DataTypes :-

It specifies the different sizes and values that can be stored in the variable.

Datatypes in C++

- **Pre-defined – int, boolean, float, double, char etc.**
- **Derived – Function, Array, Pointer etc.**
- **User-defined – class, structure, union etc.**

Data Type	Size	Range
int or signed int	4 Bytes	-2,147,483,648 to 2,147,483,647
unsigned int	4 Bytes	0 to 4,294,967,295
short int	2 bytes	-32,768 to 32,767
long int	4 bytes	-2,147,483,648 to 2,147,483,647
unsigned short int	2 bytes	0 to 65,535
unsigned long int	8 Bytes	0 to 4,294,967,295
long long int	8 Bytes	-(2^63) to (2^63)-1
unsigned long long int	8 Bytes	0 to 18,446,744,073,709,551,615
signed char	1 Bytes	-128 to 127
unsigned char	1 Bytes	0 to 255
wchar_t	2 or 4 Bytes	1 wide character
float	4 Bytes	
double	8 Bytes	
long double	12 Bytes	

Type Casting :-

It is process of converting a variable from one datatype to another datatype.

Types

1. Implicit – Automatically performed by the compiler.

2. Explicit – By default the compiler, does not allow it.

Variables :-

It is the name of memory location or it is user defined name which is given by user. Variables can store any types of values.

Rules of variable declaration:-

- **A variable name can consist of Capital letters A-Z, lowercase letters a-z digits 0-9, and two special characters such as _ underscore and $ dollar sign.**
- **The first character must not be a digit.**
- **Blank spaces cannot be used in variable names.**
- **C++ keywords cannot be used as variable names.**
- **Variable names are case-sensitive.**
- **There is no limit on the length of a variable name but by convention, it should be between 4 to 15 chars.**
- **Variable names always should exist on the left hand side of assignment operators.**

Few valid C++ variable name example:-

- **myvar**
- **myVar**
- **MYVAR**
- **_myVar**
- **$myVar**
- **myVar1**
- **myVar_1**

Types of variable

- **Global variable - If a variable is defined outside all functions, then it is called a global variable.**
- **Local variable - A variable defined inside a function (defined inside function body between braces) is called a local variable or automatic variable.**
- **Static variable – When we write static keyword before a variable then it is known as static variable.**

Identifiers

It refers to the name that is used to identify variables, functions and so on.

```
int a = 10;  // a is identifier
void disp() // disp is identifier
class Mario{ //Mario is identifier
}
```

Keywords

Keywords are the reserved words whose meaning is already defined in the compiler.

C++ keywords

asm	double	new	switch
auto	else	operator	template
break	enum	private	this
case	extern	protected	throw
catch	float	public	try
char	for	register	typedef
class	friend	return	union
const	goto	short	unsigned
continue	if	signed	virtual
default	inline	sizeof	void
delete	int	static	volatile
do	long	struct	while