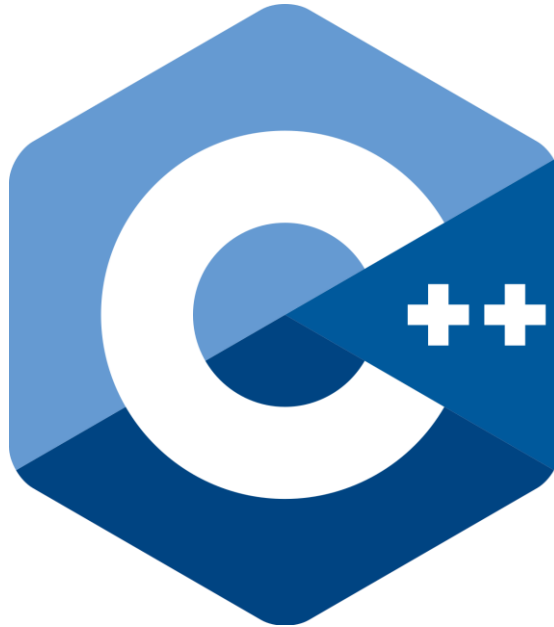




# **Fundamentals of Programming in C++**



# Find All the Code Here



<https://github.com/Srinivsan-m/Online-Classes>



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Srinivsan-m Day 1

..

 [01\\_HelloWorld.cpp](#)

 [Day1 Hello World.pdf](#)

