

```
/*  
 * C++ Programming Notes  
 * Ravi Kumar Reddy K  
 * github.com/ravikumark815  
 */
```

### **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:**

```
/*  
Multi  
Line  
Comment  
*/  
// 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

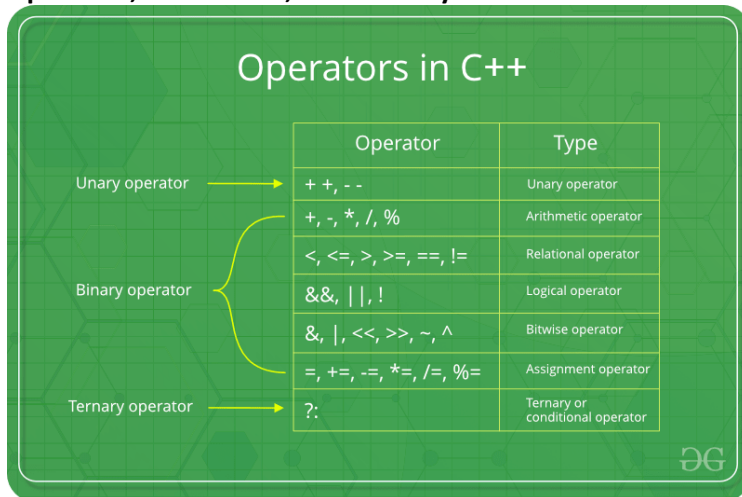
## Data Types:

Type	Definition	Control Character	Limits
int	Integer		-2147483648 to 2147483647
short	Short Integer		-32768 to 32767
long	Long Integer	l or L	-2147483648 to 2147483647
float	Floating Decimal Number	f or F	1.17549e-038 to 3.40282e+038
double	Double Decimal Number		2.22507e-308 to 1.79769e+308
long double	Long Decimal Number		2.22507e-308 to 1.79769e+308
char	Character		-128 to 127
unsigned int	Unsigned Integer		0 to 4294967295
unsigned short	Unsigned Short Integer		0 to 65535
unsigned long	Unsigned Long Integer		0 to 4294967295
unsigned char	Unsigned Character		0 to 255
bool	True or False		True = 1 and False = 0

## 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;

## Operators, Precedence, Associativity:



Precedence	Operator	Description	Associativity
1	::	Scope resolution	Left to right
2	a++ a-- type() type{} a() a[] . ->	Postfix increment and decrement Function cast Function call Subscript Member access	Left to right
3	++a --a +a -a ! ~ (type) *a &a sizeof co_await new new[] delete delete[]	Prefix increment and decrement Unary plus and minus Logical and bitwise NOT C-Style cast Dereference Address of Size-of Await expression Dynamic memory allocation Dynamic memory deallocation	Right to left
4	.* ->*	Pointer to member	Left to right
5	a*b a/b a%b	Multiplication, division, remainder	
6	a+b a-b	Addition , subtraction	
7	<< >>	Bitwise left and right shift operators	
8	<= >	Three way comparision	
9	< <= > >=	Relational operators	
10	== !=	Equality and not equality check operators	
11	&	Bitwise AND	
12	^	Bitwise XOR	
13		Bitwise OR	
14	&&	Logical AND	
15		Logical OR	
16	a ? b:c throw co_yield = += -= *= /= %= <<= >>= &= ^=  =	Ternary conditional operator throw operator yield-expression Direct assignment Compound assignment by sum, difference Compound assignment by product,quotient,remainder Compound assignment by bitwise left and right shift Compound assignment bY bitwise AND, XOR, OR	Right to left
17	,	comma	Left to right