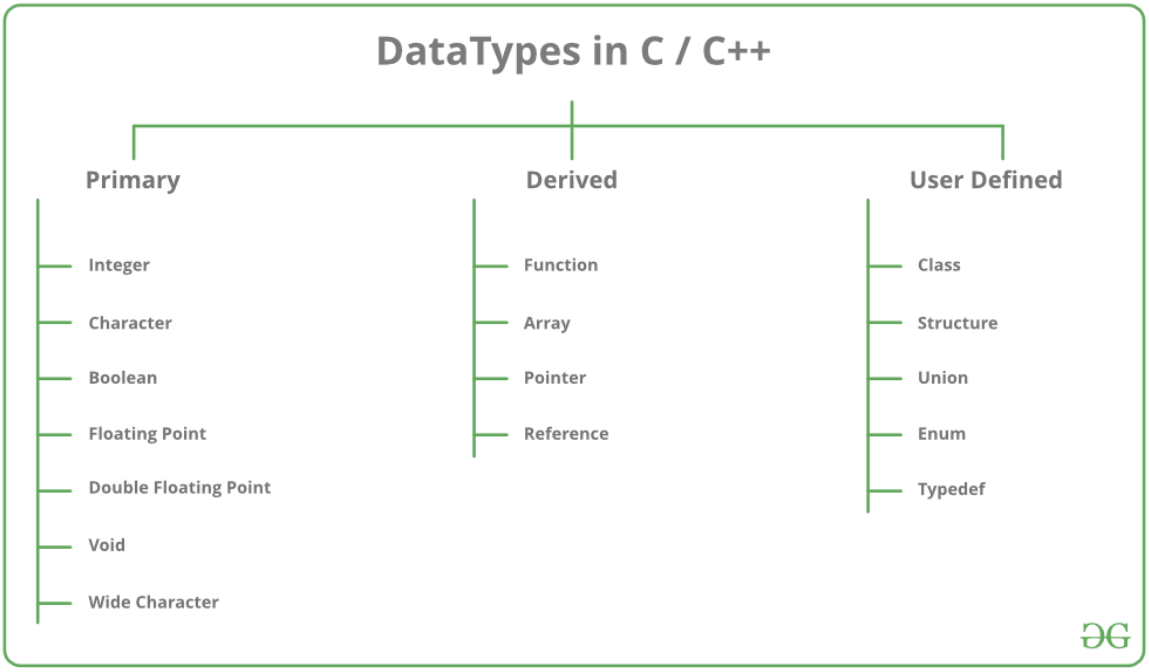
Data types

A data type specifies the type of data that a variable can store such as integer, floating, character etc. There are 4 types of data types in C++ language.

C++ supports the following data types:

1. Primary or Built in or Fundamental data type
2. Derived data types
3. User defined data types



primitive data types available in C++.

- **Integer**: The keyword used for integer data types is **int**. Integers typically require 4 bytes of memory space and range from -2147483648 to 2147483647.
- **Character**: Character data type is used for storing characters. The keyword used for the character data type is **char**. Characters typically require 1 byte of memory space and range from -128 to 127 or 0 to 255.
- **Boolean**: Boolean data type is used for storing Boolean or logical values. A Boolean variable can store either *true* or *false*. The keyword used for the Boolean data type is **bool**.
- **Floating Point**: Floating Point data type is used for storing single-precision floating-point values or decimal values. The keyword used for the floating-point data type is **float**. Float variables typically require 4 bytes of memory space.

- **Double Floating Point**: Double Floating Point data type is used for storing double-precision floating-point values or decimal values. The keyword used for the double floating-point data type is **double**. Double variables typically require 8 bytes of memory space.
- **void**: Void means without any value. void data type represents a valueless entity. A void data type is used for those function which does not return a value.
- **Wide Character**: Wide character data type is also a character data type but this data type has a size greater than the normal 8-bit datatype. Represented by **wchar_t**. It is generally 2 or 4 bytes long.

SYNTAX:

```
float area = 64.74;
double volume = 134.64534;
int salary = 85000;
double distance = 45E12    // 45E12 is equal to 45*10^12
char test = 'h';
str name=”aaa”;
wchar_t test = L'ם'  // storing Hebrew character;
bool cond = false;
    We cannot declare variables of the void type.
long b = 4523232;
long int c = 2345342;
long double d = 233434.56343;
short d = 3434233; // Error! out of range
unsigned int a = -5;    // Error! can only store positive numbers or 0
ARRAY---int arr[4]={0,1,2,3};
POINTER----int* point_int;
REFERENCE----int val = 1526; int &ref = val;
```

EXAMPLE PROGRAM:

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

int main()
{
   cout << "Size of char : " << sizeof(char) << endl;
   cout << "Size of int : " << sizeof(int) << endl;

   cout << "Size of long : " << sizeof(long) << endl;
   cout << "Size of float : " << sizeof(float) << endl;

   cout << "Size of double : " << sizeof(double) << endl;

    return 0;
    }
```

Output

```
Size of char : 1
Size of int : 4
Size of long : 8
Size of float : 4
Size of double : 8
```