# Variables

```
int age = 20;
```

datatype

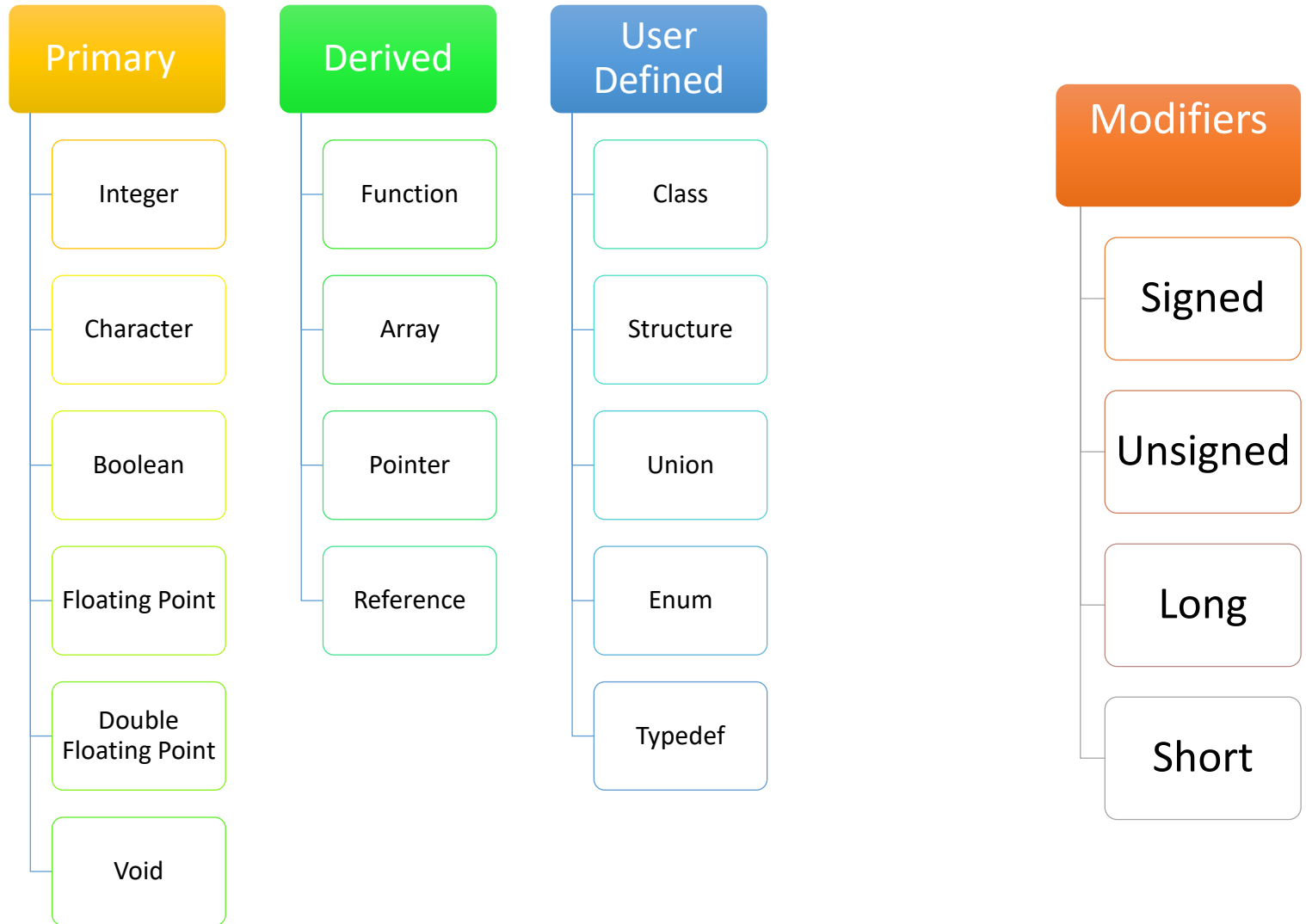
value

variable name

```
int date;  
date = 12;
```

```
string name = "Tanmay";
```

# Data Types



	DATA TYPE	MEMORY (BYTES)	RANGE	FORMAT SPECIFIER
	short int	2	-32,768 to 32,767	%hd
	unsigned short int	2	0 to 65,535	%hu
→	unsigned int	4	0 to 4,294,967,295	%u
→	int	4	-2,147,483,648 to 2,147,483,647	%d
	long int	8	-2,147,483,648 to 2,147,483,647	%ld
	unsigned long int	8	0 to 4,294,967,295	%lu
	long long int	8	-(2^63) to (2^63)-1	%lld
	unsigned long long int	8	0 to 18,446,744,073,709,551,615	%llu
	signed char	1	-128 to 127	%c
	unsigned char	1	0 to 255	%c
→	float	4		%f
→	double	8		%lf
	long double	16		%Lf

# Keywords

alignas (C++11)  
alignof (C++11)  
and  
and\_eq  
asm  
auto  
bitand  
bitor  
bool  
break  
case  
catch  
char  
char16\_t (C++11)  
char32\_t (C++11)  
class  
compl  
const  
constexpr (C++11)  
const\_cast  
continue

decltype (C++11)  
default  
delete  
do  
double  
dynamic\_cast  
else  
enum  
explicit  
export  
extern  
false  
float  
for  
friend  
goto  
if  
inline  
int  
long  
mutable

namespace  
new  
noexcept (C++11)  
not  
not\_eq  
nullptr (C++11)  
operator  
or  
or\_eq  
private  
protected  
public  
register  
reinterpret\_cast  
return  
short  
signed  
sizeof  
static  
static\_assert (C++11)  
static\_cast

struct  
switch  
template  
this  
thread\_local (C++11)  
throw  
true  
try  
typedef  
typeid  
typename  
union  
unsigned  
using  
virtual  
void  
volatile  
wchar\_t  
while  
xor  
xor\_eq

# Identifier Naming Best Practices

```
int my_variable_name;  
int myVariableName;
```



```
int my variable name;
```



# Variable Assignment

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

int main()
{
    cout << " ** Variable Assignment ** \n";
    int var1 = 10; //direct initialization
    int var2;
    var2 = 21;
    int var3(12); //copy initialization
    int var4{43}; //brace initialization
    int var5{}; //zero initialization
    int var6(var3); //copy initialization
}
```

# Taking input & Performing Operations

```
int age;  
cin >> age;
```

```
#include <iostream>  
using namespace std;  
  
int main()  
{  
    cout << "Calculator" << endl;  
    int a, b;  
    cout << "Enter two numbers to add : ";  
    cin >> a >> b;  
    cout << "The Sum of " << a << " and " << b << " is : " << a + b << endl;  
}
```



Write a program to **find the volume of a cuboid**.  
Take the **length**, **width** and **Height** as  
**input from the user** and  
**print the volume** as the output.



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

int main()
{
    cout << "Volume of a cuboid" << endl;
    int length, width, height;
    cout << "Enter the length of the cuboid : ";
    cin >> length;
    cout << "Enter the width of the cuboid : ";
    cin >> width;
    cout << "Enter the height of the cuboid : ";
    cin >> height;
    int volume = length * width * height;
    cout << "Volume of the cuboid is : " << volume << " sq. units \n";
}
```

# Escape Sequences

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

int main()
{
    cout << "** Escape Sequences **" << endl;
    cout << "New line (\n)";
    cout << "Tab Spacing (\t)";
    cout << "Backspace (\b)";
    cout << "Carriage Return (\r)";
}
```

```
#include <cmath>
```

or

```
#include <math.h>
```

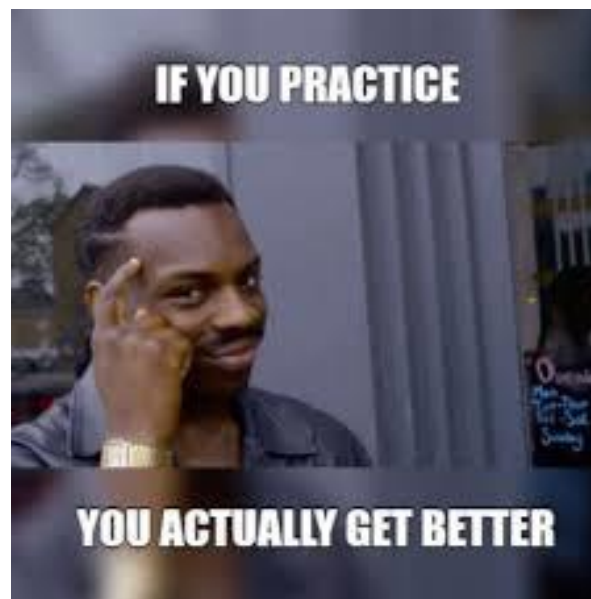
<http://www.cplusplus.com/reference/cmath/>

```
#include <iostream>
#include <math.h>
using namespace std;

int main()
{
    double num = pow(3, 4);
    cout << "3^4 = " << num << endl;

    int num1 = 83;
    double square_root = sqrt(num1);
    cout << "sqrt of " << num1 << " is " << square_root << endl;

    cout << "cos (60deg) = " << cos(60.0 * (3.14159 / 180)) << endl;
}
```



Given the **coefficients** of the **quadratic equation**

$$ax^2 + bx + c = 0$$

find its **roots** using the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$