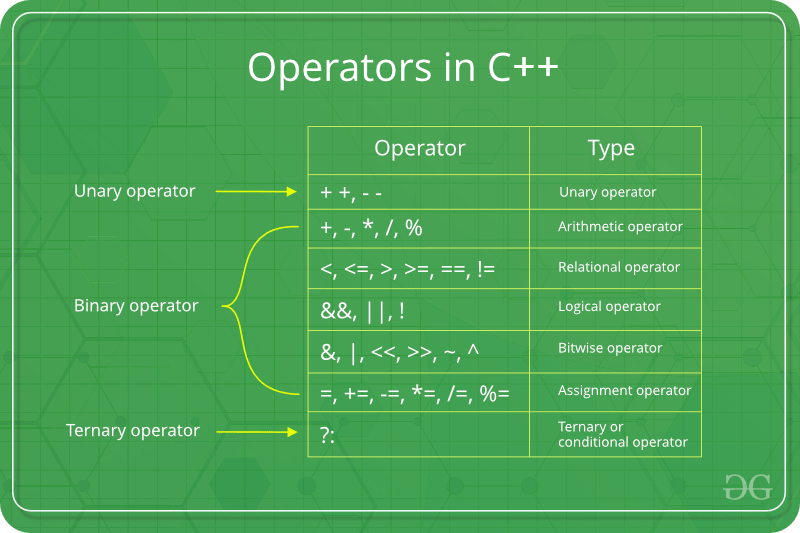
**Data Types:**

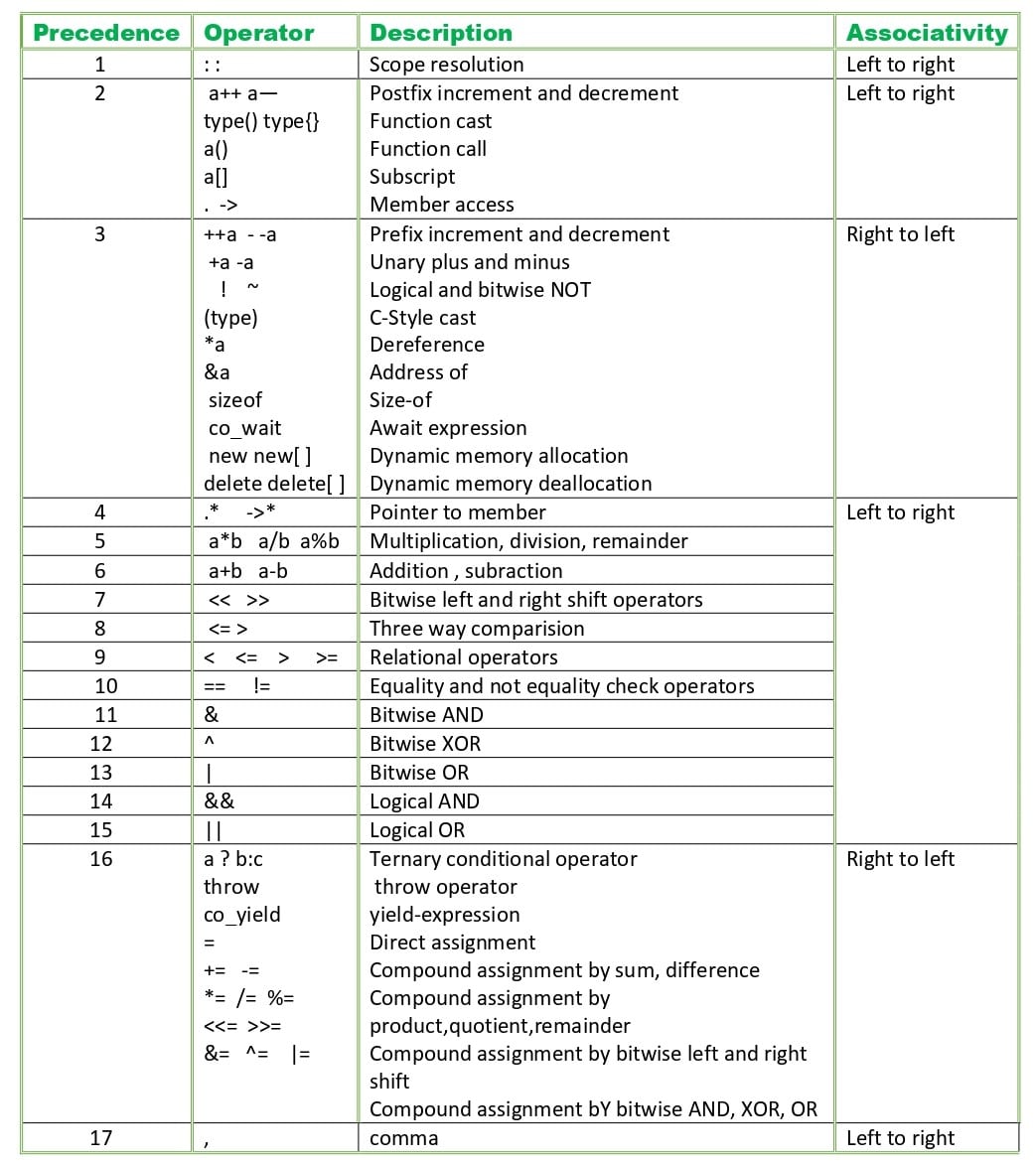


**Input and Output:**

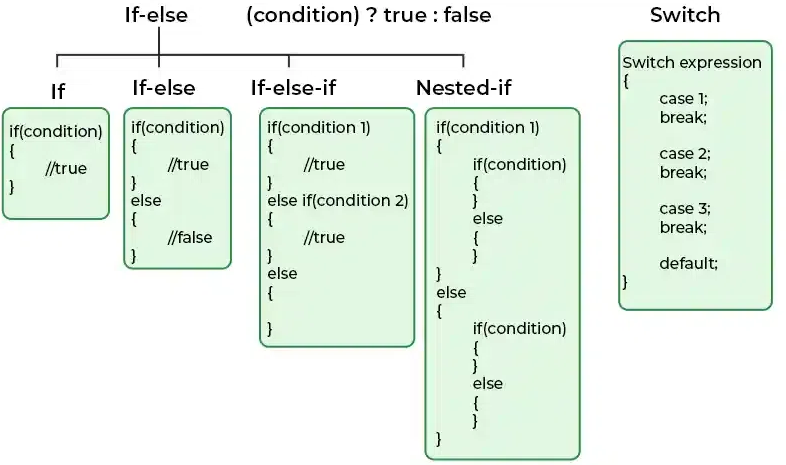
* cout << “Min int” << numeric\_limits<int>::min();
* cout << “Max short int” << numeric\_limits<short int>::max();
* printf(“Sum = %.7f\n”), (1.1111111+1.1111111)); // To print formatted output of float upto 7 decimal places
* cout << “int Byte:” << sizeof(int) << endl;
* printf(“%c %d %5d %.3f %s\n”, ‘A’, 10, 5, 3.1234, “Hi); // O/p: A 10 5 3.123 Hi //Right justify
* cin >> num\_str; //to take in input for num1
* int num1 = stoi(num\_str) //To convert num1 from string to int;
* bool res=true; cout.setf(ios::boolalpha); cout << res << endl; // To print booleans

**Operators, Precedence, Associativity:**





**Conditional Statements:**



**Loops:**

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**Arrays:**

void main(int argc, char\*\*argv) {

int array1 [10] = {1}; // Size

int array2 [] = {1,2,3}; // Size for this would automatically be 3

int array3 [5] = {8,9}; //

cout << “First val: ” << array1[0] << endl;

array1[0] = 7;

int array4[2][3][3] = { {{1,2}, {3,4}}, {{5,6}, {7,8}} }; // Multidimensional arrays

cout << array4[0][1][1] <<endl //prints 4

return 0;

}

* Size once defined cannot be changed.

**Vectors:**

* Used when size of arrays cannot be determined in precursor.

void main() {

vector<int> vnums(2);

vnums[0] = 1;

vnums[1] = 2;

vnums.push\_back(3);

cout << “Size:” << vnums.size() << endl; //O/P Size: 3

}